CALIFORNIA
TELEHEALTH
RESOURCE
CENTER

The
CTRC
Telehealth
Program Developer Kit

A Roadmap For Successful
Telehealth Program Development

The California Telehealth Resource Center (CTRC), a resource center specializing in telemedicine and telehealth program development, responds to hundreds of assistance requests from around the globe. We often hear from organizations interested in starting telehealth programs who think telehealth sounds valuable but need to know what steps to take to get a telehealth program started.

The CTRC Program Developer was designed to answer that need. The genesis of this is kit is the implementation methodology developed for the University of California schools and hospitals, as well as the safety net clinic referring partners throughout the state. It was necessary to implement a standardized program across the state. Using project management fundamentals, a replicable standardized approach was developed to assure consistency of operation and streamlined implementation. This process, now called the CTRC Program Developer, provides a simple step by step approach to telehealth development and implementation.

This approach has been adapted and expanded for use in all types of services settings and applies to both small and large facilities. It provides a roadmap to traveling the road from initial program interest to program implementation and operation. It also incorporates telehealth best practices and resource materials to offer a process customized to the telehealth environment.

The goal of the Program Developer is to allow new programs to learn from the experience of others, to reduce trial and error, and most of all to create successfully operating telemedicine programs. It can easily be adapted and customized to the size and formality of your program.

The Program Developer is a living document that will continue to incorporate new best practices and lessons learned. Materials for the kit are available in print format and online at the CTRC website. We welcome your feedback on using the Program Developer in your program.

California Telehealth Resource Center

Introduction and Overview

You want to start your telemedicine program quickly and you don't want to learn by trial and error. You want to know when you are on track and when you should make adjustments. The CTRC Program Developer was designed to assist you in developing and implementing telehealth services. This Guide provides overview information on the process and the activities and information you will collect during each of the development phases.

Each of the steps is designed to allow your organization to consider critical aspects of development and to support decision making. The phases and steps are shown below:

Assess & Define

Assess & Define

Three steps support assessing the environment and defining the proposed program:

Step 1: Assess Service Needs & Environment
- Assess service needs
- Identify potential telehealth opportunities
- Assess organizational readiness

Step 2: Define Program Model
- Consider the type of program that will meet needs

Step 3: Develop Business Case
- Determine the impact of the proposed telehealth program

Develop & Plan

Develop & Plan

Two steps support fully defining the activities necessary for program implementation:

Step 4: Develop and Plan Program & Technology
- Create a detailed project plan

Step 5: Develop Performance Monitoring Plan
- Define monitoring and evaluation mechanisms and program improvement process

Implement & Monitor

Implement & Monitor

The final two steps support implementation and ongoing monitoring:
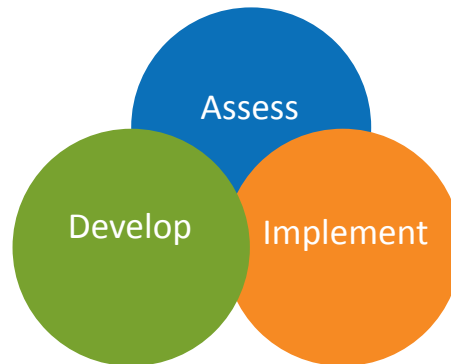
Step 6: Implement Telemedicine Program
- Perform all the work required to implement the program

Step 7: Monitor and Improve Program (Ongoing)

The Steps Can Blend Together

Although the CTRC Telehealth Program Developer presents distinct steps, in actual practice the steps blend together into one process.   Information from one step may overlap with another step and information obtained in a later step may require reconsideration of an earlier step.

Every Program Is Unique—Customize the Seven Steps For Your Organization

Telemedicine programs vary significantly in their objectives, size, and complexity. And organizations differ in the way they make decisions. Depending on the organization and the way you make decisions, you may need to develop written reports or simply provide an informal presentation. No matter the size of your program, CTRC recommends that you address each of the components in the Program Developer. Experience shows that programs that follow these guidelines, experience fewer setbacks and greater successes.

Why Not Just Start Implementing

"Measure Twice, Cut Once"

You may wonder why we just don't start with Step Six: Implement the Program. After all, that's what you intend to do. Experience has shown that the most successful telemedicine programs take the time to carefully identify and define program needs before beginning. A structured development process allows you to consider decisions and impact before making buying and other costly decisions. The danger of starting with Step Six is that you will be required to make decisions without necessary information and many of your decisions will have to be revisited and revised. These decisions are often costly and time consuming.

You may think that Steps One through Five will take a substantial amount of time, but the length of time required depends on the scope and complexity of the project. A small project may be done very rapidly, while a large project should not be done without careful coordination of tasks and stakeholders. Steps One through Five allow you to draw on the extensive experience of others thus avoiding known pitfalls.

These steps also allow you to identify and incorporate best practices into your program during the development, rather than making mistakes and having to rework your program as you go along.

Assess and Define

You've got to be careful if you don't know where you're going, because you might not get there.

- Yogi Berra

> **One: Determine Needs**
> **Two: Define & Specify Program Model**
> **Three: Define and Develop Business Case**

Assess and Define

Steps One, Two and Three, will determine the clinical and community needs that would be supported through the development of a telehealth program. During Assess and Define, a needs assessment is undertaken to collect quantitative data on service level needs. Based on these needs, the type of telehealth program can be defined and a certain level of specificity can be developed about the telehealth program model. During these initial steps, the business case will be considered to determine how the program fits into the business plan of the organization, what revenue streams it may create, how it may be funded for start-up and operation and what secondary sources of revenue may be created from the telehealth program. This is also the time to fully consider the existing market place to determine if there is a market for a new telehealth program.

The first three steps will:

- Identify and document the need and rationale for the envisioned telemedicine program.

- Define the health care or other services your telemedicine program will deliver.

- Describe how the targeted services will be delivered.

- Perform a market analysis to determine if there is a market for the service you are proposing to provide and a willingness and mechanism to pay for it.

Tabs for steps One, Two and Three provide detailed information on activities related these steps.

Assess
&
Define

Develop and Plan

*A plan is a list of actions arranged in whatever sequence
is thought likely to achieve an objective.*

John Argenti, founder
Strategic Planning Society

Four: Develop Detailed Program & Technology Plan

Five: Develop Performance Monitoring Plan

Develop and Plan

Steps Four and Five are about planning – identifying the work that needs to be done and the steps required to achieve each of the work products. It is easy to think that planning is actually doing the work, but that occurs in Steps Six and Seven. All we want to do now is create detailed plans. In Steps Two and Three of your program development effort, you defined the program model, developed a high-level understanding of what will be required to deliver the targeted services in the proposed way, and developed a business case demonstrating why it makes sense to deliver the targeted services in the proposed way.

In Steps Four and Five you will:

- Use all the information collected in Steps Two and Three to create a plan that details all the areas that require work during the implementation.

- Define all the tasks needed to build, test, deploy, and operate the program.

- Determine who will be needed perform the tasks.

- Estimate the hours required to do the work (effort).

- Estimate the timeline for the work.

- Determine if additional staff are required in certain areas.

- Develop a plan to monitor program performance and evaluate the program.

Tabs for Steps Four and Five contain detailed information on these activities.

Develop
&
Plan

Implement and Monitor the Telehealth Program

*Have a plan. Follow the plan, and you'll be surprised
how successful you can be.
Most people don't have a plan.
That's why it's is easy to beat most folks.*

Paul "Bear" Bryant, football coach
University of Alabama's Crimson Tide

Six: Implement the Telemedicine Program

Seven: Monitor and Improve the Program

Implement and Monitor

With your plan in hand, you are now ready to implement your telemedicine program. Steps Six and Seven, allow an organization to use the written plans developed in Steps Five and Six to implement the new or expanded program. Because there is a written plan, the implementation team and executive management will be able to fully monitor progress and provide assistance and support if challenges arise. With the written plan, the team can monitor actual efforts to anticipated time, cost and use of resources.

In addition, ongoing monitoring of the program described in Step Seven, uses performance indicators to assess the impact of the program.

During Steps Six and Seven you will:

- Put into action the plans, decisions, and approaches identified in Step Four.

- Begin monitoring the program using the approach identified in Step Five.

Implement
&
Monitor

Tabs for Step Four and Five contain detailed information on these activities.

Telehealth Program Developer
Step by Step Checklist

This checklist highlights the areas that will help you identify important factors to consider during each of the seven steps.   If you answer no or unsure for any question, further work should be done to address the question.

Assess Service Needs & Environment

	Yes	No	Unsure
1. You know what healthcare services are not currently available to your patents.	☐	☐	☐
2. You have identified and prioritized activities suited for telehealth.	☐	☐	☐
3. You have identified the assumptions and constraints for implementing a teleheath program.	☐	☐	☐
4. You have decided on the top reasons for developing a telehealth program, based upon your needs assessment results.	☐	☐	☐
5. You have determined that there is willingness and desire to pay for the fulfillment of the need.	☐	☐	☐

Define and Specify Program Model

	Yes	No	Unsure
1. You know which services will be offered to meet the identified patient needs.	☐	☐	☐
2. You have identified the mode of service delivery.	☐	☐	☐
3. You have determined who will provide the service and where they are located.	☐	☐	☐
4. You have identified the organizational model that best suit your patient needs.	☐	☐	☐
5. You have identified any constraints based on your organization, for example federally qualified health center rules.	☐	☐	☐
6. You know the general technological features & functions that are needed to deliver the target services in the proposed way.	☐	☐	☐
7. Of the choices of technology, you have selected the one most appropriate for your program.	☐	☐	☐
8. You have identified any additional human resources needed and where will they be located.	☐	☐	☐
9. You have identified any additional facility-related resources needed and where will they be located.	☐	☐	☐
10. You have identified any legal, legislative or regulatory constraints that your organization would need to consider when developing your telehealth program.	☐	☐	☐
11. You have determined your program's implementation approach (i.e., phased, pilot).	☐	☐	☐

Develop Business Case

	Yes	No	Unsure
1. You have determined approximate start up and operating costs for your telehealth program.	☐	☐	☐
2. You have determined how the benefits of telehealth relate to the mission of your organization and the needs of the community.	☐	☐	☐
3. You have identified the payer mix.	☐	☐	☐
4. You have obtained financial commitment to implement and sustain your telehealth services.	☐	☐	☐
5. You know the approximate expected cost reductions (e.g., providers who no longer travel to remote clinics).	☐	☐	☐

Plan Program and Technology

	Yes	No	Unsure
1. You have identified the activities or steps that you will undertake to achieve your telehealth objectives.	☐	☐	☐
2. You have developed a plan that you will need for managing the work involved in establishing a telehealth program.	☐	☐	☐
3. You have identified who in a leadership position in the organization will be involved in your program and what their role will be.	☐	☐	☐
4. You have identified members of your telehealth team and their roles and responsibilities.	☐	☐	☐
5. You have developed a communication/marketing strategy to promote your telehealth services.	☐	☐	☐
6. You have developed policies and procedures for operation of the program.	☐	☐	☐
7. You have a suitable space for telehealth.	☐	☐	☐
8. You have determined how appointments will be scheduled.	☐	☐	☐
9. You have determined how referrals will be made.	☐	☐	☐
10. You have identified the type of training needed and who needs to be trained.	☐	☐	☐
11. You have developed clinical referral guidelines.	☐	☐	☐
12. You have determined how telehealth will be integrated into clinic operations.	☐	☐	☐
13. You have identified the detailed attributes of hardware, software, and telehealth (i.e., bandwidth, product standards, and product features).	☐	☐	☐
14. You have defined the necessary service level and support agreements.	☐	☐	☐

	Yes	No	Unsure
15. You have identified the interoperability and scalability requirements.	☐	☐	☐
16. You have identified the existing organizational resources that can be used to meet specified requirements (e.g., existing network, hardware, equipment).	☐	☐	☐
17. You have identified the types of approvals or authorizations required to assign existing resources to the telehealth services.	☐	☐	☐
18. You know the organization's procurement policies and procedures.	☐	☐	☐

Develop Performance Monitoring Plan

	Yes	No	Unsure
1. You have developed an approach to measure, track, and achieve your targets for telehealth volume and utilization.	☐	☐	☐
2. You have developed a plan to measure success in achieving your project goals, objectives and outcomes.	☐	☐	☐
3. You have determined how you will know what impact telehealth has made in your organization.	☐	☐	☐
4. You have identified data collection methods for obtaining the needed data.	☐	☐	☐
5. If the performance objectives are not being met, you have developed a process of identifying and implementing the necessary changes.	☐	☐	☐
6. You have determined how program improvements will be defined, planned, implemented, tested, and managed.	☐	☐	☐

Implement the Telehealth Program

	Yes	No	Unsure
1. You are monitoring project schedules and determining if deliverables are being met.	☐	☐	☐
2. You are identifying risks and mitigating when necessary.	☐	☐	☐
3. You have implemented your communication plan.	☐	☐	☐
4. You have determined how needed program modifications are identified and managed.	☐	☐	☐

Monitor & Improve Program

	Yes	No	Unsure
1. You can determine if the program is meeting its objectives.	☐	☐	☐
2. You can identify what changes are needed to ensure that the program meets its objectives.	☐	☐	☐

Using This Kit

Successfully building a telehealth program relies on a number of critical skills including technology, clinical, and operational skills as well as program development and, often overlooked, project management skills. The CTRC Program Development Guide has been developed to bring together a project management process designed specifically for telehealth to allow new, operating and expanding programs to easily assess their current position, identify needed activities and actions, and move toward implementation or enhanced service delivery.

This kit contains a variety of materials to assist you

The Program Developer Guide that contains information on the major implementation activities, materials that have been developed to provide detailed information on a variety of telehealth topics, and templates that can be used to produce a variety of reports, worksheets and assessments. All of these materials have been developed using nationally recognized best practices for telehealth.

This Kit contains the Program Developer Guide along with guides and templates that related to these tasks. Also included are a wide variety of general use guides and templates.

The CTRC website has additional information that is updated regularly and also provides critical information to support your program development.

Training videos to support these steps are available through the CTRC website - www.caltrc.org

A complete listing of the materials as of this printing is found in the Resources section of the website.

Development Is Not Completely Linear

Although the steps presented here are in sequential order, keep in mind that steps often loop back on each other as more information is obtained. Sometimes you may gather information that is used in an immediate step as well as in a later step. Your development is unique to you; however the seven steps provides a foundation that covers the necessary analysis and decision points.

Guideposts

Throughout this guide you will find icons that are guideposts for action and activity. Each of the Guideposts is shown below:

In a nutshell: Provides a summary of the information in the guide.

Tools: Lists the various tools that will assist during the step

Before you move forward: Experience has shown that certain actions or inactions can seriously impact the quality or timeliness of your development. This guidepost alerts you to consider a critical factor before moving forward.

Get some additional information or direction: Lists or directs you to additional information.

CTRC Telehealth Program Developer
Summary and Resource Matrix

This matrix contains a high level summary of the questions to answer for each of the steps, the products and activities associated with each step, and a listing of CTRC Guides, Video and Tools to support programs development efforts. New materials are released regularly. Check the CTRC website for new products and sign up for our emails to be alerted to new offerings.

Step 1: Determine Program Need

Questions to Answer	Products and Activities	Program Developer Guides / Videos / Tools
• What might telemedicine do for my organization? • Is my organization ready and willing to support telemedicine development? • What resources need to be allocated for initial planning? • What are the unmet healthcare needs of our existing and potential patients? • Which of these needs may be met using telehealth? • What provider related needs or opportunities might be met with telehealth?	• Perform Organization Readiness Assessment • Organizational Readiness Assessment Report • Approval to Proceed • Allocation of resources • Perform Needs Assessment • Needs Assessment Report	• Program Developer Guide • Assessing Organizational Readiness Guide • Organizational Readiness Video • Organizational Readiness Assessment Template • Organizational Readiness Summary and Approval Template • Predictors of Success Video • What Is telemedicine Video • Typical Visit Video • Technology Overview video • Telemedicine Applications video • Needs Assessment Guide • Needs Assessment Template • Needs Assessment Video • Best Practices for Step One

Step 2: Define Your Program Model: Preliminary Definition and Scope

Questions to Answer	Products and Activities	Program Developer Guides / Videos / Tools
• What services have you decided to provide? • How will the services be provided? • What is the proposed scope of the program?	• Kick Off Meeting • Preliminary Program Charter • Preliminary Program Proposal • Telemedicine Program Model • Preliminary Technology Assessment • Approval To Proceed • Allocation of resources	• Charter Template • Sample Kickoff Meeting Agenda • Project team composition checklist • Best Practices for Step Two

Step 3: Detailed Analysis of the Program Model: Detailed Analysis: Cost, Service Delivery, Technology and Business Analysis

Questions to Answer	Products and Activities	Program Developer Guides / Videos / Tools
• What is the estimated demand for the service? • What service and technology estimates/assumptions are being used for the cost projections? • What is the financial model associated with the proposed program? • How will the program be funded or supported – initially / ongoing? • How will the program impact the organization's financial position? • Is the program sustainable? • Will the program create revenue in another area of the organization? • Will the program require subsidy from the organization? • Is there a demonstrated return on investment? • What are the clinical program requirements? • What are the operational program requirements? • What are the technology requirements? • How will the technology requirements be met? • What implementation approach will be used?	• Market Analysis • Business Case Report • Clinical Services Requirements and Implementation Approach / Strategy • Technology Requirements and Implementation Approach / Strategy • Site Readiness Assessment • Updated Program Charter • Approval To Proceed • Staff plan	• Reimbursement Guide • FQHC Reimbursement Guide • Telecommunications Discount Guide • FQHC Reimbursement Video • Market Analysis Video • Marketing Guide • Marketing Templates • Sample Consent Form • Provider selection template • Roles and Responsibilities Video • Roles and Responsibilities Guide • Technology Guide • Site Readiness Assessment Worksheet • Best Practices for Step Three

Step 4: Create A Detailed Plan: Add the Specifics

Questions to Answer	Products and Activities	Program Developer Guides / Videos / Tools

• What are the tasks needed to implement the program?
  • Clinical Services
  • Operational
  • Technology
  • Human Resources
  • Physical Environment
• What are possible challenges and how will we handle problems?
• How will the work be organized?
• How will we communicate with stakeholders?
	• Clinical Services Implementation Plan
	• Technology Implementation Plan
	• Communication Plan
	• Budget
		• Training Guide
		• Training Templates
		• Competency skills template
		• Sample Duty Statements
		• Room Design Guide
		• Best Practices for Step Four

Step 5: Develop Performance Monitoring Plan

Questions to Answer	Products and Activities	Program Developer Guides / Videos / Tools
• How will overall program performance be monitored and assessed? • What data will be need to be collected? • How will the data be collected? • How will program modifications and modifications be identified and implemented?	• Program Monitoring Plan • Quality Improvement Process	• Performance Indicators and Data Elements Matrix • Best Practices for Step Five

Step 6: Manage the Implementation of the Program

Questions to Answer	Products and Activities	Program Developer Guides / Videos / Tools
• Are project schedules being met? • Are risks being identified and mitigated? • Is a communication plan in place? • Is work being done in a quality manner? • Do any tasks need revision? • Are any needed program modifications being identified and managed? • Is the program ready for operation?	• Project Management Reports • Program deliverables	• Sample Clinical Protocols • Video Etiquette/Procedures • Completion Checklist • Patient Informing and Consent Materials • Best Practices for Step Six • Dermatology Guide • Diabetic Retinopathy Guide

Step 7: Begin Service; Ongoing Program Monitoring and Improvement

Questions to Answer	Products and Activities	Program Developer Guides / Videos / Tools
• Is the program meeting its objectives? • What program changes would ensure that the program meets its objectives? • What challenges or improvements have been identified?	• Data analysis reports and/or presentation • Improvement logs and data collection documents • Implemented improvements and changes to the program	• Patient Satisfaction Survey • Best Practices for Step Seven

Step One

Assess Service Needs & Environment

Questions to Answer	Products and Activities
• What are the unmet healthcare needs of our existing and potential patients? • Which of these needs may be met using telehealth? • What provider related needs or opportunities might be met with telehealth? • Are there any major organizational barriers that should be addressed before starting development? • Is telehealth in line with your organization's mission and strategic plan?	• Needs Analysis & Report • Organizational Readiness Assessment & Report • Preliminary Technology Assessment & Report • Learn about telehealth • Engage stakeholders • Read the CTRC Best Practices Guide

Telehealth programs usually get started because there are unmet healthcare needs that might be addressed by providing telehealth – technology enabled healthcare from a distance. Perhaps your community needs medical specialty services or clinicians need more access to continuing education. Perhaps you have heard that home monitoring of chronic disease patients reduces hospital and emergency department admissions. Telehealth has many applications and uses, so a first task is to determine what your community needs and how telehealth could address those needs.

In the initial step of program development you will explore telehealth, identify service needs that might best be met with a telehealth application, and take a look at your organization to assess if there are any barriers that might hinder successful implementation.

It is often useful to bring a team together early in the assessment process to assure that all stakeholders are involved in performing the research and developing recommendations about the program.

In a nutshell: During Step One you will:

- Identify and assess unmet clinical, educational or administrative needs

- Assess your organizational readiness

- Perform a preliminary technology assessment

- Identify potential telehealth opportunities

- Learn about telemedicine technology applications

- Learn about predictors of success and best practices

- Begin to engage stakeholders - bring a team together

<u>Activities</u>

1. Assess Organizational Readiness

Knowing if your organization is ready to take on the challenges and embrace the opportunities of implementing a telemedicine program is an essential component of Step One. The best time to assess readiness is before you begin development and implementation. Identifying any serious barriers early will allow opportunity to address before the project is impacted.

Tools for this Activity:
Organizational Readiness Assessment - Video
Organizational Readiness Assessment - Guide
Organizational Readiness Assessment - Template
Organizational Readiness Assessment – Summary of Results

2. Analyze Needs: Identify & assess unmet clinical, educational and administrative needs

This step may seem simple but the success of your program will, to some extent, depend on the research and effort you have placed on really identifying unmet needs. It is easy enough to say "we need dermatology" but successful programs go further and identify what level of service is needed and why it is a current need.   Whether you are a large health system developing a provider network or a single rural health clinic, an analysis of need of the population you intent to serve with telehealth is necessary.

In a nutshell: Determine the current capacity to provide services and the current need for those services. Don't rely completely on perceived needs. Collect data. It will be important as you develop your service.

First, decide on the scope or extent of your analysis. Will your analysis focus on the patients and providers in your clinic or will it look at needs within the community that are currently not being addressed.

Second, decide what data you will collect, where this data might exist, and how you will get the data. Billing records, referral records, surveys and interviews with clinicians and patients, public health data, needs assessments of other agencies, interviews with community leaders are all great ways to collect information. The idea is to find out what is needed and then to quantify this need so you can create measurable program goals and objectives. This analysis also assures that there is an adequate need for services before you make decisions about the program design and model.

Third, determine what your current services are, what you want them to be and the difference between the two – it's often called the gap or a gap analysis.

Fourth, prioritize the needs – there may be more needs or opportunities to use telehealth than you think you can start all at once.

Fifth, identify any major barriers that would impact the ability to move forward with the needed services.

Tools for this Activity:
      Needs Assessment - Guide
      Needs Assessment - Worksheet

Put It In Writing!

Even if the needs analysis is not a highly detailed or formal report, it is strongly recommended that the results be developed into a written format. Later in the development you will need to review your original assumptions and decisions.

3. Preliminary Technology Assessment

You and your IT staff will want to do an initial assessment of your connectivity and network so you can determine if there are major barriers or improvements that will be needed as you look at the type of services you would like to provide.

Tools for this Activity:
Preliminary Technology Assessment Template

4. Learn about telehealth

This is a great time to begin learning about telehealth – how it works, different applications, what equipment is used, what resources are available – everything and anything. This kit and the CTRC website have short videos on many introductory topics as well as reference guides in many areas. Many other websites and organizations have great information as well. CTRC staff can help you find resources for your areas of interest.

This is also a good time to consider attending a training program, enrolling in an online pro-gram or bringing some training to your organization.

Tools for this Activity
CTRC Resource Library - www.caltrc.org

5. Read the Best Practices

The Best Practices Tab has a compendium of lessons learned by other telehealth programs which can be most helpful to you during development.

Tools for this activity
Best Practices Compendium - See Best Practices Section

Have you covered everything?

Take a look at the Step One Checklist. You may see some things to consider before you move on.

Assess Service Needs and Environment Checklist

	Yes	No	Unsure
1. You know what healthcare services are not currently available to patients.	☐	☐	☐
2. You have identified and prioritized activities suited for telehealth.	☐	☐	☐
3. You have identified the assumptions and constraints for implementing a teleheath program.	☐	☐	☐
4. You have decided on the top reasons for developing a telehealth program, based upon your needs assessment results.	☐	☐	☐
5. You have determined that there is willingness and desire to pay for the fulfillment of the need.	☐	☐	☐

Organizational Readiness Tools

The following tools may be of assistance in performing an organizational readiness assessment:

1. The *Organizational Readiness Guide* that will assist you in looking at key factors for successful program initiation.

2. The *Organizational Readiness Assessment Template* has the questions you want to answer to determine if your organization is ready to begin telehealth development.

3. The *Organizational Readiness Assessment Summary* transfers the answers from the Assessment template to a summary document that can be used to present your findings to an oversight or governance body.

Assessing Organizational Readiness
Is Your Organization Ready for Telehealth?

Determining organizational readiness is an initial step an organization should take to assure that a new telehealth program will be fully adopted and utilized.

Telehealth offers healthcare organizations new and effective systems for delivering healthcare and, in many instances, allows organizations to reach far beyond current service offerings and think creatively about delivery models. Implementing a telehealth program is an organizational change, and like all change it's about people. Technology is a cornerstone of telehealth programs; however, successfull implementation requires the ability to manage change.

Telehealth programs don't always begin as a result of an organization's strategic planning process. In many cases, an individual within the organization takes an interest in telehealth and begins to promote that idea to others. Ideally, an organization embraces telehealth and makes optimal use of the technologies, but unfortunately there are programs that did not adequately or accurately assess the current position of the organization prior to starting a telehealth program and as a result end up with expensive equipment sitting idle in a closet.

How do you know if your organization is ready to take on the challenges and embrace the opportunities of implementing a telehealth program? The best time to assess an organization's readiness for change is before you begin implementation. The importance of assessing your organization's readiness for change cannot be underestimated.

What exactly is organizational readiness and why is it important?

Organizational readiness – the willingness and ability of an organization to shift from its current way of operating.

Organizational readiness is becoming aware of the current state of an organization in the context of going somewhere new. Organizations that successfully implement a telehealth program have the internal ability and willingness to move in a new direction. Willingness focuses on the desire of the organization and its employees to change and embrace new ways of working. Ability focuses on having or acquiring the skill sets necessary to successfully implement a change. Assessing organizational readiness will identify any major challenges that could delay or prevent your new program's successful start-up. Organizational strengths can be leveraged to assist in program development and acceptance.

> *Experts estimate that 50 percent of all change efforts fail because leaders do not sufficiently assess organizational readiness for change.*

Performing a Readiness Assessment

Performing an evaluation of organizational readiness does not have to be time consuming, and in many cases can be easily accomplished in a day. This assessment may be as simple as reviewing the steps in the guide to assure that critical areas have been considered or as detailed as a written presentation for executive management. The level of formality depends on your organization's needs and culture. No matter how extensive the review, the assessment or organizational readiness is a critical component of a successful telehealth program.

Describe the desired program and how it would change the existing organization.

The first task in assessing organizational readiness is to identify the desired new program. Develop a short paragraph that specifically describes the action or program that the organization is considering. While this may seem rather basic, it will assure that all stakeholders have the same vision.

Some examples might be:
- For a clinic: Implement a telehealth program that allows medical specialty services to be provided at a clinic using remote specialists.
- For a hospital: Implement a telestroke program that provides telehealth neurology consults for emergency department patients experiencing stroke symptoms.
- For a provider: Expand the existing practice to provide dermatology services to new and existing patients.

Determine how the proposed project would align with the Current Organization.

The second task in assessing organizational readiness is to determine how the existing state of the organization relates to the desired new program. It is desirable to assess the alignment of the proposed project with the organization's current vision, mission, and strategic plan. Consider the following questions to determine your organization's readiness to take on the proposed new program.

1. Does the proposed project align with the organization's current vision, mission, and strategic plan?
   - Does the project support the organization's vision of its desired future?
   - Does the project align itself with the organization's belief of who it is, what it does, and how it serves?
   - Does the project support the organization's approach to achieving its goals and objectives?

2. Is the proposed project consistent with the organization's values and culture?
   - Is the project consistent with the organization's guiding principles?
   - Does the project align with the organization's existing beliefs, assumptions, and expectations?
   - Does the organization's culture support innovation and clinical technology applicantions?

3. Are resources available to begin development of the proposed project?
   - Is funding available for the initial planning activities?
   - Is there staff available to work on the project?
   - Are there leadership groups in place to foster support?

4. Does the proposed program have a champion?
   - Is there a clinical champion for the project?
   - Is there an administrative champion for the project?
   - Are there leadership groups in place to foster support?

5. Do stakeholders support the program?
   - What perceptions do stakeholders have about the proposed program?
   - Are stakeholders educated about the proposed program?

6. Who has authority over the proposed program?
   - Who has to approve the project?
   - Are they supportive of the project?

7. Are there potential opportunities or barriers to initiating the program?

A SWOT Analysis can be beneficial in assessing organizational readiness for implementing a new program. SWOT identifies an organization's strengths and weakness and may identify any areas that need change in order to move forward. It identified opportunities that will contribute to success and the treats or barriers that may inhibit success.
   - What are the organization's strengths?
   - What are the organization's challenges or weaknesses?
   - Where are the organization's business opportunities?
   - Ar e there any barriers to the organization's success?

8. Is your organization technology ready?

Performing a preliminary technology assessment can assist in identifying barriers to program success.

TECHNICAL NEEDS ASSESSMENT

	Yes	No	Unsure
Do you have internet access in your clinic exam rooms?*			
All Rooms	☐	☐	☐
Some Rooms	☐	☐	☐
Via Wall Jack	☐	☐	☐
Via Wireless	☐	☐	☐

	Yes	No	Unsure
Do you have internet access in the room you use for conferences and staff meetings?*			
All Rooms	☐	☐	☐
Some Rooms	☐	☐	☐
Via Wall Jack	☐	☐	☐
Via Wireless	☐	☐	☐

	Yes	No	Unsure
Do you receive your broadband from the California Telehealth Network (CTN)?*			
All Rooms	☐	☐	☐
Some Rooms	☐	☐	☐
Via Wall Jack	☐	☐	☐
Via Wireless	☐	☐	☐

If you currently have telemedicine equipment at your facility, please specify below:*
- ☐ Live Video
- ☐ Store and Forward
- ☐ No Equipment

VIDEO EQUIPMENT SPECS

Video conferencing equipment type: _____

Is your unit high definition or standard? _____

Monitor Size: _____ Is the unit wall mounted or on a mobile cart? _____

Can it easily be moved from one room to another?   ☐ Yes   ☐ No

Do you have peripheral equipment that is to be used with the unit? (ex: Dermscope, Otoscope, Stethascope) If so, please list all: _____

STORE AND FORWARD

What Specialties Do You Utilize?_____

Software Used? _____ Camera Used?_____

Do you have an EHR?   ☐ Yes   ☐ No   ☐ Implementing Currently

Please list the brand: _____

After the Assessment: Summarize findings, address possible challenges or deficiencies, obtain support and approval.

Answering the questions above will give you a good idea about whether your organization is fully ready to undertake a new program implementation. If not fully ready, the assessment will give you a clear picture of what specific areas require attention before proceeding, such as obtaining support from stakeholder groups. After making any necessary organizational adjustments or changes, reviewing the assessment worksheets again will help ensure that you are ready to move forward.

When there is agreement that the organization is ready to move forward, a structured program development process can be extremely beneficial in keeping your implementation on track with a minimum of problems.

Needs Analysis Tools

The following tools that may be of assistance in performing a needs analysis.

1. ***The Needs Assessment – Areas to Consider and Data Sources,*** contains a variety of questions that might be pertinent to your needs analysis and suggests some possible data sources.

2. ***The Guide To Performing A Formal Needs Assessment,*** provides details on the tasks involved in creating a large scale needs assessment. Some organizations might require this level of discovery and analysis.   It can be simplified as described in Step One for smaller studies. The information, however; can be very useful to consider.

3. ***The Organizational Readiness Assessment Template*** is a template that contains key questions to consider as you analyze your unmet needs and space for you to document any thoughts or answers.

Needs Assessment

There are many ways to collect data on community needs and resources. Provided below are sample data that may be collected in determining your community needs and identifying services that may be provided via telehealth. Also included are suggestions on how to locate the data for each of the data collection recommendations. Please keep in mind that this is not an exhaustive list, and it should be modified or adopted to meet your organizational needs.

Demographic and Socioeconomic

Characteristics	Possible Data Sources
Age Analysis: Compare the county and state percentage age distributions and describe how the county age distribution is different from the state.	1. CDC National Center for Health Statistics http://www.cdc.gov/nchs/ 2. Henry J. Kaiser Family Foundation http://www.statehealthfacts.org/compare.jsp 3. State health department
Race/Ethnicity Analysis: Compare county and state distributions and describe how the county distribution is different from the state? Do you have any racial/ethnic group needing special consideration?	1. CDC National Center for Health Statistics http://www.cdc.gov/nchs/ 2. Henry J. Kaiser Family Foundation http://www.statehealthfacts.org/compare.jsp 3. State health department
Socio-Cultural-Demographic Features: Identify any unique features of your county that may increase risks of health problems for members of your community (i.e. poverty, high unemployment).	1. US Census Bureau http://quickfacts.census.gov/qfd/index.html 2. State health department

Health Status

Characteristics	Possible Data Sources
How does your county compare with the rest of the state on chronic disease indicators? • Coronary Heart Disease Mortality Rate • Cerebrovascular Disease Mortality Rate • Hospitalization Rate for Diabetes • Hospitalization Rate for Asthma	1. CDC Data and Statistics http://www.cdc.gov/DataStatistics/ 2. CDC Behavioral Risk Factor surveillance Survey http://www.cdc.gov/brfss/index.htm 3. State Health Department
What is the percent of the population with behavioral risk factors? • Cigarette smoking • Hypertension • Hypercholesterolemia • Diabetes mellitus • Physical activity • Family history of hypertension • Family history of hypercholesterolemia • Family history of diabetes mellitus	1. CDC Data and Statistics http://www.cdc.gov/DataStatistics/ 2. CDC Behavioral Risk Factor surveillance Survey http://www.cdc.gov/brfss/index.htm 3. State Health Department

Are there any special populations with chronic disease problems (i.e. race, migrant workers)?	• CDC Data and Statistics http://www.cdc.gov/DataStatistics/ • CDC Behavioral Risk Factor Surveillance Survey http://www.cdc.gov/brfss/index.htm • State Health Department
What conditions drive your re-admission rates?	• Review your hospital/clinic re-admission records to identify those conditions that patients are most commonly readmitted for.
Are there any diseases or diagnoses that you have found to be particularly difficult to manage locally?	• Review your hospital/clinic service data to identify diseases or diagnoses that are commonly referred out to other sites for service provision

Service Availability

Characteristics	Possible Data Sources
Are there any special problems your community faces that restrict access to care (i.e. location, hours of operation, and lengthy wait for next appointment)?	1. Survey community members to identify any restrictions to access to care at your site. 2. Facilitate focus group interviews with community members to identify any restrictions to access to care at your site. 3. Review your hospital/clinic scheduling records to identify services that have longer wait times for the next available appointment.
What percentage of your population lacks health insurance coverage?	1. State health department 2. US Census Bureau http://quickfacts.census.gov/qfd/index.html 3. Medicare and Medicaid reports
What specialty services are needed but not available in your community?	1. Review your hospital /clinic service data to identify clinical services are available and not available at your site. 2. Review your hospital /clinic referral records to identify services that are regularly transported out. 3. Review health status data collected to determine additional services that may be needed in your community. 4. Survey your target population to identify services they need, but are not available.
Are there any populations not served by language-specific or culturally knowledgably service providers?	1. Review county demographic information to identify specific populations located in your service area. 2. Review your hospital/clinic records to identify those populations that are in your service area, but not served by language-specific or culturally knowledgeable service providers

Are there any gaps between healthcare service needs and available resources?	Compare identified healthcare service needs to your community's available resources. • Service needs can be identified through review of hospital/clinic service records, referral records, demographic and socio-economic data, and feedback received from patients or others in the community. • Available resources can be identified through asset mapping – identification of local resources in the community.
Where does the demand for healthcare services regularly exceed local resources?	• Review your hospital/clinic referral patterns to identify services that are regularly referred out to other sites or regularly referred to your site. • Review your hospital/clinic scheduling patterns to identify services that have long wait times for seeing the provider (helps to determine any provider shortages). • Review your hospital/clinic scheduling patterns to identify types of services scheduled.

Referral Patterns

Characteristics	Possible Data Sources
What are your predominant referral patterns?	• Review your hospital/clinic referral patterns to identify the type of services that are regularly referred out to other sites or referred to your site. • Identify where the services are referred to or from and why they are referred (service is not available at all at your site; service is available, but no appointments are available in the near future; service is not available at a distant patient site). • Review your hospital/clinic scheduling patterns to identify services that have long wait times for seeing the provider (helps to determine any provider shortages). • Review your hospital/clinic scheduling patterns to identify types of services scheduled.
Do you currently refer patients to other sites?	• Review your hospital/clinic referral patterns to identify the type of services that are regularly referred out to other sites and how often referral are made for each service.
What diagnoses/healthcare services are commonly referred or transported out?	• Review your hospital/clinic referral patterns to identify the type of services that are most commonly referred out to other sites.

Does your organization have existing referral relationships with distant sites or specialty services?	• Review your hospital/clinic referral patterns to identify the type of services that are regularly referred out to other sites and how often referral are made for each service.
What diagnoses/healthcare services are commonly referred or transported out?	• Review your hospital/clinic referral patterns to identify the type of services that are most commonly referred out to other sites.
	• Survey community members to identify where they go to receive healthcare services that are not available locally. • Facilitate focus group interviews with community members to identify where they go to received healthcare services that are not available locally.
Are healthcare providers in your organization currently traveling to other communities/organizations to provide care?	• Review your hospital/clinic referral patterns to identify the type of services that are regularly referred to your site.
Are there healthcare providers traveling to your organization from another community/organization to provide care to patients?	• Review your hospital/clinic service data to identify services that require healthcare providers in your organization to travel to a different location to provide care.
Are there healthcare providers traveling to your organization from another community/organization to provide care to patients?	• Review your hospital/clinic service data to identify services that require a healthcare provider from another site to provide care to patients in your service area.

Administrative/Educational Events

Characteristics	Possible Data Sources
Are there any educational events that currently involve travel time and expense, but do not require in-person attendance?	• Review the schedule of educational events attended by staff at your site to determine if any involve travel, but do not require in person attendance. • Survey staff to gather additional data on educational events that involve travel, but do not require in-person attendance.
Is there an interest in accessing educational events (ground rounds/CME) offered at other sites that have videoconferencing capabilities?	• Survey staff to determine if there is an interest in access educational events offered at other sites.
Are there meetings and events that currently take place at your organization that involve travel to another location, but do not require in-person attendance?	• Review the schedule of meetings and events that take place at your organization that involve travel to another location, but do not require in-person attendance. • Survey staff to gather additional data on meetings and events that involve travel, but do not require in-person attendance.

Payer Mix

Characteristics	Possible Data Sources
How many unique patient visits does your site receive per year?	• Review your hospital/clinic service data to identify the number of patients served.
What is the payer breakdown for those visits? • Medicare • Medi-Cal • Commercial/Private Payer • CMSP • Self pay	• Review your hospital/clinic billing data to identify the payer mix for the patients your site serves.
Other	
What is the Medicaid spending by county for the region you serve?	• State Health Department • Medicaid reports
What is the Medicare spending by county for the region you serve?	• State Health Department • Medicare reports

Guide to Performing A Formal Needs Assessment

Introduction

When rolling out telehealth programs to deliver healthcare at a distance, it is particularly tempting to begin development efforts by looking at the newest telehealth equipment and deciding to implement a program. However, for best results, you should first conduct a needs assessment.

What is a Needs Assessment?

A needs assessment is a process used to identify the health care needs of a community. Needs assessments collect and analyze data to determine the current level of service availability, the desired level of service availability and the gap between the two. With data driven need identification, your organization's clinical, executive, administrative, and other key stakeholders are better able to evaluate the rationale for developing the envisioned telemedicine program. A needs assessment can be summarized in a single page or in a volume depending upon your requirements and resources.

Conducting a needs assessment provides many benefits, including:

- Clear understanding of community need
- A foundation for program development
- Clear objectives and shared expectations among stakeholders
- Improved coordination of services and rational allocation of resources
- The ability to evaluate program effectiveness
- Information for the marketing analysis and business plan

The needs analysis, market analysis, and business model development are interrelated activities. Organizations may wish to combine needs assessment, market research, and analysis activities.

Needs Assessment → Market Analysis → Business Model

There are many ways to conduct a needs assessment. For simplicity, we are providing one framework that you may adapt. The size and scope of your envisioned telemedicine program will determine how formal or comprehensive your needs assessment will be.

Don't worry if you get part way through and find yourself amending previous activities. This is not a linear process. It is as interactive and dynamic as your services are likely to be.

The following table summarizes the activities of a needs assessment.

Needs Assessment Summary

Steps	Activities	Using this step you will
Define the Scope	Identify your assessment's scope	Determine how much of the community's unmet needs you can handle. Are you going to limit your analysis to some specific telemedicine application area or some targeted illness or a particular geographic location?
Data Collection	Identify your assessment approach	Identify what information you will consider to establish possible needs and opportunities. Consider what analysis methods will be used and, if looking at new information, determine how data will be collected. Who will do this work?
Gap Analysis	Identify your current and desired states	Describe the current patient, health care services, and provider environment (i.e. what your organization does now) and identify the new or augmented patient, health care services, and provider environment that will be supported by telemedicine programs (i.e. what you want to do) in the future.
	Identify the Gap	Define the difference between what you currently do and what you envision doing. Explain what is needed to bridge the "gap" by describing all new or expanded clinical services, the anticipated telemedicine delivery model and high-level technology, provider and other requirements.
Potential Barriers	Identify barriers	Describe obstacles and challenges to achieving the desired state. What additional steps you must take to achieve your objectives? Can you take those steps?
Services Priorities	Assign priorities	Rank the new or expanded clinical services and other objectives in priority order. If subsequent analysis or occurrences determine it is not feasible to implement all services or it is not feasible to implement all at once, the priorities will help identify which services to pursue.
Next Steps	Summarize and present results	Pull together the results of your needs assessment and present them to key stakeholders. Seek permission or buy-in for continuing with the program development effort.

Task 1: Defining the Scope

The initial task in the needs assessment process is to define the scope. In most cases it is done to determine how telemedicine might best meet the unmet needs of the community.

Questions to consider during this step include:

- Whose needs will be assessed? Some or all of the existing patient population? Some or all of a projected (potential) new patient population? Providers (e.g., continuing education requirements)? Some or all of your organization (e.g., main hospital and clinics)?

- Which types of healthcare services will be evaluated? Primary care? Specific types of specialty care?

- How extensive will the needs assessment be?

- What kind of resources will be available to conduct the needs assessment?

Task 2: Identify Assessment Approach

In this task, you will identify how you will structure and conduct your assessment. Your approach should describe your preliminary assumptions about what specific information you will consider and how you will gather it.

Information, or data, will be at the heart of your needs assessment. You may gather new data to consider in your analysis and you may need to also look at information previously gathered by others.

Provided in the table below is an overview of the major sources of information that may contribute to your needs assessment activities.

Sources of Information

Class	Description
Primary data	Original or new data that you expect to collect and analyze in the course of your assessment. Examples of primary data include: results from patient surveys; notes from a focus group conducted to gather information on needed healthcare services; etc.
Secondary data	Information that has already been collected which you can analyze or reference in your needs assessment. Secondary data can exist in previously analyzed form or raw data form (that you can do additional analysis upon). Examples of secondary data would include the health history information the hospital maintains on its clients.
Qualitative data	Information or facts presented in a narrative format and that generally cannot be presented numerically and cannot serve as the basis for statistical analysis. Interview data is an example of qualitative data.
Quantitative data	Information presented in numerical terms and that can serve as the basis for some statistical analysis. An example would be results of a survey where respondents can only select from among a fixed set of responses.

Questions to help establish your needs assessment approach:

- What existing (secondary) information is available?
- What new information (primary data) is needed? Where and how will you gather that information?
- How will the needs assessment process be coordinated and monitored?
- How will data be analyzed?
- When, how, and in what form will results be presented?
- Who will do this research?

Data Gathering Tools

Assessment tools commonly used to gather the information for a needs assessment include:

- Focus group interview -- Qualitative method of conducting in-depth interviews with a small number of people whose discussion is planned and facilitated by a moderator.
- Public issues forum – Qualitative method of collecting information from large groups of community members.
- Secondary data analysis – Pre-existing information that is collected without having direct contact with the subject of the research.
- Survey – Quantitative method involving data collection from a sample of individuals selected from a target population.
- Individual interviews – A conversation designed to help gather information about a person's assumptions/perceptions.
- Asset mapping – Cataloguing local assets/resources to meet organizational or community objectiv es.

Task 3: Identify Current and Desired State

During this task you define how the organization currently performs, and then how you desire it to perform. Your current state evaluation will generally focus on the healthcare services your organization currently provides along with how the provided services are delivered, the numbers and types of providers, and other characteristics of support services, staff, and equipment. The desired state evaluation will identify the supplemental services, delivery capability, providers and other re-sources that can be supported by telemedicine.

Questions to help generate ideas about the current and desired states include:

- What types of healthcare services are offered by the organization; where, how and when are those services delivered?
- What healthcare services require residents of your region to travel? Which of these services are amenable to being delivered via telemedicine?

- Are there problems or deficiencies in the availability of or access to specific types of health-care services?

- Are there problems you expect to arise in the future due to changes within your organization, your community, the healthcare industry, the economy (e.g., new competition? downsizing)?

- Could you gain a competitive edge or expand the scope of your organization's business by providing new or expanded services or by reaching new clients? How might a telemedicine program help you to take advantage of identified opportunities?

- How might you use telemedicine to leverage the strengths of your organization or region? For instance, if your hospital offers premier cardiac care, how might telemedicine help you build upon that strength?

- Is there a market for the proposed service? Are there willingness, desire, and the means to pay for the service?

Task 4: Identify the Gap

In this task, the difference -- or gap -- between the current state and the desired state is described and measured. Here is where you identify the requirements that must be met. A telemedicine gap analysis identifies:

- The new or extended healthcare services that must be provided in order to reach the desired state.

- How the new or extended services will be delivered using a telemedicine model.

It may be appropriate for you to identify specific resources and to confirm their availability/ willingness to participate in the manner envisioned within the proposed telemedicine program (e.g., a specific clinic, hospital or physician).

The gap analysis should identify general technology requirements, not specific equipment models or vendors. Typically clinical and information technology staff will collaborate in order to identify the general technology requirements. For instance, if a new or revised health service will provide secondary cardiology care to remote patients, the gap analysis might state that technology must support: "live" interactive cardiology consult; the ability to measure blood pressure, pulse rate, and body weight in the patient's home; the capability to perform EKGs and portable x-rays at the client home or a remote client site and store; or the means to forward the results and images. From these requirements, information technology staff can establish general telecommunication and network requirements.

Task 5: Identify Barriers

Once you have identified needed services and whether telehealth could be an appropriate solution, the next task is to identify potential barriers to implementing the healthcare services via telemedicine. Examples of barriers you might identify include:

- Financing (lack of capital, budget constraint, etc.)
- Lack of personnel
- Lack of particular skills

- Lack of equipment and/or peripheral devices
- Inadequate telecommunications and IT infrastructure
- Lack of knowledge of the implementation process
- Inadequate IT support

Identifying barriers may result in specifying additional requirements or recognizing that the desired state must be revised.

Task 6: Summarize Results

The next task is to rank the telemedicine program components and the associated requirements in priority order. Which among the proposed services are the most important for your organization to provide? For each of the highest priority services identified, what are the essential elements of the service that must be supported.

Priority ranking provides important information. If later analysis or emerging financial, business or other factors determine that the envisioned program cannot be implemented in its entirety or must be implemented in phases over time, the priorities assigned in this step will help determine what parts of the program should be implemented and when.

Task 7: Present Results

The outcome of each task of your needs assessment should be documented in a format that pulls together all of the information obtained during the needs assessment.

If formal approval of the needs assessment is required prior to proceeding to the next phase of developing your telemedicine program, this presentation provides the opportunity for securing this approval.   At a minimum, the presentation provides an opportunity to explain the rationale for the envisioned telemedicine program and to solicit stakeholder support and buy-in. We recommend that you secure organizational support and buy-in at the end of each program development phase.

Organizational Readiness Assessment Template

Identify the Anticipated or Desired Change

Write Your Program Description and how it will accomplish the desired change:

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

Determine how the proposed project would align with the Current Organization

1. Does the proposed project align with the organization's current vision, mission, and strategic plan?

	Yes	Minimal Change Needed	Significant Changes Needed	Major Barrier
Aligns with Organizational Vision / Mission	☐	☐	☐	☐
Aligns with Strategic Plan	☐	☐	☐	☐

Actions Required to Become Fully Ready / Comments:

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

2. Is the proposed project consistent with the organization's values and culture?

	Yes	Minimal Change Needed	Significant Changes Needed	Major Barrier
Alignment with Organizational Values & Culture	☐	☐	☐	☐

Actions Required to Become Fully Ready / Comments:

_____
_____
_____
_____
_____
_____
_____

3. Are resources available to begin development of the proposed project?

	Yes	Minimal Change Needed	Changes Needed	Major Barrier
Resource Availability	☐	☐	☐	☐

Actions Required to Become Fully Ready / Comments:

_____
_____
_____
_____
_____
_____

4. Does the proposed program have a champion?

	Yes	Minimal Change Needed	Changes Needed	Major Barrier
Identified Champion	☐	☐	☐	☐

Name:_____ Role:_____

Decision Makers Interest	☐	☐	☐	☐

Name:_____ Role: _____

Support for Initiative	☐	☐	☐	☐

Actions Required to Become Fully Ready / Comments:

_____
_____
_____
_____

5. Do stakeholders support the program?

	Yes	Minimal Change Needed	Changes Needed	Major Barrier
Stakeholder program perceptions	☐	☐	☐	☐
Stakeholder program education	☐	☐	☐	☐

Name: _____ Role: _____

Name: _____ Role: _____

Actions Required to Become Fully Ready/Comments:

_____
_____
_____
_____
_____

6. Who has authority over the proposed program?

	Yes	Minimal Change Needed	Changes Needed	Major Barrier
Program Authority	☐	☐	☐	☐

Name: _____ Role: _____

Name: _____ Role: _____

Actions Required to Become Fully Read / Comments:

_____
_____
_____
_____
_____

7. What does the SWOT analysis reveal about organizational successes and potential barriers?

	Ready/Acceptable	Minimal Change Needed	Changes Needed	Major Barrier
Internal Factors (skill sets, strengths, weaknesses)	☐	☐	☐	☐
External Factors (opportunities, challenges)	☐	☐	☐	☐

Actions Required to Become Fully Ready / Comments:

_____
_____
_____
_____
_____

Organizational Readiness Assessment
Summary

Use this template if an Executive Summary of the Readiness Assessment is desired.

Date:	Organization:
Description of Desired Initiative:	

RATE READINESS FACTORS   Record all of your answers from the organizational readiness assessment in the appropriate boxes below.

	Not Ready <---> Ready				
	Major Barrier	Substantial Barrier	Significant Changes Neded	Minimal Changes Needed	Full Support
Alignment with Organizational Vision / Mission					
Alignment with Strategic Plan					
Alignment with Organizational Values /Culture					
Resource Availability					
Identified Champion					
Decision Makers Interest					
Support for Initiative					
Stakeholder program perceptions					
Stakeholder program education					
Program Authority					
Internal Factors (skill sets, strengths, weaknesses)					
External Factors (opportunities, challenges)					
Overall Rating					

List of Actions Required to Become Fully Ready:

Recommendation:

_____   Move Forward Now   _____   Make Necessary Changes _____Reassess in___ months _____ Not appropriate

Needs Assessment Worksheet

Define the Purpose

1. What is the purpose and scope of your needs assessment?

_____
_____
_____
_____
_____
_____
_____
_____
_____

Data Collection

2. What data are you going to collect?

_____
_____
_____
_____
_____
_____
_____
_____
_____

3. What tools will you use to gather the data?

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

GAP Analysis

4. What is the current state of your organization? (i.e. healthcare services your organization currently provides, how those services are delivered, number and type of providers, available local resources). What are the unmet community and market needs?

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

5. What is the desired state of your organization? (i.e. supplemental services, delivery capability, providers and other support that is needed). What community needs can telemedicine support?

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

6. What is the gap between your current state and your desired state? Are there new or extended health care services that must be provided in order to reach the desired state?

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

7. How can telemedicine be used to help reach the desired state?

_____
_____
_____
_____
_____
_____
_____
_____
_____

Potential Barriers

8. Are there any potential barriers to implementing a telemedicine program? (i.e. financing, training, lack of technical support)

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

9. Based on these barriers, what revisions will you need to make to your desired state to allow for any barriers that are perceived unavoidable?

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

Service Priorities

10. Now that you have identified the desired state and the services that can be enhanced using telehealth, rank your service needs by priority.

1. _____
2. _____
3. _____
4. _____
5. _____

Step Two

Define & Specify Program Model

Questions to Answer	Products and Activities
• What services have you decided to provide? • How will the services be provided? • What is the proposed scope and implementation strategy? • What technology model will you use? • Do you have authority, support & resources to move forward?	• Develop program goals and objectives • Develop preliminary service description • Develop preliminary telehealth delivery model • Identify implementation approach • Create program charter

Everyone loves Step Two! Step Two identifies the specific clinical services your telemedicine program will target and the telemedicine program model that will be used to deliver those services. You will identify the services you want to target, any geographical boundaries, what form of telemedicine you will implement and the most appropriate program model for your particular organization. During Step Two you gather information and consider what the program would look like and how it can be structured as an integral and valued strategic organizational element.   You will also consider your implementation approach – pilot, one service only, limited sites, etc.

In this step you will review your prioritized list from the needs assessment, and then research the types of telemedicine that might address these needs. You will then collect some very preliminary application cost data for various telehealth models to explore which might work for you. This step blends into Step Three where the information from Step Two will be expanded to create a business model, business case and more detailed cost estimates.

At the completion of this Step, you will have a high-level understanding of what is needed clinically, technologically, and organizationally in order to deliver the targeted telemedicine services in the proposed way.

In a nutshell: During Step Two you will:
- Decide on the type of services to be provided – prepare a preliminary program description

- Decide on the type of telehealth program that best works for your application and prepare a preliminary program model description
- Consider assumptions, constraints, opportunities
- Create high level cost estimates
- Create a written proposal or Program Charter

Some organizations bring together a small group to define the program and technology model while others may be ready to bring a larger team together at this point in the development.

As you continue to develop and define the specifics of the program during subsequent steps, the preliminary decisions may need to be revisited and revised.

Activities

1. Develop program goals and objectives

Measurable goals based on your decisions about service needs will assist you in identifying the scale of the program, equipment needs, estimating workload associated with the new program, and creating a basis for program evaluation.

2. Develop a preliminary service and program description

The program proposal describes the type of service that will be provided:
- Proposed telehealth services;
- Alternatives considered and reasons for proposed solution;
- High-level description of the program model to be adopted, the rationale, and how it would be incorporated into existing service delivery;
- High-level description of what is required in order to support the identified program model. This description will include general technology requirements (e.g., live interactive, store and forward); specific types of health care providers; specific sources of services (e.g., city hospital); and
- Preliminary costs associated with supporting the programs high-level requirements (e.g, space, staff).

The service and program description documents your research and recommended decisions. It can be a standalone report, can be incorporated into the preliminary telemedicine delivery model or may be part of a Program Charter.

Tools for this Activity:
- Simple Charter
- Charter Template
- Kick Off Meeting Template

3. Develop a preliminary telehealth delivery model

A Telemedicine Program Model defines the choice of telehealth, selecting the most appropriate model for your situation and service selection. The preliminary telemedicine program model includes:

- The telemedicine delivery method proposed for providing the service; (e.g. live interactive with a telemedicine system on a clinician's desktop);
- High-level requirements of the telemedicine system and equipment including requirements for interoperability, network and storage capability and available support for IT; and
- Preliminary cost estimates for technology components of the proposed program.

The telehealth delivery model documents your research and recommended decisions.

It can be a standalone report, can be incorporated into the preliminary service and program description or may be part of a Program Charter.

Tools for this Activity:
> Step Two Program Model Checklist
> Program Charter Template

4. Develop implementation approach

Consider the best approach for implementation – a small pilot with limited service provision followed by expansion, a limited number of sites initially, one type of telehealth (e.g. live interactive) followed by another application (e.g. provider education). Many programs find small steps useful others find larger implementations successful. Decisions are often based on available resources , risk tolerance of the organization, time available, and the opinions of champions and decision-makers.

5. Create a Charter or other written report

Many find it very helpful to develop a Charter to document the information that has been gathered to date. Charters contain background on the reason telehealth is being considered, information on the problem, desired solutions, assumptions, constraints, desired timeframes, approvals and other critical information. A Charter assures that important initial decisions are well documented prior to moving on to the detailed planning for the program.

Tools for this Activity:
> Program Charter – Template
> Program Charter - Sample

Have you covered everything?

Take a look at the Step Two Checklist. You may see some things to consider before you move on.

Define & Specify Program Model Checklist

	Yes	No	Unsure
1. You know which services will be offered to meet the identified patient needs.	☐	☐	☐
2. You have identified the mode of service delivery.	☐	☐	☐
3. You have determined who will provide the service and where will they are located.	☐	☐	☐
4. You have identified the organizational model that will best suit your patient needs.	☐	☐	☐
5. You have identified any constraints based on your organization, for example federally qualified health center rules.	☐	☐	☐
6. You know the general technological features & functions that are needed to deliver the target services in the proposed way.	☐	☐	☐
7. Of the choices of technology, you have selected the one most appropriate for your program.	☐	☐	☐
8. You have identified any additional human resources needed and where they will be located.	☐	☐	☐
9. You have identified any additional facility-related resources needed and where they will be located.	☐	☐	☐
10. You have identified any legal, legislative or regulatory constraints that your organization would need to consider when developing your telehealth program.	☐	☐	☐
11. You have determined your program's implementation approach (i.e., phased, pilot project, demonstration project)?	☐	☐	☐

CTRC Telehealth Program Developer
Project Charter Template
Name of Organization: _____

Version Number: Revision Date:

I. Background and Problem Statement

Project Background

Give any background information that will help explain how the project came to be.

Problem Statement

Describe the reasons for initiating the project, specifically stating the clinical and / or business problem. Explain why the project is needed. If applicable, include details of why existing services are inadequate. The subsequent needs analysis (if not already performed) would provide more information. This is what appears to be driving the project.

II. Project Description and Scope

Project Description and Scope

Provide a description of the project, defining the project scope, being careful to note boundaries and limitations. The project scope should be clearly detailed so that all parties involved are very aware of exactly what the project includes as well as what it doesn't. As more detail about the project is developed, the scope may need revision. The Charter would also be revised.

Project Goals and Objectives

Clearly state all goals and quantitative objectives for the project.

Project Scope

Provide a description of the project scope, being careful to identify boundaries and limitations. The project scope should be clearly detailed so that all parties involved are very aware of exactly what the project includes as well as what it doesn't. As more detail about the project is developed, the scope may need revision. The Charter would also be revised.

Project Includes:

Project Excludes:

Assumptions

Describe any project assumptions related to need, clinical services, business, technology, resources, scope, expectations, or schedules.

Constraints

Describe any project constraints being imposed in areas such as schedule, budget, resources, and technology to be employed.

Major Projects and Milestones

List the project's preliminary major milestones and deliverables with the planned completion dates for delivery.   This list will be expanded and revised during Phase II – Program Development.

Milestone/Deliverable	Planned Completion Date

III. Governance and Oversight

Development Team

Provide a list of names identifying the major parties involved in the project, such as project sponsors, stakeholders, and eventual project owners. In addition, be sure to identify the role of each individual listed so that there is no confusion concerning responsibilities later down the line.

Identify team members and Summarize roles and responsibilities for this project.

Team Member	Responsibility

Sponsorship and Ownership

Identify who has authority for the project including any external oversight bodies and organizational policies.

IV. Reference Materials

Documents

List any related documents or other resources that could be helpful in understanding various aspects of the project, such as the scope and need.

Terminology

Use this section to identify any special terms related to the project that will need to be known to anyone related to the project.

Approvals

Approval of the Project Charter indicates an understanding of the purpose and content described in this deliverable. By signing this deliverable, each individual agrees with the direction and outlined details of the project and agrees to move forward with the project.

Approver Name	Title	Signature	Date

V. Approvals and Revision History

**Revision
History**

Keep track of changes to the Charter

Version	Date	Description

CTRC Telehealth Program Developer
Project Charter Example
Hospital In The Woods

Version Number: 2.0   Revision Date: February 1, 2001

Project Background

I. Background and Problem Statement

Hospital In The Woods will be receiving telemedicine equipment for use in their facility through grants awarded by the State Rural Health Office and a private foundation. The grant also provides funding for a part time telemedicine coordinator. Hospital In The Woods formed a telemedicine committee to look at how telemedicine might benefit their organization. The committee is meeting on a monthly basis.

Problem Statement

Hospital In The Woods is a small Joint Commission accredited 25-bed critical access not-for-profit hospital located in Anywhere, CA. The rural location of Anywhere is a serious barrier to receiving specialty care especially during winter months when travel is severely restricted due to snow levels. Anywhere is designated as a rural HPSA area for Medicare.

NIH sees a potential need for oncology, rheumatology, cardiology, dermatology and possibly psychiatry services. Over 150 specialty referrals are made monthly.

Payer mix Medicaid 35%, Medicare 25%, Uninsured 18%, Commercial 22%. There are concerns that Medicaid and Medicare payer mix may limit reimbursement.

Project Description

II. Project Description and Scope

Implement outpatient oncology services at the Hospital In The Woods Rural Health Clinic. Initial implementation will be providing Oncology services to patients at this facility.

This project will undertake the activities and tasks required to implement services, including equipment procurement, develop of work flows, clinical and operational policies and procedures, business model development, clinical service provision, billing and scheduling, staffing, service coordination and performance monitoring.

Hospital In The Woods is working with the CTRC to coordinate necessary work, create a business model and a training manual for telemedicine billing.

Project Goals and Objectives

Improve Access to Clinical Service
Provide 10 telemedicine oncology consults per month.
Reduce travel for patients and wait times for visits.

Maximize Administrative Efficiency and Revenue
Reduce facility revenue lost when patients are required to obtain services outside the hospital/clinic.
Optimize reimbursement with availability of current reimbursement schedules.

Build A Program Foundation That Will Allow for Expansion and Sustainability
Assess the impact of telehealth at 3 months, 6 months and one year.
Prepare business model for expanded services.
Identify grant opportunities for further funding of Telehealth.

Project Scope

Project Includes:
- Development of Oncology outpatient services provided from the Rural Health Clinic
- Development of program operations including policies procedures and clinical coordination
- One patient site
- Identifying Oncology provider for telehealth service delivery
- Working with local clinicians to engage them in Telehealth

Project Does Not Include:
- Implementation of other clinical specialties until oncology is operational
- Wireless applications
- Any additional patient sites

Assumptions

- Begin providing services in MM/YYYY
- Equipment and peripherals to be procured in a timeframe that supports service startup
- Adequate broadband is available for live interactive telehealth
- Remote oncology service provider is interested in telemedicine
- All grant funds are approved and received as expected
- Current staffing will support development efforts and activities

Constraints

- Two grants are only source of funding
- Current staff will be required to perform implementation tasks in addition to current workload

Major Milestones

Milestone/Deliverable	Planned Completion Date

III. Governance and Oversight

Development Team

Sponsorship and Ownership

Documents

IV. Reference Materials

Project Scope of Work
CTRC Organizational Readiness Assessment Template
CTRC Reimbursement Guide

V. Approvals and Revision History

Approvals

Approval of the Project Charter indicates an understanding of the purpose and content described in this deliverable. By signing this deliverable, each individual agrees with the direction and outlined details of the project and agrees to move forward with the project.

Approver Name	Title	Signature	Date

Revision History

Document changes to the Charter and subsequent revision approvals.

Version	Date	Description

Telehealth Kickoff and Planning Meeting Template

2 - 4 hours is usually a sufficient time for a kick off meeting

Purpose: To begin development of a plan to implement appropriate telehealth technology

Attendee List:

Project Sponsor	Director of Information Technology
Chief Executive Officer	Chief Operating Officer
Chief Medical Director	Clinic Manager
Chief Financial Officer	Telemdicine Coordinator
Director of Nursing	Medical Director

- Bring Team Together
    - o Welcome and Introductions
    - o Objectives of Meeting

- Overview of Telehealth

- Applying A Development Process

- Predictors of Success

- Consider Organizational Readiness
    - o Assessments

- Development of a Charter

- Create a Development Plan
    - o Review Needs and Possible Opportunities
    - o Identify Implementation Team
    - o Identify Information Needed

- Identify Next Steps

Step Three

Develop Business Case

Questions to Answer	Products and Activities
• What is the proposed scope of the program? • What is the estimated demand for the service? • What service and technology estimates are being used for the cost projections? • What is the financial model associated with the proposed program? • How will the program impact the organizations financial position? • Is the program sustainable? What is the sustainability model? • Will the program create revenue in another area of the organization? • Will the program require subsidy from the organization? • Is there a demonstrated Return on Investment? • Is the organization willing to implement if there is not a revenue positive or neutral program design? • Will grants be required for program initiation and/or sustainability?	• Market Analysis • Business Case Report

Step Three assists with evaluating the service demand, cost, benefits, risks and other elements of the proposed telemedicine program and assists with consolidating the outcomes into a business case report. This step brings together the information and analysis done during the needs assessment and the preliminary program development, and adds a financial and market analysis to determine the business model for the program and how the proposed telehealth program would financially impact the organization.

A clear understanding of the proposed program's financial impact is necessary along with consideration of the risks associated with the implementation and decisions on the business model. Developing a business model that supports program sustainability has been a challenge for many telemedicine programs. In many cases, the program may provide beneficial access to care without supporting the organization's bottom line. This may be perfectly acceptable given an organization's mission and other sources of revenue.   However, it is preferable to know the financial impact before proceeding.

The business case development looks at the estimates for service delivery, the costs to develop and operate the program and any sources of revenue or fiscal impact, positive or negative to describe the overall impact of the program on the program's financial picture. A market analysis during this step of the development will determine if there is an effective demand or market for the proposed service.

Sometimes it is assumed that since there is a need for the service that there is automatically a demand for the service. It is important to determine what purchasing power is available to obtain or pay for the fulfillment of the identified need with telehealth. If purchasing power or revenue to support the program can not be identified, there may not be a good business case for the program. A market analysis explores whether there is a desire, willingness and the means to obtain or pay for the service.

The formality and level of detail presented in the Business Case Report depends primarily on:
• The scope of the proposed telemedicine program. Is this an extension to an existing telemedicine program or is it the first implementation of a telemedicine program? Large programs and first time implementations benefit from a formal and detailed business model and business case report.

• The audience for the Business Case Report (i.e., a Board of Directors, a granting agency, a bank, a venture capitalist) and the information they require.

Activities

1. Business Case Report (sometimes called a business plan):

A Business Case Report correlates with elements of a market analysis, a strategic plan, an operational/ management plan, a financial plan, an environmental scan and information from the needs analysis and preliminary program proposal.

The Business Case Report generally contains:
• Description of the need for the telemedicine program (using the work products created during Step One, *Determine Needs*);
• Description of how the proposed program aligns with the organization's existing mission, lines of business, and/or strategic plans;
• Description of the market and demand for the service;
• Cost estimates;
• A fiscal analysis and Return on Investment (ROI) calculated for the telemedicine program;
• Description of how program development and implementation will be structured and managed;
• Description of how the program will be promoted;
• Description of how the ongoing operations will be managed and what resources are needed (including financial);
• Projected fiscal impact of the program on the organization's; and
• Evaluation of risks and constraints.

Tools
Needs Assessment
Market Analysis Guide
Market Analysis Template

Have you covered everything?

Take a look at the Business Case Checklist. You may see some things to consider before you move on.

Business Case Checklist

	Yes	No	Unsure
1. You have determined the approximate start up and operating costs for your telehealth program.	☐	☐	☐
2. You have determined how the benefits of telehealth relate to the mission of your organization and the needs of the community.	☐	☐	☐
3. You have identified the payer mix.	☐	☐	☐
4. You have obtained financial commitment to implement and sustain your telehealth services.	☐	☐	☐
5. You know the approximate expected cost reductions (e.g., providers who no longer travel to remote clinics).	☐	☐	☐

End With A Review!

Include a critical review at the end of each program development step so stakeholders and decision makers can evaluate results obtained thus far and make informed decisions about continuing to invest time and resources to further develop the telemedicine program as currently envisioned. Whether a decision about moving forward requires the formal approval of a board or the informal consensus of your program development team, including a critical review at the end of each step better ensures the organization will make a conscious decision about further program development. Of equal importance, these r eviews and decision-points also provide opportunities to secure organizational engagement and buy-in for the emerging telemedicine program.

Step Four

Plan Progam and Technology

Questions to Answer	Products and Activities
• What are the clinical program requirements? • What are the operational program requirements? • What are the technology requirements? • How will these requirements be met? • What tasks will be required to create and implement all clinical, operational and technical functions?	• Detailed Program Implementation Plan • Detailed Technology Implementation Plan

Step Four creates two major products. Step Four identifies the detailed programmatic and technical requirements necessary for delivery of the targeted services and creates a comprehensive project plan. This information will be used to procure services and equipment and to staff the program.

Step Four adds more detail to the information collected in Step Two. In this step, all the information about the clinical program and requirements, the technical requirements, and operational models are defined in greater detail.

In a Nutshell: Step Four creates the detailed task lists that will be used during your program's implementation (Step Six). At the end of Step Four you should have:
- A complete description of equipment specifications, clinical requirements, operational and staffing requirements
- A complete task list for implementing each of the areas.
- An Implementation Plan that includes assigned tasks, assigned resources, preliminary timelines, and schedules.
- Definition of the approach that will be used in implementing the program

Activities

1. Detailed Program Implementation Plan

A detailed program implementation plan should be developed for the clinical services, operational, and administrative portions of the telehealth program. The detailed Program Implementation Plan will include:

- a detailed description of the clinical services, operational requirements, estimated volumes and other requirements.
- a complete listing of the tasks required to achieve implementation of the program including staffing, clinical services, site coordination, operations, room preparation, training, and marketing and communication.
- preliminary timelines, schedules and estimates of required effort and resources

2. Detailed Technology Plan

The Technology Plan will include:
- Detailed technical requirements and specifications for all technology components, defined requirements for service level agreements, list of targeted products, services, and vendors (including projected one-time and continuing costs).
- A complete listing of tasks necessary to implement and operate all technology components of the telemedicine program.

If, in completing Step Four, you find that the information is substantially different than the originally projected approach, the Business Case developed in Step Three may need to be revisited and revised.

Have you covered everything?

Take a look at the Step Four Checklist. You may see some things to consider before you move on.

Plan Program and Technology Checklist	Yes	No	Unsure
1. You have identified the activities or steps that you will undertake to achieve your telehealth objectives	☐	☐	☐
2. You have developed a plan that you will need for managing the work involved in establishing a telehealth program.	☐	☐	☐
3. You have identified who in a leadership position in the organization will be involved in your program and what their role will be.	☐	☐	☐
4. You have identified members of your telehealth team and their roles and responsibilities.	☐	☐	☐
5. You have developed a communication strategy to promote your telehealth services.	☐	☐	☐
6. You have developed policies and procedures for operation of the program.	☐	☐	☐
7. You have a suitable space for telehealth.	☐	☐	☐
8. You have determined how appointments will be scheduled.	☐	☐	☐
9. You have determined how referrals will be made.	☐	☐	☐
10. You have identified the type of training needed and who needs to be trained.	☐	☐	☐
11. You have developed clinical referral guidelines.	☐	☐	☐
12. You have determined how telehealth will be integrated into clinic operations.	☐	☐	☐
13. You have identified the detailed attributes of hardware, software, and telehealth (i.e., bandwidth, product standards, and product features).	☐	☐	☐
14. You have defined the necessary service level and support agreements.	☐	☐	☐
15. You have identified the interoperability and scalability requirements.	☐	☐	☐
16. You have identified the existing organizational resources that can be used to meet specified requirements (e.g., existing network, hardware, equipment).	☐	☐	☐
17. You have identified the types of approvals or authorizations required to assign existing resources to the telehealth services.	☐	☐	☐
18. You know the organization's procurement policies and procedures.	☐	☐	☐

Step Five

Develop Performance Monitoring Plan

Questions to Answer	Products and Activities
• How will regular program performance be monitored and assessed? What data elements are required? How will they be collected? What management reports will be produced? • How will the program be evaluated? On what criteria? Using what methodology? • How will program modifications and improvements be identified and implemented?	• Performance Monitoring Plan • Evaluation Plan • Quality Improvement Process

Step Five identifies how the telemedicine program will be monitored and evaluated to determine if it is successfully meeting program objectives.

During Step Five you will decide what data you need to collect in order to assess progress and achievement of objectives, determine how you will collect the necessary data, develop report formats, and develop a schedule for monitoring and reporting program performance. The information gathered about the program will be used to identify and implement program improvements throughout the life of the program (see Step Seven).

Don't Overlook This Plan

While the Performance Monitoring Plan could be considered as part of Step Four, it is often overlooked until the program is operating and the data necessary for an adequate evaluation is not being collected. Because of the importance of evaluation and monitoring, it has been separated into a distinct step.

During Step Five, the process for reviewing performance, identifying improvements, and implementing changes should be identified and documented. As with any program, modifications and enhancements are necessary for optimal performance.   Many organizations have formal quality improvement processes that are used to identify and implement improvements. If one is not available, a quality improvement process should be identified and documented during Step Five.

In a nutshell: During Step Five, program evaluation will be addressed. In addition to making decisions on formal evaluation efforts, routine program performance monitoring will be considered. At the end of Step Five you should have:

- Selected performance indicators, corresponding data elements, data collection mechanisms, and a plan for developing and implementing the performance monitoring process.
- Determine what type of program evaluation may be desired or required, and developed implementation plans for the evaluation activities.
- Developed process for reviewing performance monitoring data and evaluating and implementing improvements in the program.

Activities

1. Performance Monitoring Plan

A detailed program implementation plan should be developed for the clinical services, operational, and administrative portions of the telehealth program. The detailed Program Implementation Plan will include:

Tools:
          Performance Monitoring Indicators Matrix

2. Quality Improvement Process

The Quality Improvement Process should provide written documentation on the manner in which the program will implement quality improvement. It should document the improvement structure, reviewing performance, submitting improvement suggestions, and monitoring implementation of improvements.

> **Data Collection Should Start Immediately**
>
> Data collection does not have to be difficult especially when it is designed into work flows and operational processes. It can, however, become very daunting and time consuming when the data has to be retrieved after the program has begun. Gathering data and reporting on performance will assist your program in obtaining organizational support, funding, and further expansion of services. Remember to match your data design with the baseline data collected during the needs assessment.

California Telehealth Resource Center
Telehealth Program Monitoring Data Project

Performance Indicators and Data Element Matrix

CALIFORNIA TELEHEALTH RESOURCE CENTER

Your resource for telehealth success
caltrc.org | 877.590.8144

Revised to include data elements or aggregated data elements. Also includes column to consider core, desirable or remove. Decisions would be impacted by the aggregated data element matrix.

Indicator	Data Elements/Aggregated Data Elements	Purpose / Value	Outpatient Services Chronic	Disease Home Monitoring	eICU	ED Services	Admin	Educational Services	Selected Indicators
Program Performance									
1. Percent of all health services / encounters performed using telehealth: total and by specific service type.	• **Non telehealth services/ encounters** total number total by service type • **Services provided / obtained through telehealth:** total number total by service type	Indicates overall use of telehealth in the facility – total and by specific service types.	X	X	X	X	X	X	
2. Telehealth services provided: total and by type	• **Completed telehealth en-counters:** total number total by service type	General overview of telehealth use	X	X	X	X	X	X	
3. Clinical services provided: total and by type	• **Clinical service encounters:** total number total services by type	General overview of clinical services.	X	X	X	X	X	X	
4. Administrative services provided: total and by type	• **Administrative service usage:** total number total services by type total participants total hours	General overview of administrative services. Types could include: • Administrative meetings • Community / business non-health meetings • Commercial conferencing services	X	X	X	X	X	X	
5. Educational services provided: total and by type	• **Educational services provided:** total number total number by type total attendees total hours	General overview of educational services. Types could include: • Education for health professionals	X	X	X	X	X	X	

Indicator	Data Elements/Aggregated Data Elements	Purpose / Value	Outpatient Services	Chronic Disease Home Monitoring	eICU	ED Services	Admin	Educational Services	Selected Indicators
		• Elective education for health professionals • Case reviewso Grand rounds • Community Health education programs • Patient support groups							
6. Clinical versus non clinical uses, in percent.	• **Clinical encounters:** Total • **Non-clinical encounters:** Total	General indicator of service use	X	X	X	X	X	X	
7. Percent of requested telehealth services / encounters that were successfully scheduled.	• **Telehealth encounters requested:** Total number of requests Total number by type • **Telehealth encounters scheduled:** total number scheduled total number scheduled by type	• May identify telehealth provider shortages or long wait times. • May identify scheduling operations problems.	X	X	X	X	X	X	
8. Percent of scheduled telehealth encounters completed.	• **Telehealth encounters scheduled:** total number scheduled total number scheduled by type • **Telehealth encounters completed:** total number completed total number completed by type	Alerts to low completion rates. May be affected by (partial list): provider availability, technical problems, patient site staffing, patient no show	X	X	X	X	X	X	
9. Percent of scheduled telehealth encounters not completed: total, by type, and by specific reason.	• **Telehealth encounters scheduled:** Total number scheduled Total by type • **Telehealth encounters not completed:** Total number completed Total number by type Not completed by specific reason	Alerts to low completion rates. Reason codes could include: • Provider not available • Patient failed to appear • **Patient presenter unavailable** • Participants not available • Patient refused service • Required workup/ tests results or other clinical data not available	X	X	X	X	X	X	

Indicator	Data Elements/Aggregated Data Elements	Purpose / Value	Outpatient Services	Chronic Disease Home Monitoring	eICU	ED Services	Admin	Educational Services	Selected Indicators
		• Technical / equipment problem							
10. Percent of encounters that are started but can not be completed: total and by reason.	• **Telehealth encounters started** Total Total by type • **Telehealth encounters started ut not completed:** Total Total by type Total by reason	Alert to low completion rates. Reasons could include: • Patient refused after visit began • Presenter of provider call away during visit • Required work/up test results not available • Technical/Equipment problem	X	X	X	X	X	X	
11. Percent of patient refusals: total and by reason.	• **Scheduled telehealth encounters:** Total scheduled Total by type • **Patient refusals:** Total refusals Total by type Total by reason	Monitors refusal rates and reasons for refusal. Reasons could include: • Uncomfortable with technology • Unsure that technology is effective • Want to see doctor in person	X	X	X	X	X	X	
12. Completed encounters impacted by a technical issue: percent of total completed encounters and percent by reason.	• **Encounters completed:** Total completed Total by type • **Encounters with technical issue reported** Total Total by specific reason	Monitors types of technical situations that are impacting operations. By capturing the reasons, performance improvement measures can be implemented. Reasons could include: • Dropped calls • Poor video quality • Poor audio quality • Diagnostics not working	X	X	X	X	X	X	
13. Scheduled encounters cancelled or not completed due to technical issues: percent of total scheduled encounters and percent by	• **Scheduled telehealth encounters:** Total scheduled Total scheduled by type	Monitors types of technical situations that are causing service cancellations. Reasons could include:	X	X	X	X	X	X	

Indicator	Data Elements/Aggregated Data Elements	Purpose / Value	Outpatient Services	Chronic Disease Home Monitoring	eICU	ED Services	Admin	Educational Services	Selected Indicators
reason (13, 14).	• **Scheduled telehealth encounters cancelled or not completed due to technical issues:** Total, Total by reason	• No network connection • Dropped calls • Poor video quality • Poor audio quality • Diagnostics not working							
14. Most frequent times for Telehealth services delivery.	• **Encounter start time**	This has value for "on demand" telehealth services to identify staffing patterns.			X	X			
15. Average time from Telehealth service request to Telehealth encounter scheduled – non high risk.	• **Encounter request date** • **Encounter scheduled date**	Provides information on scheduling system performance and provider availability.	X	X			X	X	
16. Average time from service request to the on demand provider to start of the encounter – high risk.	• **Time encounter requested** • **Time encounter scheduled**	Provides information on scheduling system performance and provider availability.			X	X			
17. Average time from identification of need for a Telehealth encounter until S&F package sent.	• Date and time of patient image capture • Date and time of Store and Forward Package Transmission	Store and forward service type specific. This detects patient site performance issues.	X		X	X			
18. Average time from S&F package sent to assessment/ results returned.	• **Date and time of Store and Forward package transmission** All services By service type • **Date and time of provider response**	Store and forward service type specific. This detects remote provider site performance issues.	X		X	X			
19. Average time per telehealth encounter (including prep and charting): all services and by specific service type.	• **Start time of encounter** • **End time of encounter** • **Specific service type**	Provides information on total encounter time at either patient or provider side. Useful for scheduling.	X	X	X	X	X	X	
20. Average number of video minutes per encounter: total and by	• **Start time of live video** • **End time of live video**	Provides information on time required for different	X	X	X	X	X	X	

Indicator	Data Elements/Aggregated Data Elements	Purpose / Value	Outpatient Services	Chronic Disease Home Monitoring	eICU	ED Services	Admin	Educational Services	Selected Indicators
specific service.	• **Service type**	specialties / services (without pre and post provider activity. Useful for scheduling, service negotiations.							
21. Time required to obtain service telemedicine versus non-telemedicine: total and by specific service.	• **Estimated time to in person service delivery** Specific Type Service method • **Date of service telehealth request** • **Date of service telehealth encounter**	Indicates relative availability of telemedicine services; ability to impact service scheduling	X	X	X	X	X	X	
22. Percent of allocated telehealth appointment time used.	• **Time allocated to Telehealth appointments** • **Allocated time used for appointments**	Measures use of available resources and available re-sources unused.	X				X	X	
23. Result of telehealth encounter by reason.	• **Total encounters** • **Encounter result by reason**	Reasons may include: • Corroborated initial diagnosis/treatment plan • Resulted in definitive diagnosis/treatment plan • Confirmed need for face to face visit with remote provider • Confirmed need for urgent/emergent transport • Avoided need for face to face visit with remote provider • Avoided need for urgent/ emergent transport • No change in diagnosis or treatment plan • Changed diagnosis or treatment plan	X	X	X	X	X	X	

Indicator	Data Elements/Aggregated Data Elements	Purpose / Value	Outpatient Services	Chronic Disease Home Monitoring	eICU	ED Services	Admin	Educational Services	Selected Indicators
24. Telehealth services by delivery method.	• **Telehealth encounters completed** • **Total number by delivery method**	Provides distribution by delivery method. Methods could include: • Live interactive • Store and Forward • Hybrid • Telemetry	X	X	X	X			
25. Percent of patient encounters no subsequent in person encounter was necessary.	• **Total number of telehealth encounters** • **Total number of telehealth encounters with no subsequent in-person required**	Provides information on how often telehealth visits replaced an office visit?	X	X	X	X		X	
26. Primary diagnosis by service type	• **Service type** • **CPT codes for primary diagnosis** • **CPT codes for secondary diagnosis**		X	X	X	X		X	
Home/Chronic Disease monitoring									
27. Improved quality of life scores Aggregate change in quality of life rating; percent improved percent no change, percent decreased.	• **Quality of Life scores**	Provides improvement in Quality of Life rates through telehealth use. Balances under patient measures provider.	X	X	X	X	X	X	
28. Physiologic measurements collected by type compared to number indicated in care plan.	• **Number physiologic measures scheduled for collection** • **Number physiologic measures collected**	Non adherence to care plan by type: human and technology.		X					

Indicator	Data Elements/Aggregated Data Elements	Purpose / Value	Outpatient Services	Chronic Disease Home Monitoring	eICU	ED Services	Admin	Educational Services	Selected Indicators
29. Percent change in admission and readmission rates.	• **Average readmission rate before Telehealth** • **Average readmission rate after Telehealth**	Provides change in inpatient admissions resulting from telehealth use.		x					
30. Percent change in visits to Primary Care Provider.	• **Average PCP visit rate before Telehealth** • **Average PCP visit rate after Telehealth**	Provides reduction in PCP visits resulting from tele-health use.		x					
31. Average number of in-home care nurse encounters per episode of care for home monitoring telehealth programs.	• **Number of in-home nurse encounters** • **Number of episodes of care**	Provides overall utilization on nursing services		x					
32. Nurse contacts per episode of care due to out of range reading NEW	• **Nurse contacts for out of range readings** • **Number of episodes of care**	Provides information on out of range readings per episode of care		x					
33. Average time between in-home nurse interventions compared to non telehealth	• **Number of home clinical visits** • **For telehealth enrollees** • **For non telehealth enrollees** • **Number of days between visits** • **For telehealth enrollees** • **For non telehealth enrollees**	Allows tracking of the length of stable periods		x					
34. Unplanned telehealth encounters by episode of care	• **Number of unplanned telehealth encounters** • **Number of episodes of care**			x					
35. Average number of nurse encounters per unit of time (hour, shift).	• **Number of nurse encounters** • **Unit of time**	Provides productivity information		x					

Indicator	Data Elements/Aggregated Data Elements	Purpose / Value	Outpatient Services	Chronic Disease Home Monitoring	eICU	ED Services	Admin	Educational Services	Selected Indicators
eICU									
36. Percent change in mortality rate.	• **Average mortality rate before Telehealth** • **Average mortality rate after Telehealth** • **Average ICU length of stay before**	Provides reduction in mortality rate through telehealth use. Requires historical data collection and comparison. A common indicator for effectiveness and cost avoidance			x				
37. Percent change in ICU length of stay.	**Telehealth** • **Average ICU length of stay after Telehealth**	Provides reduction in ICU length of stay that in eICU programs use. Required historical data for comparison.			x				
38. Percent change in complications.	• **Average complication rate before Telehealth** • **Average complication rate after Telehealth**	Provides reduction in complications in eICU programs. Requires historical data collection and comparison. Provides reduction in overall length of stay in eICU programs. Requires historical data for comparison.			x				
38. Percent change in complications.	• **Average length of stay before Telehealth**				x				
Emergency Department									
40. Percent of appropriate TPA Percent reduction in overall length of stay. delivery in allowable timeframe.	• **Number of patients presenting with stroke symptoms that are eligible for TPA.** • **Number of patients TPA was administered within the allowable timeframe.**	Provides a measure of telehealth impact on delivery of TPA in appropriate cases. Requires historical data comparison.				x			

Indicator	Data Elements/Aggregated Data Elements	Purpose / Value	Outpatient Services	Chronic Disease Home Monitoring	eICU	ED Services	Admin	Educational Services	Selected Indicators
41. Percent change in time required for triage or evalua-tion in ED.	• **Time triage or evaluation services requested** Total By service type • **Time triage or evaluation services provided** Total By service type	Provides measure of change in obtaining triage or evaluations and use of ED beds. Requires historical data comparison.							
Provider Measures									
42. Practitioners referring patients for telehealth: percent of total practitioners.	• **Number of practitioners** • **Number of practitioners with telehealth referrals**	Provides an indicator of the acceptance and use of telemedicine by referring practitioners.	X	X	X	X		X	
43. Percent of providers that indicated overall satisfaction levels of satisfied or above: total and by reason.	• **Number of satisfaction instru-ments collected** • **Number of responses that indi-cate satisfied or above:** Total responses Total responses by reason.	Identified overall satisfaction and reasons. Reasons could include: • Makes efficient use of time • Integrated into workflow • Presenter knowledgeable • Technology is reliable • Technology is appropriate • Patient comfortable / cooperative	X	X	X	X	X	X	
44. Percent of providers indicating unsatisfied: total and by specific reason.	• **Number of satisfaction instruments collected** • **Number of responses that indicate unsatisfied or below by reason**	Detects provider concerns. Reasons my include: • Technology did not perform as expected	X	X	X	X	X	X	

Indicator	Data Elements/Aggregated Data Elements	Purpose / Value	Outpatient Services	Chronic Disease Home Monitoring	eICU	ED Services	Admin	Educational Services	Selected Indicators
		• Patient site not prepared • Proper video etiquette was not followed • Poor patient presentation skills • Protocol not followed • Necessary information unavailable • Ineffective use of time • Patient uncooperative							
45. Percent of patients for whom Telehealth encounter were deemed appropriate.	• **Total encounters** • **Inappropriate encounter**	An indicator of referral pattern behaviors. Detects opportunities for provider education.	X	X	X	X	X	X	
46. Percent of patients for whom Telehealth encounter were deemed appropriate.	• **Number of encounters where provider participated in the encounter** • **Number of providers that indicated increased understanding**	This only applies to patient site providers that participated in teleconsultation. This is a measure of effectiveness and impact.	X		X	X			
47. Percent of patient sites indicating satisfied or above and by specific reason.	• **Number of satisfaction instruments collected** • **Number of responses that indicate satisfied or above and by specific reason**	Identified overall satisfactions and reasons. Reasons could include: o Makes Efficient use of time o Integrated into workflow o Provider knowledgeable o Technology is reliable o Technology isappropriate o Patient comfortable / cooperative	X	X	X	X	X	X	

Indicator	Data Elements/Aggregated Data Elements	Purpose / Value	Outpatient Services	Chronic Disease Home Monitoring	eICU	ED Services	Admin	Educational Services	Selected Indicators
48. Percent of patients indicating unsatisfied: total and by specific reason.	• **Number of satisfaction instruments collected** • **Number of responses that indicate unsatisfied or below by specific reason**	Detects patient site concerns of concern. Reasons my include: • Technology did not per form as expected • Provider site not prepared • Proper video etiquette was not followed • Poor provider presentation skills • Necessary information unavailable • neffective use of time	X	X	X	X	X	X	
49. Percent of providers / presenters that are trained to use the system.	• **Number of Telehealth providers/ presenters in system** • **Number that received formal training**	Identifies training levels.	X	X	X	X	X	X	
50. Percent of providers / presenters that demonstrate adequate ability in telehealth service delivery.	• **Number of Telehealth providers/ presenters in system** • **Number that demonstrated skill in telehealth service delivery**	Direct observation needs to support assessment of skills. Identifies need for additional training.	X	X	X	X	X	X	
Patient Measures									
51. Percent of patients that indicated overall satisfaction levels of satisfied or above.	• **Number of patient responses collected** • **Number of patient responses with satisfied or above**	Identifies overall satisfaction.	X	X	X	X		X	

Indicator	Data Elements/Aggregated Data Elements	Purpose / Value	Outpatient Services	Chronic Disease Home Monitoring	eICU	ED Services	Admin	Educational Services	Selected Indicators
52. Percent of patients that indicated they would recommend the telehealth system to a friend or family member.	• **Number of patient responses collected** • **Number of favorable patient responses**	Identifies overall satisfaction.	X	X	X	X		X	
Cost Benefit									

53. Estimated reduction or avoidance in travel costs as a result of using Telehealth system: total, by type of transport, and by payer of transport.	• **Total sessions held**
	 • **Total travel miles avoided**
	   By patients
	   By providers
	   By payer
	   By service type
	 • **Estimated cost of travel miles**
	   By patients
	   By providers
	   By payer
	   By service type
		This indicator reflects all types of travel cost avoidance – both patient and provider. Should be captured with each appropriate encounter or by use of algorithm. Many programs develop algorithm to identify where provider or patient would have to travel without telehealth, determine mode of transportation and estimates costs of the transportation including: vehicle charges (personal vehicle, ambulance, public transportation, air ambulance), mileage costs, salary costs while traveling, overtime / swing shift cost etc. Payer types may include patient, health system, insurer, government program.
		
		 Provides indicator of the environmental impact
			X	X	X	X	X	X	

54. Carbon Footprint Impact	• **Total travel miles avoided** • **Total reduction in carbon footprint**								

Indicator	Data Elements/Aggregated Data Elements	Purpose / Value	Outpatient Services	Chronic Disease Home Monitoring	eICU	ED Services	Admin	Educational Services	Selected Indicators
		resulting from telehealth services							
55. Net cost and revenue per telehealth service delivery: total and by service type.	• **Net cost of telehealth service delivery** Total cost per unit Total cost per unit by service type • **Net revenue per telehealth service delivery** Total revenue per unit Total revenue per unit by service type	Provides per unit cost for services provision. Requires work with the organization's Administration and Finance offices to develop and apply a model. Organization creates model customized to specific application and situation. Data elements could include: o cost of equipment, o amortization period, o cost of development, o staffing costs o overhead o Insurance o IT support o training o cost of provider services, revenues – direct and in-direct	×	×	×	×	×	×	
56. Return on Investment.	• **Revenue / Gain from Investment in telehealth** • **Cost associated with Investment in telehealth**	Measure to compare the cost of a program with the anticipated gain from the program. Requires work with the organization's Finance Office to develop ROI model and collect data.	×	×	×	×	×	×	
57. Cost Benefit.	• **List of costs by item**	Overall picture of program	×	×	×	×	×	×	

Indicator	Data Elements/Aggregated Data Elements	Purpose / Value	Outpatient Services	Chronic Disease Home Monitoring	eICU	ED Services	Admin	Educational Services	Selected Indicators
	• List of benefits with associated financial value – can be both direct and indirect; tangible and intangible	value that allows program to quantify and place a value on tangible and intangible costs and benefits							
58. Percent of total revenue generated by telehealth services NEW	• Total revenues • Revenue associated with telehealth service.	How telemedicine contributes to the overall revenue of the organization. May be useful to look at gross revenue and net revenue	X	X	X	X	X	X	

59. Percent of services re-imbursed: total and service by type	• Total number of telehealth services
	    Total
	    Total by type
	• Total number of reimbursed services
	    Total
	    Total by type
		Provides telehealth specific information on reimbursement	X	X	X	X	X	X	

60. Percent of total pro-vided telehealth services that are not reimbursed.	• Total number of encounters
	• Total number of telehealth services that were reimbursed
	    Total by service type
	    Total dollar amount
	• Total number of services not reimbursed (not billed)
	    Total by service type
	    Total dollar amount
		Provides information on the number of unpaid telehealth services.	X	X	X	X	X	X	

61. Comparative cost to put 24 hour internist	• Cost of telehealth on demand internist • Cost of 24 hour on-site internist								
62. Productivity loss avoided	• Estimated hours of work lost due to travel	Requires application of an	X	X	X	X	X	X	
	• Estimated cost of travel time	algorithm to associate time savings with productivity loss reduction.	X	X	X	X	X	X	

Have you covered everything?

Take a look at the Performance Monitoring Plan. You may see some things to consider before you move on.

Develop Performance Monitoring Plan Checklist

	Yes	No	Unsure
1. You have developed an approach to measure, track, and achieve your target for telehealth volume and utilization.	☐	☐	☐
2. You have developed a plan to measure success in achieving your project goals, objectives and outcomes.	☐	☐	☐
3. You have determined how you will know what impact telehealth has made in your organization.	☐	☐	☐
4. You have identified data collection methods for obtaining the needed data.	☐	☐	☐
5. If the performance objectives are not being met, you have developed a process for identifying and implementing the necessary changes.	☐	☐	☐
6. You have determined how the program improvements will be defined, planned, implemented, tested, and managed.	☐	☐	☐

Step Six

Implement the Telehealth Program

Questions to Answer	Products and Activities
• Are project schedules being met? • Are risks being identified and mitigated? • Is a communication plan in place? • Is work being done in a quality manner? • Do any tasks need revision? • Are any needed program modifications being identified and managed? • Are all the deliverables and products required for operation complete? • Is the program ready for operation?	• Project Management Reports • Project Team Meeting • Program deliverables

Step Six ensures that everything needed to make the telemedicine program operational is completed. This step starts with ensuring that ALL the tasks required to fully implement the program are defined, scheduled, and assigned a primary resource responsible for task completion. This is the step in which program development particularly benefits from applying project management principles and practices.

Depending on the scope of the telemedicine program, the work that occurs during this step may be managed by a dedicated project manager using formal project management practices to keep the work effort on track. Smaller work efforts may be more informally managed and coordinated. In nearly all cases, it is useful to have a lead person responsible for ensuring the completion and coordination of many different tasks required to implement the program.

 A detailed work plan is generally used to record and track progress on these tasks and to highlight dependencies between tasks. Once the work plan is established, focus shifts toward executing that plan in order to complete all tasks required to implement the program while keeping stakeholders updated on status, managing risks and resolving issues encountered. Once the program has moved into operation, the phase focuses on executing the performance monitoring plan and conducting the ongoing program monitoring and evaluation.

Following the plans and specifications established during Step Four, this step ensures that:
• Equipment is purchased and installed;
• Clinical protocols are finalized;
• Contracts are implemented;
• Operational processes and procedures are created or revised and communicated;
• Staff are hired or assigned;

- Staff are trained;
- Facilities are established;
- All aspects of the telemedicine program are tested (to the extent feasible) to ensure that the program is ready to begin delivering the targeted services using the envisioned Program model.

Activities

1. Project Management Reports

Step Six manages, monitors, and reports on the implementation of the program. It also includes activities related to evaluating and monitoring risks and issues and communicating progress to stakeholders.   A variety of project management tools and reports are available to support the implementation including:
- Implementation plan updates;
- Status reports;
- Communication plans; and
- Test plans.

2. Project Deliverables

During Step Six all project deliverables should be accomplished. Products created during the implementation could include:
- Finalized clinical protocols for new service;
- Executed contracts and agreements;
- Policies and Procedures;
- Patient Informing Materials;

Have you covered everything?

Take a look at the below checklist. You may see some things to consider before you move on.

Implement the Telehealth Program Checklist

	Yes	No	Unsure
1. You are monitoring project schedules and determining if deliverables are being met.	☐	☐	☐
2. You are identifying risks and mitigating when necessary.	☐	☐	☐
3. You have implemented your communication plan.	☐	☐	☐
4. You have determined how needed program modifications are identified and managed.	☐	☐	☐

Step Seven

Monitor & Improve Program

Questions to Answer	Products and Activities
• Is data being collected? • Are regular performance monitoring reports being produced? • Are the reports being reviewed by the program team? • Is the program meeting its objectives? • What program changes would improve operation or outcomes? • What challenges or improvements have been identified?	• Performance monitoring • Improvement logs and data collection documents • Implement improvements and changes to the program

Step Seven is the ongoing monitoring and evaluation of your program, and the identification, assessment and implementation of program improvements. Step Seven monitors the program to determine if it is achieving the desired clinical and business outcomes. This step also identifies necessary changes or improvements. Once the program is operational, Step Seven will be repeated at intervals described in the Monitoring Plan and will become a part of regular operations.

Activities

1. Performance Monitoring

Data analysis determines whether the outcome was different from what was expected. The results and interpretation of the data analyses should be incorporated in a report and/or presentation format.

2. Improvement Logs and Data Collection Documents

Documentation is a critical step in the evaluation process. Collecting data and maintaining improvement logs will allow a program to track project deliverables and identify areas for potential improvement.

3. Implement Improvements and Changes to the Program

Based on the analysis of the data, program enhancements and modifications may need to be made. The telemedicine program will need to determine how they plan to implement the changes.

Have you covered everything?

Take a look at the Evaluate & Improvement Checklist. You may see some things to consider before you move on.

Evaluate & Improve Program Checklist

	Yes	No	Unsure
1. You can determine if the program is meeting its objectives.	☐	☐	☐
2. You can identify what changes are needed to ensure that the program meets its objectives.	☐	☐	☐

Best Practices for Telehealth Programs

As you begin….Lessons from the field

The experiences of other telehealth programs contain some of the most valuable and important information you can have. This document contains the lessons learned and best practices identified by hundreds of telehealth programs implemented over the past decade. Their experience provides us with a compass for implementing programs in the most straightforward and cost effective way. These best practices were mined from evaluation reports of telehealth program developments funded by The California Telehealth and eHealth Center. These best practices were then reviewed by a national panel of experts, who both validated and added to this compendium. This compendium is organized by the Seven Steps identified in the CTRC Telehealth Program Developer.

Assess Service Needs and Environment

✔ **Best Practice: Assess and confirm your organization's readiness for telehealth**

> It is costly, time consuming and challenging to start telehealth even though it may sound easy. Organizations that perform a formal assessment of readiness have the advantage of identifying potential problems and addressing them early. They also gain a lot of support for the project by engaging people early.
>
> Lessons from the field…..
>
> - Be sure the program "matches the mission/vision".
> - Buying equipment is not the first step.
> - You need the proper authority to successfully move forward.
> - Knowing and reporting the strengths, weaknesses, opportunities and threats (SWOT) of your organization will help build the case for your program.
> - Bringing the major department heads into the process early allows for easier development and acceptance of the program.
> - Identify appropriate leadership team members, and bring the team together early.

✔ **Best Practice: Perform A Needs Analysis**

> A needs analysis will help your organization to identify key unmet needs and will help you devise effective strategies and approaches to meet them. It will give you a clear understanding of the nature and scope of the unmet need, provide a sound foundation for planning, help you clarify objectives and shared expectations, improve coordination of services and resources and provide supporting structure for your program evaluation.

This document was produced with the generous support of the California Endowment.

Lessons from the field…..

- Determine the needs you wish to meet, and how you are going to meet them. Invite clinical staff to identify service needs at both host and remote sites at patient and provider sites.
- Ensure the needs analysis is data driven.
- Recognize that the needs analysis is inseparable from the program model and the business case. It lies at the heart of sound telehealth program planning.

Define the Program Model

Have a clear understanding of the types of services you wish to deliver and the best and most appropriate Telehealth program model for your particular organization. Identify which services you will target, which geographical regions you will serve, what form of telehealth you will implement.

✔ **Best Practice: Develop preliminary goals and objects for service delivery**

Measurable goals and objectives will assist in selecting equipment, developing staffing, evaluating performance, creating cost estimates…in every facet of program design and development.

Lessons from the field…..

- Prioritize your service options.
- Be mindful of the size and scale of the program you are creating. Stay focused on the success of your initial few sites. Start small to help guarantee success.

✔ **Best Practice: Select the delivery model that best suits your service goals and objectives**

Understand the various forms of telehealth currently in use and ensure your choice is suited to the particular specialty services you plan to provide.

- Familiarize yourself with the different types of telehealth, and select the right kind(s) for your particular need. A 'hybrid' system, containing elements of each, can prove highly effective, particularly in the delivery of multi-disciplinary care.
- Create high quality, structured and layered training, and plan to provide it on an ongoing basis, at both host and remote sites.
- Keep your model in line with your organization's vision, mission and strategic plan.

✔ **Best Practice: Plan to incorporate Health Information Technology (HIT)**

The implementation of electronic health records and other HIT is taking place at a rapid rate. Telehealth systems should be designed and structured to support health information exchange.

Lessons from the field….

- If your organization is not currently deploying HIT methods and practices, it soon will be expected to at some level. Be mindful of this.
- There are always serious network security and privacy issues and concerns related to HIT, so it is imperative your technical leadership and legal counsel are involved in this planning from the outset.

✔ **Best Practice: Grow your champions**

Many consider having clinical and administrative champions to lead and sustain the development of your telehealth program vision as the most important factor for success. Champions must be true agents of change within your organization and in positions to garner top level organization attention to obtain financial, technical, personnel and other resources.   They must be inspirational figures, who play a key role in creating a professional and nurturing environment in which additional champions will be encouraged and developed.

Lessons from the field….

- Find champions who will enable you to achieve the level of change in attitudes and practice upon which a successful telehealth program depends.
- Ensure your champions are true agents of change, with the vision and passion to bring it about and instill it in others.
- Find equivalent champions at all participating network sites.
- Recognize that your champions are the primary advocates of your program, and that their success depends upon the full support and dedication of the entire team and the wider organization. Help them succeed.

✔ **Best Practice: Know your geographic area**

It is important to understand the nature and norms of the locations you will be working with remotely. Service expectations can be quite different in different regions, as can medical services purchasing power, reimbursement options and access to other non-Telehealth caregivers.

Lessons from the field…..

- Go visit! There is simply no substitute for taking the time to visit your remote sites, meet your colleagues, and learn firsthand about their lives, patients, local opportunities, chal lenges and concerns.
- Keep communication between sites direct, clear and simple to avoid basic misunderstandings or clinical errors.
- Be aware that there may be important business and legal considerations to take into account when providing medical services over distance. This is especially true if a telehealth network is being planned that aims to provide service across state lines, or on a national basis.
- Know the 'political geography' of any region in which you wish to provide services. Understand the activities and interests of local providers, organizations and other local stakeholders. Their support of your program, and willingness to collaborate with you, may prove to be a deciding factor in creating a successful telehealth outreach program.

Develop Business Case

Cost benefit risks and opportunities need to be identified analyzed and consolidated into a comprehensive business case report as part of program development efforts.

✓ **Best Practice: Perform a market analysis and write a business case report**

The business case for initial and ongoing resource investment needs to be developed, reviewed and approved. A market analysis to determine market demand for proposed services will assist in assuring sustainability.

Lessons from the field…..

- Be sure you are clear about the effective demand for the services you are considering to provide. There can be great need for a particular specialty service in an area, but not necessarily the demand and/or purchasing power to obtain it.
- View grants as only short term 'seed funding'. Actively seek long term sustainability from the outset. Grants may be sought to support required program expansion.
- Focus beyond the 'here and now'. Incorporate growth into the business case report.

✓ **Identify and develop your revenue opportunities and fiscal estimates**

Reimbursement is one of the most challenging areas in implementing sustainable telehealth programs. In the long run, programs require reliable and adequate revenue and reimbursement for clinical services. Programs need to look for opportunities to contract with payers, insurance companies and others to offer cost effective services.

Lessons from the field…..

- A sustainable program may require multiple revenue streams, e.g. hand in hand clinical and educational (CME) services. Ensure your program has a good patient payer mix.
- Learn from other telehealth practitioners about their reimbursement strategies and challenges. Understand general existing reimbursement methods and practices at host and remote sites. Base your program design on what already exists.
- Focus on delivery of services that are known to be sufficiently and reliably reimbursed.
- Rural health clinics and FQHCs have multiple revenue models available, and thorough research needs to be undertaken to identify that wich is most appropriate for a particular service type.

Plan Program and Technology

✔ Create a detailed programmatic and technical implementation plan

The most successful telehealth programs come as a result of careful and detailed planning and the deployment of well considered, integrated and streamlined technologies.

Lessons from the field…..

- Make sure your plan includes detailed information on timelines, deliverables and milestones, and detailed information on technical requirements and potential challenges as well as the demand and/or purchasing power to obtain it.
- Submit your plan for review by senior leadership and key stakeholders, and invite feedback, comments and open discussion.
- View your plan as a dynamic and living resource, which should be updated periodically as your program grows and programmatic circumstances change.
- Recognize that unforeseen circumstances and factors may influence your initial or ongoing planning. Be flexible in your approach, and able to make quick and effective adjustments to operational schedules and programmatic elements as necessary.

✔ Best Practice: Get the equipment right

Select the right equipment for your telehealth application and delivery mode. Video equipment, communication systems, medical devices and software applications are critical equipment components. Obtain good information and advice and learn as much as you can about functionality, features and interoperability. Keep in mind that the best equipment for your program might not necessarily be the most expensive.

Lessons from the field….

- Clearly identify appropriate specifications for your devices, applications and all technical systems.
- Identify trustworthy and knowledgeable sources to guide you in your equipment choices, and to provide ongoing support. Do extensive equipment comparison to identify the best equipment for your program.
- Be mindful that technology advances quickly, and systems and applications will need upgrading and warranty renewals. There can be substantial costs involved. Be sure to budget.
- Test, test, test your equipment and connectivity before announcing or advertising your program.

✔ **Best Practice: Integrate telehealth into your operation.**

Telehealth activities should be designed to complement your standard practices and working methods, not complicate or interrupt them. Telehealth should be integrated alongside your face to face clinical activities. Telehealth examination rooms (both patient and provider sites) should be located in close proximity to the clinical staff.

Lessons from the field…..

- Plan a workflow analysis to reveal how your program fits in with standard clinical practice. Discuss necessary changes with stakeholders.
- Think of the telehealth technology as just another tool for the delivery of normal services, with the only difference being that the patient isn't in the room with the consulting provider.
- Keep it simple.

✔ **Best Practice: Know the Law**

There are a wide range of legal and regulatory issues and requirements that must be understood and complied with when developing a telehealth program. Regulations and laws change frequently. Ensure your organization's legal counsel is fully informed of your plans well in advance of implementation to allow time for complete legal reviews.

Lessons from the field…..

- Identify the current policies and regulations and determine the impact they may have on your program. Critical legal and regulatory areas to consider include licensure, credentialing, HIPAA and medication prescription.
- Consult with your legal counsel to consider any impacts on your organization and to ensure that you are aware of any new changes in laws and regulations.
- Realize that telehealth law is a rapidly changing area of law. Be sure your legal counsel stays closely in touch with your program expansion and development activities and plans.

✔ Best Practice: Plan for the availability of strong IT support at all participating locations

Having ready access to trained and knowledgeable IT personnel and network support staff is critical to the effective running of your program. During consults or any clinical interaction taking place via the telehealth system, trained and efficient technical staff must be on hand to troubleshoot and make technical adjustments as necessary. Both equipment and network expertise is essential and staff must have appropriate authorizations to make network changes as needed. It is vital that an IT champion is identified and that the IT department is involved to provide authorization and approval of technical plans and strategies.

Lessons from the field.....

- Identify an IT champion.
- Focus on introducing IT personnel at all sites to each other. The better they know one another, the smoother your technical troubleshooting will be.
- Ensure IT personnel are fully versed in your technologies, and are authorized to work directly with network systems and settings at an organizational level.
- Familiarize all IT staff in your and your partner organizations (either working directly with your program or not) with all the systems, applications and network needs. There can be wider IT system dependencies and knock-on effects of telehealth operations that may not be apparent to you or your team until it's too late.

✔ Best Practice: Plan to appoint a dedicated telehealth program manager

No telehealth program will succeed without a dedicated, trained and efficient manger working in sync with your champions. This individual will help conceptualize and put into place all key operational and clinical elements of your program and will lay the foundation upon which all future development will based.

Lessons from the field.....

- Appoint this individual at the very beginning of your program planning to help you design it.
- Scale this position to the size and scope of your program.
- View this individual as the 'eyes and ears' of your clinical and administrative champions. This individual should be directly responsible for all programmatic elements and the design of performance monitoring and evaluation strategies.

✔ Best Practice: Plan for system redundancy for all critical system applications and network

Building redundancy (back up) into your telehealth architecture is a critical part of your program design. Knowing there is backup for critical technical systems and networks will go a long way in instilling confidence in your clinical staff as they undertake their telehealth activities.

- Technology can be fickle. Realizing this in advance and planning appropriate back-up for all your mission-critical systems and applications is vital. Don't wait for your network to go down, without back-up, mid-consult.
- Don't forget to budget for this redundancy, and include it in your business case analysis and plans.
- If costs for redundancy are prohibitive, ensure process redundancies are well planned to cover any technical failures.

✔ **Best Practice: Plan for the development of protocols policies and procedures**

Clinical and service protocols should be adapted to the telehealth environment yet , as much as possible, retain content of non-telehealth protocols.

Lessons from the field…..

- Create protocols that are as close as possible to non-telehealth protocols. This will instill far greater comfort and confidence in your caregivers who will not feel they are doing something strange and unusual, and way out of line with their traditional practices.
- Follow standard, recognizable protocols which will lead to consistent clinical results that will be vital for your evaluations and program monitoring.

Develop Performance Monitoring Plan

Build systems into your program to measure and analyze program performance. In the planning stage, determine assessment methods and evaluation and strategies, and build a plan to create routine regular performance monitoring. Consider the need for formal evaluation of clinical services and operational or cost impacts

✔ **Best Practice: Be sure to establish both short and long term performance goals**

It is easy to focus only on the short term when initially implementing your telehealth program. This can be a mistake, as you must recognize that implementing fundamental practice changes take time and will not happen overnight. Be sure to establish longer term goals as well, that consider clinical, business and financial outcomes several years into the future and movement towards programmatic self sustainability.

Lessons from the field…..

- Long range strategic planning for a telehealth program should be carried out on an ongoing basis and should include the program's governing board.
- Plan to begin collecting vital program data from the very beginning of your program implementation.
- Determine and communicate your measures of success.
- Things take time. Be realistic in your setting of goals.

✔ **Develop an evaluation and monitoring plan**

Clearly determine before you begin your implementation, how you will go about evaluating your program and monitoring its performance. Considering what you should monitor, how frequently and by what methods, are critical questions to answer. Evaluation and monitoring should be shared and agreed with your network partners.

Lessons from the field….

- Monitor and evaluate all key elements of the program on a regular and ongoing basis.
- Include a range of topics in your plan, including service usage, patient and provider comfort level with particular technologies, devices and applications and cost savings analysis.
- Be sure to monitor and track ancillary or related services benefiting from your telehealth program activities, e.g. lab and blood tests performed at local clinics, staff and nursing employment etc.

✔ **Best Practice: Develop a Quality Improvement Processs**

A clearly stated quality improvement process is important to any telehealth program. It will assist you in identifying improvements, reacting to changes in circumstances, and assessing unexpected performance.

Lessons from the field….

- Document improvement structure and clarify all improvement activities in your QI process.
- Create a written document.
- Find equivalent champions at all participating network sites.
- Develop and share your QI process before implementing the program.

Implement the Telehealth Program

✔ **Best Practice: Apply known principles of successful telehealth room design. Create a convenient and effective care environment reminiscent of a traditional care environment.**

The designated telehealth room should be user friendly, well equipped with reliable and appropriate technology, be comfortable for patients and apply basic principles of room design for videoconferencing applications.

Lessons from the field….

- Follow basic and standard rules for the design of your telehealth room. When designing your telehealth room space pay close attention to location, size, equipment, furniture placement, lighting acoustics and wall color.

- Plan carefully and discuss your design ideas with program colleagues and IT personnel.
- Remember to budget for necessary design/remodeling.
- Make sure that any licensing requirements are known and implemented.

✔ Best Practice: Get the people right

Any program stands and falls by the people implementing it. In the case of telehealth, appointing and or hiring the right staff at both the patient and the provider sites and clearly defining their roles and responsibilities, is crucial. Whenever possible, dedicated staff should be hired, who fully understand the program's outreach goals and ambitions. The provision of effective ongoing training and personnel development is immeasurably important. Realize that further telehealth champions can be grown from your staff to lead further growth and development. Actively nurture them.

Lessons from the field…..

- Identify a coordinator to oversee all daily operational activities of the program scheduling, billing, technical operations etc. Ideally, this individual should be employed full-time on your program.
- Make sure all staff are technically savvy, knowledgeable about telehealth systems and applications, and are flexible and open to new clinical methods and approaches.
- Create an environment in which staff at both sites can work well together to create a seamless, comfortable, and reassuring clinical atmosphere for the patients.
- Share existent resources, hire additional dedicated personnel, or find staff through outsourcing activities for your program.
- Develop and implement a formal, comprehensive and standardized training regimen for all staff. Training must be ongoing and designed to increase in scope and scale as your telehealth program expands.
- Nurture further telehealth 'champions', from all levels of your staff.

✔ Best Practice: Provide easy to use administrative tools

It makes good sense to simplify tools and processes for scheduling, billing, program measurement and documentation.

Lessons from the field…..

- Keep administrative systems and methods simple! Medical administration is often complex enough without the added challenge of operating over distance and in unfamiliar administrative environments.
- Ensure administrative staff is well trained and conversant in telehealth methods and practices.
- Determine and communicate your measures of success.
- Carefully document all administrative processes and protocols.

✔ **Best Practice: Communicate regularly with your remote partners**

The clinicians, nursing staff, presenter, schedulers and other staff at the site remote from you (whether you are a provider or a patient site) are the other half of your program. Ensure that both ends of the telehealth link are satisfied with the program's management, administration, billing systems, IT support, problem resolution, coordination, and quality improvement.

Lessons from the field.....

- Consider bringing participating site personnel together quarterly or annually to discuss the program, air grievances and discuss and implement any changes necessary. This will enhance relationships and build support.
- Keep your communication channels open.
- Learn and move the program forward together.

Monitor and Improve Program

✔ **Best Practice: Implement your Quality Improvement Process**

After assessing the initial performance of your program, taking into account service utilization, provider and patient satisfaction and other key factors, you should begin to implement the QI process you developed during the planning process.

Lessons from the field.....
- Evaluate the strengths and weaknesses of your program on a regular basis.
- Implement new ideas, adjustments and solutions in an organized fashion.
- Ensuring constant quality improvement must be a part of regular operations.

✔ **Best Practice: Report regularly**

Regularly monitoring your program's performance to identify trends and areas for improvement will allow the program to continuously improve and will provide the data necessary to determine if your program is achieving its objectives and to measure the program's impact in your organization and the community.

Lessons from the field....

- General service utilization reports and quality of service measurements are of primary importance.
- Evaluate your telehealth systems and applications in a clinically appropriate and user friendly manner.
- Undertake ongoing analysis of financial performance. This will form the basis of your business strategy as you move towards self sustainability. Financial analysis should include evaluation of cost and benefits, coding issues, reimbursement, account receivables and network utilization.

✔ **Best Practice: Present your outcomes**

In the ever expanding and increasingly mainstream field of telehealth, there is tremendous interest from around the country in program experiences and lessons learned. There are numerous opportunities to publish or present your findings and share these experiences with new and long established developers of telehealth programs and the wider community. Share what you have learned!

Lessons from the field.....

- Present your outcomes and program developments in a public forum (published or by meeting presentation) at least once per year.
- Involve members of your telehealth team in these positive communication activities. This will help secure buy-in from your staff, and increase passion for the program.
- Join forums for networking purposes, and the sharing of experiences and lessons learned.
- Share existent resources, hire additional dedicated personnel, or find staff through outsourcing activities for your program.
- Share outcomes and successes with non telehealth stakeholders and interested parties, the local communities in which you work, etc.

And last but not least......

Celebrate Your Successes!

tab 1 goes before page 1.1

Reimbursement

Telemedicine Reimbursement Guide

This document is intended as a guide to assist telehealth providers in obtaining information on reimbursement. This document does not constitute legal advice. Many factors affect the appropriateness of submitting a particular claim for reimbursement. The information should be used in consultation with your billing specialist and other advisers in initiating telehealth services billing. Reimbursement information can become outdated quickly. We recommend review of this material on a regular basis to assure the information is up to date. CTRC does not guarantee payment for any service.

The California Telehealth Resource Center is a leading source of expertise and comprehensive knowledge on the development and operation of telemedicine and telehealth programs. CTRC has received national recognition as one of fourteen federally designated Telehealth Resource Centers in the country.

Table of Contents

INTRODUCTION

What Is Telemedicine?

Telemedicine generally refers to the provision of clinical services from a distance. The Institute of Medicine of the National Academy of Science defines telemedicine as "the use of electronic information and communication technologies to provide and support health care when distance separates the participants". Telemedicine is a component of telehealth.

What Is Telehealth?

Telehealth is a collection of means or methods for enhancing health care, public health, and health education delivery and support using telecommunications technologies.

As state and federal policymakers, private payers, practitioners, and consumers realize telehealth' s potential benefits, there is a growing need to create a consistent framework for understanding what is meant by "telehealth," and how the term is accurately applied.

First and foremost, telehealth is a collection of means or methods, not a specific clinical service, to enhance care delivery and education. Ideally, there should not be any regulatory distinction between a service delivered via telehealth and a service delivered in person. Both should be held to the same quality and practice standards. The "tele-" descriptor should ultimately fade from use as these technologies seamlessly integrate into health care delivery systems.

While "telemedicine" has been more commonly used in the past, "telehealth" is a more universal term for the current broad array of applications in the field. Its use crosses most health service disciplines, including dentistry, counseling, physical therapy, and home health, and many other domains. Further, telehealth practice has expanded beyond traditional diagnostic and monitoring activities to include consumer and professional education.

While the State of California now uses the term "telehealth", some providers and payer organizations still use the term "telemedicine" when referring to the provision of clinical care over a distance.

Note that while a connection exists between health information technology (HIT), health information exchange (HIE), and telehealth, neither HIE nor HIT are considered to be telehealth.

How Does Telehealth Work?

Today, telehealth encompasses four distinct domains of applications. Note, however, that each state Medicaid program and private insurer varies in its use and reimbursement of these applications. These are commonly known as:

- **Live Videoconferencing** (Synchronous): Live, two-way interaction between a person and a provider using audiovisual telecommunications technology.

- **Store-and-Forward** (Asynchronous): Transmission of recorded health history through an electronic communications system to a practitioner, usually a specialist, who uses the information to evaluate the case or render a service outside of a real-time or live interaction.

- **Remote Patient Monitoring** (RPM): Personal health and medical data collection from an individual in one location via electronic communication technologies, which is transmitted to a provider in a different location for use in care and related support.

- **Mobile Health** (mHealth): Health care and public health practice and education supported by mobile communication devices such as cell phones, tablet computers, and PDAs. Applications can range from targeted text messages that promote healthy behavior to wide-scale alerts about disease outbreaks, to name a few examples.

Is Telemedicine A Billable Service?

In many cases telemedicine services are covered benefits and are billable by government programs and private payers. This Handbook provides information on major telemedicine reimbursement programs in California. As the field is rapidly expanding, it should be noted that more and more public, private and commercial payers may begin to cover telemedicine. It is important that you check with your major payers on a regular basis to see if additional services have been added for reimbursement.   CTRC can provide updates on many of the major payers but may not be aware of all payer policies.

Reimbursement Information By Program

The following pages provide details on reimbursement for many of the major payers within the state of California.

It should be noted that telemedicine is a rapidly expanding field and changes in telehealth covered services and reimbursement are expected to occur during the next few years. It will be necessary for programs to review new reimbursement provisions on a regular basis. CTRC publishes changes to reimbursement on our website and distributes them to those on the CTRC email list.

Medicare

Reimbursement for Medicare telehealth has five criteria for payment of telehealth services:

1. **The patient was seen from an "originating site" as defined by CMS**. An originating site is the location of an eligible Medicare beneficiary at the time the service being furnished via a telecommunications system occurs. Originating sites authorized by law are:

   a. Offices of a Physician or Practitioner
   b. Hospitals
   c. Critical Access Hospitals
   d. Community Mental Health Centers
   e. Skilled Nursing Facilities
   f. Rural Health Clinics
   g. Federally Qualified Health Centers
   h. Hospital-Based or Critical Access Hospital (CAH)-Based Renal Dialysis Centers (including satellites)

2. **The originating site is located in any of the following geographic areas**:

   a. Rural Health Professional Shortage Areas (HPSAs),
   b. Counties located outside Metropolitan Statistical Areas (MSA), and
   c. Effective January 1, 2014, HSPAs located in rural census tracts of metropolitan statistical areas.

   Determining HPSA locations
   As of January 2014, CMS is finalizing the regulatory definition of "rural HPSA" for purposes of determining eligibility for Medicare telehealth originating sites to include HPSAs located in rural census tracts, consistent with ORHP's definition of "rural." HRSA has developed a tool that will help providers determine geographic eligibility for Medicare telehealth services. This tool, the Medicare Telehealth Payment Eligibility Analyzer, is available at http://datawarehouse.hrsa.gov/telehealthAdvisor/telehealthEligibility.aspx.

   For more information, please refer to the CMS Medicare Learning Network MLN Matters bulletin number MM8553 Revised, release Date December 30, 2013 at http://www.cms.gov/Outreach-and-Education/Medicare-Learning-Network-MLN/MLNMattersArticles/Downloads/MM8553.pdf

3. **The encounter was performed at the "distant site" as defined by CMS as the site where the health care provider is located. Eligible distant site practitioners are as follows:**

   a. Physicians
   b. Physician assistants
   c. Nurse practitioners
   d. Clinical nurse specialists
   e. Registered dietitians or nutrition professionals
   f. Nurse midwives
   g. Clinical psychologists*
   h. Clinical social workers*
   *CPs and CSWs cannot bill for psychiatric diagnostic interview examinations with medical services or medical evaluation and management services under Medicare. These practitioners may not bill or receive payment for Current Procedural Terminology (CPT) codes 90792, 90833, 90836, and 90838

4. **The patient was present and the encounter involved interactive audio and video telecommunications** that provides real-time communication between the practitioner and the Medicare beneficiary.

> NOTE: Store and forward telehealth services are only permitted in federal demonstration programs currently conducted in Alaska and Hawaii. California Medicare sites are not eligible for reimbursement for store and forward telehealth services.

5. **Type of Service provided** as specified in the Medicare Eligible Services table on the following page.

Billing and Reimbursement

Originating Site Fee

The originating site is eligible to receive a facility fee for providing services via telehealth. For 2014, the payment amount is "80% of the lesser of the actual charge or $24.63". The site receives a flat reimbursement rate, outside of any other reimbursement arrangements such as inpatient DRGs or RHC per-visit payments.

- Originating sites are to use HCPCS code Q3014 when submitting facility fee claims.
- The type of service is "9, or other items and services".

Medicare provides specific instructions for different originating facility types:

- For FQHC and RHCs: the originating site facility fee for Medicare telehealth services is not an FQHC or RHC service. When an FQHC or RHC serves as the originating site, the originating site facility fee must be paid separately from the center or clinic all-inclusive rate.
- For Critical Access Hospitals, the payment amount is 80 percent of the originating site facility fee.
- In addition to FQHCs, RHCs and CAHs, Chapter 12 of the Medicare Claims processing Manual, Section 190.6 describes payment methodologies for hospital outpatient departments, hospital inpatient, Physicians' and practitioners' offices, renal dialysis centers, skilled nursing facilities and community mental health centers.

Distant Site Clinical Services Fees

Reimbursement to the health professional delivering the clinical service is the same as the current fee schedule amount for the service provided without telemedicine.

Distant site claims for reimbursement should be submitted with the appropriate CPT code or HCPCS code for the professional services provided and one of the following Telemedicine modifiers:

- GT for interactive audio and video telecommunications system or
- GQ for Store and forward applications (for services provided in Alaska and Hawaii only)

The following table provides a listing of all eligible services with CPT and HCPCS codes effective January 2014. Eligible services are usually updated once a year effective in January.

Table 1
Medicare Eligible Services
Effective January 1, 2014

Service	CPT or HCPCS Code
Telehealth consultations, emergency department or initial inpatient	HCPCS codes G0425 – G0427
Follow-up inpatient telehealth consultations furnished to beneficiaries in hospitals or SNFs	HCPCS codes G0406 – G0408
Office or other outpatient visits	CPT codes 99201 – 99215
Subsequent hospital care services, with the limitation of 1 telehealth visit every 3 days	CPT codes 99231 – 99233
Subsequent nursing facility care services, with the limitation of 1 telehealth visit every 30 days	CPT codes 99307 – 99310
Individual and group kidney disease education services	HCPCS codes G0420 and G0421
Individual and group diabetes self-management training services, with a minimum of 1 hour of in-person instruction to be furnished in the initial year training period to ensure effective injection training	HCPCS codes G0108 and G0109
Individual and group health and behavior assessment and intervention	CPT codes 96150 – 96154
Individual psychotherapy	CPT codes 90832 – 90834 and 90836 – 90838
Psychiatric diagnostic interview examination	CPT codes 90791 and 90792
End-Stage Renal Disease (ESRD)-related services included in the monthly capitation payment	CPT codes 90951, 90952, 90954, 90955, 90957, 90958, 90960, and 90961
Individual and group medical nutrition therapy	HCPCS code G0270 and CPT codes 97802 – 97804
Neurobehavioral status examination	CPT code 96116
Smoking cessation services	HCPCS codes G0436 and G0437 and CPT codes 99406 and 99407
Transitional Care Management Services	CPT Code 99495-99496
Alcohol and/or substance (other than tobacco) abuse structured assessment and intervention services	HCPCS codes G0396 and G0397
Annual alcohol misuse screening, 15 minutes	HCPCS code G0442
Brief face-to-face behavioral counseling for alcohol misuse, 15 minutes	HCPCS code G0443
Annual depression screening, 15 minutes	HCPCS code G0444
High-intensity behavioral counseling to prevent sexually transmitted infection; face-to-face, individual, includes: education, skills training and guidance on how to change sexual behavior; performed semi-annually, 30 minutes	HCPCS code G0445
Annual, face-to-face intensive behavioral therapy for cardiovascular disease, individual, 15 minutes	HCPCS code G0446
Face-to-face behavioral counseling for obesity, 15 minutes	HCPCS code G0447
Transitional care management services with moderate medical decision complexity (face-to-face visit within 14 days of discharge) (effective 1/1/14)	CPT code 99495
Transitional care management services with high medical decision complexity (face-to-face visit within 7 days of discharge) (effective 1/1/14)	CPT code 99496

*Clinical psychologists and clinical social workers are not allowed to bill for CPT codes 90792, 90833, 90836, and 90838

*ESRD related services at least on hands on visit (not telehealth) must be furnished each month to examine the vascular access site by a physician, NP, PA or CNS.

Coverage for Home Telehealth

In 2000, Medicare implemented home health services covered for 60 days under a fixed payment. Agencies providing services to Medicare beneficiaries are allowed to use telehealth services in providing care; however, no additional or separate payment beyond the fixed payment is allowable.

Additional Resources

CMS Telehealth Services Fact Sheet Series
http://www.cms.gov/Outreach-and-Education/Medicare-Learning-Network-MLN/MLNProducts/downloads/RuralHlthClinfctsht.pdf

CMS MLN Matters number: MM8553 Revised, Jan 1, 2014
http://www.cms.gov/Outreach-and-Education/Medicare-Learning-Network-MLN/MLNMattersArticles/Downloads/MM8553.pdf

Medicare Benefit Policy Manual, Chapter 15, Section 270 Pub
http://www.cms.gov/Regulations-and-Guidance/Guidance/Manuals/downloads/bp102c15.pdf

Medicare Claims Processing Manual, Chapter 12, Section 190
https://www.tiftregional.com/documents/CME/Billing%20Manual.pdf

UnitedHealthcare Medicare Plans

UnitedHealthcare offers telemedicine and telehealth services to UnitedHealthcare Medicare patients. Telemedicine and telehealth services are covered for patients under this plan when Medicare coverage criteria are met.

Originating site requirements and allowable practitioners listed in the Medicare section of this manual apply to all telemedicine visits. UnitedHealthcare also uses the same billing codes as Medicare for services.

See Medicare section of this manual for detail information on program restrictions.

Medi-Cal Fee For Service

The following information has been obtained from the Medi-Cal guideline for telehealth reimbursement, dated December 2013.

The Telemedicine Act of 1996, California's enabling legislation, refers to telemedicine and does not use the term Telehealth. AB415 was passed in 2013 and replaced the outdated legal terminology of "telemedicine" with "telehealth". This guide is true to the legislation and regulations and uses the terminology telehealth. A complete listing of California Telehealth Legislation is found on the CTRC website with links to the legislative language.

As written in the Medi-Cal bulletin which was released September 2013, Medi-Cal defines the originating site as follows: An "originating site" is where the patient is located at the time health care services are provided via a telecommunications system, or where the asynchronous store and forward service originates.

Medi-Cal defines the distant site as where the health care provider is located while providing services via a telecommunication system.

Live Interactive: Covered service

• A telemedicine service must use interactive audio, video or data communication to qualify for reimbursement. The E&M service must be in real-time or near real-time (delay in seconds or minutes) to qualify as an interactive two-way transfer of medical data and information between the patient and health care provider. Medi-Cal does not reimburse for telephone calls, electronic mail messages or facsimile transmissions.

• The audio-video telemedicine system used must, at a minimum, have the capability of meeting the procedural definition of the code provided through telemedicine. The telecommunication equipment must be of a quality to adequately complete all necessary components to document the level of service for the CPT-4 code billed. If a peripheral diagnostic scope is required to assess the patient, it must provide adequate resolution or audio quality for decision-making.

• The health care provider who has the ultimate responsibility for the care of the patient must be licensed in the State of California and enrolled as a Medi-Cal provider. The provider performing services via telemedicine whether from California or out of state, must be licensed in California and enrolled as a Medi-Cal provider.

• The health care provider at the originating site must first obtain oral consent from the patient prior to providing service via telehealth and shall document oral consent in the patient's medical record, including the following:

    a) A description of the risks, benefits and consequences of telemedicine
    b) The patient retains the right to withdraw at any time
    c) All existing confidentiality protections apply
    d) The patient has access to all transmitted medical information
    e) No dissemination of any patient images or information to other entities without further written consent

• All medical information transmitted during the delivery of health care via telemedicine must become part of the patient's medical record maintained by the licensed health care provider.

Store and forward: Limited to ophthalmology and dermatology

Store and forward is defined as an asynchronous transmission of medical information to be reviewed at a later time by a physician at a distant site, where the physician at the distant site reviews the medical information without the patient being present in real-time.

As of 2013, Store and forward technology is reimbursable when used for the following dermatology and ophthalmology services.

• The images must be specific to the patient's condition and adequate for meeting the procedural definition of the national code that is billed.

• Teleophthalmology and teledermatology by store and forward must be rendered by a physician who has completed training in an Accreditation Council for Graduate Medical Education (ACGME)-approved residency in ophthalmology or dermatology respectively.

• A patient receiving teleophthalmology or teledermatology by store and forward shall be notified of the right to receive interactive communication with the distant specialist physician consulted through store and forward, upon request. If requested, communication with the distant specialist physician may occur either at the time of consultation or within 30 days of the patient's notification of the results of the consultation.

• The health care provider shall comply with the informed consent provision of Section 2290.5 of the Business and Professions Code when a patient receives teleophthalmology and teledermatology by store and forward.

Exclusions

A telephone conversation, email, fax are not considered live interactive or Store and forward telehealth visits and are specifically excluded from the definition of telemedicine.

Conditions Required for Telehealth Use

Verbal and Written Patient Consent

As of 2013, the patient's written consent to telehealth services is no longer required. Prior to a patient receiving services via telehealth, the health care provider at the originating site shall inform the patient, where appropriate, of the option to utilize a telehealth modality and then obtain oral consent from the patient.

Eligible Originating Sites (Patient Site)

For purposes of reimbursement for covered treatment or services provided through telehealth, the type of setting where services are provided for the patient or by the health care provider is not limited (W&I Code Section 14132.72(e).

Eligible Distant Site Practitioners (Provider Site)

No restrictions on types or locations; however, requires licensure in State of California and adherence to licensure scope of practice.

In addition, the distant (provider) site is only a billable visit if it meets all the requirements of the Medi-Cal program.

Billing and Reimbursement

Modifiers

Only services rendered from the distant site are billed with modifiers. Claims for reimbursement should be submitted with the appropriate CPT code or HCPCS code for the professional services provided and one of the following Telemedicine modifiers:

- GT for interactive audio and video telecommunications system (live interactive) or
- GQ for Store and forward applications.

Originating Site Fee

The originating site is eligible to receive a facility fee for providing services via telehealth. For 2014, the site facility fee is $22.94. Sites are instructed to use HCPCS code Q3014 when submitting facility fee claims. **Sites fee are limited to once per day, same recipient, same provider.**

Transmission Fee: Live Interactive

Medi-Cal allows payment of transmission costs associated with live interactive services. This fee can be paid to originating and distant sites. It is limited to a maximum of 90 minutes per day, same recipient, and same provider. One unit of service is equal to one minute of transmission cost.

Sites are instructed to use code T1014: telehealth transmission, per minute. For 2014 the transmission fee is $0.24 per minute.

Clinical Fees: Live Interactive

Reimbursement to the health professional delivering the clinical service is the same as the current fee schedule amount for the service provided without telemedicine.

Table 2 provides a listing of all eligible live interactive services with CPT and HCPCS codes effective 2013.

Table 2
Medi-Cal Eligible Telemedicine Services
Live Interactive

Service	CPT and HCPCS Codes
Interactive complexity	90785
Psychiatric Diagnosis, Interview, Examination	90791 - 90792
Psychotherapy, outpatient and inpatient, with and without evaluation and management component	90832, 90837, 90839, 90840
Pharmacologic management, including prescription and review of medication, when performed with psychotherapy services	90863
Office or Other Outpatient Visit – New or established patient	99201 – 99215
Initial Hospital Care or Subsequent Hospital Care – new or established patient	99221 – 99233
Consultations – office or other outpatient, initial or follow-up inpatient, and confirmatory	99241 – 99275

Clinical Fees: Store and forward

Store and forward services are limited to dermatology and ophthalmology.

Table 4 provides a listing of all eligible store and forward services with CPT and HCPCS codes effective 2013.

Table 3
Medi-Cal Eligible Telemedicine Services
Store and forward

Service	CPT Codes
Office or other outpatient visit	99211 – 99214
Subsequent hospital care	99231 – 99233
Office consultation, new or established patient	99241 – 99243
Initial inpatient consultation	99251 - 99253

Additional Resources

Medi-Cal Telemedicine Guidelines
http://files.medi-cal.ca.gov/pubsdoco/DocFrame.asp?wURL=publications%2Fmasters-mtp%2Fpart2%2Fmednetele_m01o03.doc

Medi-Cal Professional Services: Teleopthalmology by Optometrists
http://files.medi-cal.ca.gov/pubsdoco/DocFrame.asp?wURL=publications%2Fmasters-mtp%2Fpart2%2Fproserv_v00.doc

California Children's Services (CCS) and Genetically Handicapped Persons Program (GHPP)

CCS and GHPP programs follow Medi-Cal policies and procedures concerning coverage and reimbursement of telemedicine services. Provisions and requirements found under the Medi-Cal section apply to the provision of CCS telehealth services, and is outlined in CCS Numbered Letter No. 14-12-13 regarding " Telehealth Services for CCS and GHPP Programs". To access the document, go to http://www.dhcs.ca.gov/services/ccs/Pages/CCSNL.aspx

Anthem Blue Cross Telehealth Programs

Anthem Blue Cross has telehealth services available through a variety of programs administered and operated by Anthem Blue Cross. These programs are:

- California Healthy Families
- County Medical Services Plan (Inyo is a participating county)
- Medi-Cal Partnership
- Cal PERS
- Prudent Buyer PPO

This section outlines the Anthem Blue Cross Telehealth Program provisions and benefits.   Full documentation that includes billing instructions, sample billing forms and other program documents can be found in the Anthem Blue Cross: Telemedicine Program Provider Operations Manual.

Anthem defines originating sites as the location where the patient or patient's condition is presented by telemedicine.

- Office of a physician or practitioner
- Hospital
- Critical Access Hospital
- Rural Health Clinic
- Federally Qualified Health Center

Distant or patient sites are defined as:
A healthcare facility in which the patient is present and form which the patient, patient's history, medical case and particular referral questions are presented to a specialist by telemedicine.

Anthem Blue Cross Coverage of Telehealth

- Live Interactive
- Store and forward

Service benefits are consistent across all programs with a couple of exceptions which will be identified in the materials below.

Conditions Required for Telehealth Use

Verbal and Written Patient Consent
Presentation (patient) sites are responsible for discussing the use of telemedicine with patients to obtain informed consent. The site should receive a complete Authorization and Consent to Participate in Telemedicine Consultation Form from the patient side prior to the consultation. This form is located in the Anthem Blue Cross: Telemedicine Program Provider Operations Manual.

Documented Barrier to Care
There is no requirement to document a barrier to care when utilizing telemedicine with Anthem Blue Cross.

Store and forward Requirements
It is not necessary for the referring physician to be present during the consultation.

Exclusions

County Medical Services Program (CMSP): Telemedicine should not be offered to CMSP members who have not yet met their Share of Cost.

Eligible Member Populations

- CalPERS Basic Plan Members residing in rural zip codes
- Prudent Buyer PPO Members residing in rural zip codes
- County Medical Service Program (CMSP) with claims administered by Anthem Blue Cross Life
- Healthy Families Program coverage from Anthem Blue Cross
- Medi-Cal plans from Anthem Blue Cross Partnership Plan

Eligible Originating and Distant Sites

Anthem Blue Cross limits participation in its telemedicine program to members of the Blue Cross Open Access Network. All originating (patient) and distant (provider) sites must be a member of this network.

Billing and Reimbursement

Anthem Blue Cross of California uses standardized billing procedures when submitting claims.

Modifiers

Live Interactive andStore and forward:
Processing telemedicine claims for Anthem Blue Cross members is the same as processing standard office visit claims except a telemedicine modifier must be added to the CPT code.

- GT for Live Interactive telemedicine encounters
- GQ for Store and forward telemedicine encounters

Originating Site Fee

Billing entities serving eligible Prudent Buyer PPO and CalPERS Basic Plan members will not be reimbursed for site fees after January 1, 2012. Billing entities serving eligible AIM, Healthy Families, Medi-Cal, Path2Health and County Medical Services Program members may bill for presenting site fees. Please see table 4.

Table 4
Anthem Blue Cross Eligible Telemedicine Services
Site Fee Billing Codes

Live Interactive	Presentation Site	Specialty Location
CMS-1500	Q3014	G9002
CMS-1450	Q3014	G9002
	Rev Code 780	
	Bill Type 130	
Store and forward		
CMS-1500	Q3014	Not Covered
CMS-1450	Q3014	
	Rev Code 780	
	Bill Type 130	

Transmission Fees

- Anthem Blue Cross will pay claims for Blue Cross members' telecommunication charges for Live interactive consultations only. This is limited to ISDN telecommunications only.
- A Live interactive consult requires using high-speed ISDN telecommunications lines, which are more expensive than a regular, long-distance call.
- Only the site that initiates the Live Interactive Telemedicine Encounter may bill. Table 5 below shows the appropriate codes
- Each minute (or part thereof) is equal to one (1) unit of occurrence.
- A maximum of 90 minutes of occurrence may be billed per Live Interactive Telemedicine encounter (1.5 hours billable maximum).

Store and forward is accomplished via secured email communication. As such, there are no telecommunication charges applicable. Therefore, there is no telecommunication reimbursement offered by Anthem Blue Cross.

Table 5
Anthem Blue Cross Eligible Telecommunications Codes

Program	Code
County Medical Services Program, Healthy Families, AIM, Path2Health Medi-Cal	T1014-GT

Clinical Fees: Live Interactive

Reimbursement to the health professional delivering the clinical service is the same as the current fee schedule amount for the service provided without telemedicine.

Table 6 provides a listing of all eligible live interactive services with CPT codes, effective 2012.

Table 6
Anthem Blue Cross Eligible Telemedicine Services
Live Interactive

Service	CPT Codes
Primary Care Providers	
New patient office visit	99201-99205
Established patient office visit	99211-99215
Specialist	
Consultations	99241-99245
Follow-up visits	99211-99215
Psychiatry	
Psychiatric diagnosis	90801-90809
Individual psychotherapy	90810-90815
Individual psychotherapy (inpt)	90816-90819
Individual psychotherapy (inpt)	90821-90829
Medical psychoanalysis	90853
Pharmacological psychiatric mgt	90862
Consultations	99241-99245
Established member office visits	99211-99215

Clinical Fees: Store and forward

Anthem Blue Cross pays for claims for the review of patient files for Store and forward under codes:

- 99241-99245 Consultants

The preparation of the Store and forward consult should be billed as part of the primary care provider's office visit. Use the appropriate CPT code based on total amount of time necessary to complete the office visit and the Store and forward consultation preparation.

Additional Resources

Anthem Blue Cross: Telemedicine Program Provider Operations Manual
http://w2.anthem.com/bcc_state/tm/info/tm-pom.pdf

Anthem Blue Cross Telemedicine Website
http://w2.anthem.com/bcc_state/tm/info/index.asp

County Medical Services Program: Participating Counties Map
www.cmspcounties.org/about/participating_counties.html

Federally Qualified Health Centers and Rural Health Clinics

Federally Qualified Health Centers (FQHC) And Rural Health Clinics (RHC) play a critical role in the provision of primary care to our rural and underserved populations. Many FQHC/RHS's are patient and / or provider sites for the delivery of telemedicine services. Telemedicine can improve patient access to specialty care and reduce travel hardships when needed services are far away. These valuable rural healthcare resources have played an important role in the development of telemedicine in California.

One of the questions most commonly asked of the California Telehealth Resource Center (CTRC) and the California Department of Health Care Services (DHCS) is about allowable billing for telemedicine by an FQHC/RHC. Many of the clinics have questions about "four walls" policies and how they are applied when telemedicine services are provided.

CTRC has worked with many rural clinic administrators and with DHCS to clearly identify the different reimbursement scenarios and the payment rules that surround each scenario. This document has been developed with input from DHCS staff. For MEDICARE patients, RHCs and FQHCs can be originating sites. They cannot provide services as a distant site.

This portion of the guide is designed to assist in maximizing allowable billing for telemedicine and to assist in determining the type of provider relationship that will best meet programmatic needs. It is written for FQHC's operating in California under the Prospective Payment System (PPS). Please note that rules for other states may differ.

There are a number of factors that determine how to bill for telemedicine services.

Two principles form the foundation:

- The place determined to be the provider site is the billing site and
- A provider can, under certain circumstances, enter the four walls virtually using telemedicine

The factors that determine the billing scenario are:

- Where the patient is physically located
- Characteristics of the specialty provider site
- Payment arrangement with the specialty provider
- If there is medical reason for a provider to be present with the patient.

The application of these factors is described in the following six scenarios. The guide also provides an interactive tool for determining billing scenarios along with frequently asked questions.

FQHC/RHC Patient Site to Medi-Cal Specialist Site

Scenario 1

Patient is physically present at the FQHC or RHC

Specialist is a Medi-Cal provider not physically present at the FQHC or RHC

FQHC or RHC and Medi-Cal specialist have an agreement to provide services, but the FQHC or RHC does not compensate the specialist

No medical reason for a provider to be present with the patient at the FQHC or RHC Site

Patient virtually enters specialist site via telemedicine

Outcome

Medi-Cal specialist is the provider site, and can bill fee-for-service rate

FQHC or RHC did not provide a medical service and cannot bill PPS for a face-to-face

FQHC or RHC

Medi-Cal

Telemedicine

Patient

Specialist
Provider Site

Bills Medi-Cal

FQHC and RHC sites are not eligible to bill an originating site fee or transmission charges. The cost of these services should be accounted for in the PPS rate calculation.

FQHC/RHC Patient Site With Provider Present to Medi-Cal Specialist Site

Scenario 1a

Patient is physically present at the FQHC or RHC

Specialist is a Medi-Cal provider not physically present at the FQHC or RHC

FQHC or RHC and Medi-Cal specialist have an agreement to provide services, but the FQHC or RHC does not compensate the specialist

Medical reason for a provider to be present with the patient at the FQHC or RHC Site

Patient virtually enters specialist site via telemedicine

Outcome

Medi-Cal specialist is the provider site and can bill fee-for-service rate

FQHC or RHC provided a medically necessary service, thus also a provider site, and can bill PPS for a face-to-face visit

FQHC or RHC

Medi-Cal

Telemedicine

Patient

FQHC/RHC Provider

Medical Reason

Specialist
Provider Site

Bills Medi-Cal

Specialist

Provider Site

Bills PPS*

Telemedicine services do not change or modify other FQHC or RHC billing provisions, including any current limits on patient visit frequency.

FQHC/RHC Patient Site to FQHC/RHC Specialist Site

Scenario 2

Patient is physically present at the FQHC/RHC 1

Specialist is physically at and receives compensation from FQHC/RHC 2

FQHC/RHC 1 and FQHC/RHC 2 have an agreement to provide services, but FQHC/RHC 1 cannot compensate FQHC/RHC 2

No medical reason for a provider to be present with the patient at the FQHC/RHC 1 Site

Patient virtually enters specialist site via telemedicine

Outcome

FQHC/RHC 2 is the provider site and can bill PPS for a face-to-face visit

FQHC/RHC 1 did not provide a medical service and cannot bill PPS for a face-to-face visit

FQHC/RHC 1

FQHC/RHC 1

Telemedicine

Patient

Specialist

Provider Site

Bills PPS

FQHC/RHC Patient Site With Provider Present to FQHC/RHC Specialist Site

Scenario 2a

Patient is physically present at the FQHC/RHC 1

Specialist is physically present at and receives compensation from FQHC/RHC 2

FQHC/RHC 1 and FQHC/RHC 2 have an agreement to provide services, but FQHC/RHC1 cannot compensate FQHC/RHC 2
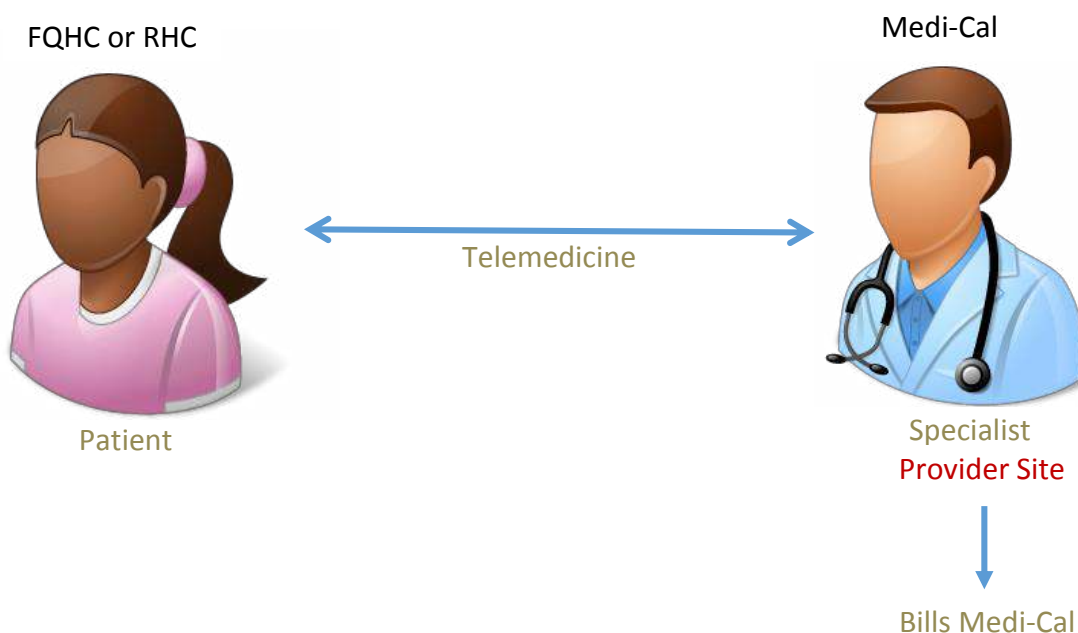
Medical reason for a provider to be present with the patient at the FQHC/RHC 1 Site

Patient virtually enters specialist site via telemedicine

Outcome

FQHC/RHC 2 specialist is the provider site and can bill PPS for a face-to-face visit

FQHC/RHC 1 provided a medically necessary service, thus also a provider site, and can also bill PPS for a face-to-face visit

FQHC/RHC 1

Medi-Cal

Telemedicine

Patient

Specialist
Provider Site

FQHC/RHC Provider

Medical Reason

Bills Medi-Cal

Specialist
Provider Site

Bills PPS*

Telemedicine services do not change or modify other FQHC or RHC billing provisions, including any current limits on patient visit frequency.

Medi-Cal (Fee-For-Service) Patient Site to FQHC/RHC Specialist Site

Scenario 3

Patient is physically present at a Medi-Cal (Fee-For-Service) Site

Specialist is physically at and receives compensation from FQHC/RHC

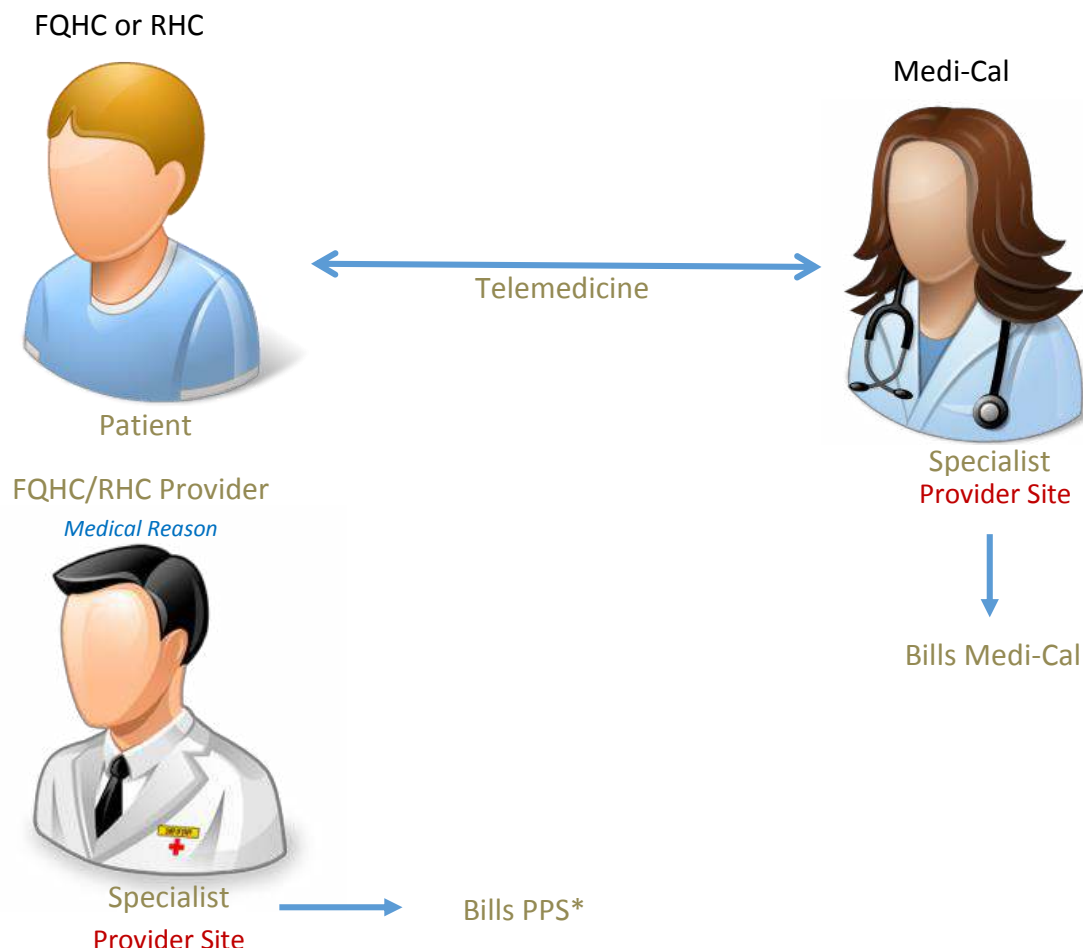Medi-Cal Site and FQHC/RHC have an agreement to provide services, but Medi-Cal does not compensate FQHC/RHC

No medical reason for a provider to be present with the patient at the Medi-Cal Site

Patient virtually enters FQHC site via telemedicine

Outcome

FQHC/RHC is the provider site and can bill PPS for a face-to-face visit

Medi-Cal Site did not provide a medical service and cannot bill for a face-to-face visit, but is eligible for site fee and transmission charges under Medi-Cal

Medi-Cal

FQHC/RHC

Telemedicine

Patient

Specialist

Provider Site

Bills site fee and transmission charges

Bills PPS

FQHC/RHC Patient Site to Other Specialist Site

Patient is physically present at FQHC/RHC Site

Specialist is not physically at the FQHC/RHC

FQHC/RHC and Specialist have an agreement to provide services, but FQHC/RHC compensate Specialist

The agreement should be in writing and clearly state: The time period during which the agreement is in effect; the specific services it covers; any special conditions under which the services are to be provided; and the terms and mechanisms for billing and payment. (See BPHC Policy Information notice 98-23)

Patient virtually enters FQHC site via telemedicine

Outcome

FQHC/RHC becomes the provider site and can bill PPS for a face-to-face visit

FQHC/RHC

Other

FQHC/RHC contracts with and compensates specialist

Telemedicine

Patient
Provider Site
Because of contract and 'virtual four walls'

Specialist

Bills PPS*

Because an FQHC/RHC's Specialist is accounted for in the PPS rate, and FQHC/RHC cannot contract to receive additional compensation from another FQHC/RHC or other patient site.

See Scenario1 and 2a for appropriate reimbursement models

Telemedicine services do not change or modify other FQHC/RHC billing provisions, including any current limits on patient visit frequency

FQHC/RHC Reimbursement Scenario Summary

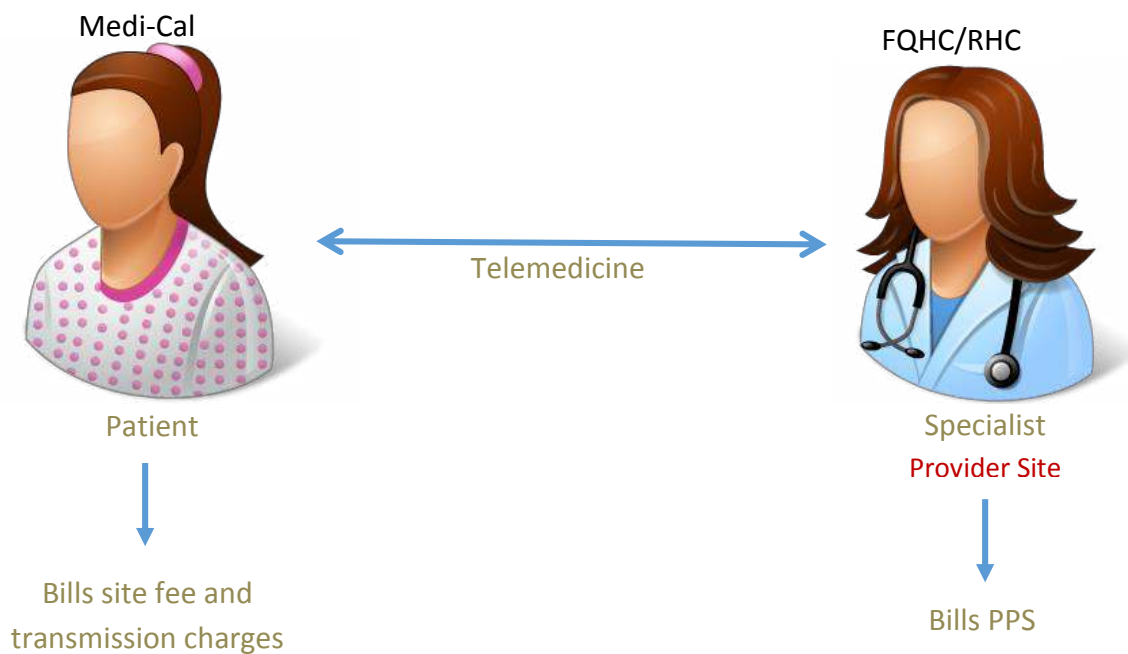| **Patient site** Where is the Patient physically located?		FQHC/RHC			Non FQHC/RHC Medi-Cal Provider Site
Specialty Site *Identify Specialist*	Other Specialty Provider Site	Medi-Cal Specialty Provider Site	FQHC Specialty Provider Site		FQHC Specialty Provider Site
Contract *Does the patient site pay the specialist provider site for service?*	Yes		No		No
Medical Reason *Is there a medical reason for a provider to be present a the patient site?*	Yes or No	Yes	No		Yes Or No
Billing *Which site, patient and/or provider, can bill for a service*	FQHC/RHC Patient Site Bills PPS for a Face-To-Face Visit	FQHC/RHC Patient Site Bills PPS Because of Medical Reason	FQHC Patient Site Cannot Bill		Medi-Cal Patient Site Eligible for Origination and Transmission Fees
	Specialty Provider Site Cannot Bill	Specialty Provider Site Bills	Specialty Provider Site Bills		FQHC/RHC Specialty Provider Site Bills PPS for a Face-To-Face Visit
Scenario	Scenario 4	Scenario 1A Scenario 2A	Scenario 1 Scenario 2		Scenario 3

FQHC/RHC Reimbursement Worksheet

This worksheet will assist you in determine which reimbursement scenario best fits your program model.

1. Where is the patient physically located:

☐ FQHC/RHC (Go to Question 2)
☐ Non-FQHC Medi-Cal Site (Go to Question 3)
☐ Other: Contact CTRC to discuss possible reimbursement models

2. If the patient is located at an FQHC/RHC is the specialist a

☐ Medi-Cal Specialty Provider: Go to Question 4
☐ FQHC/RHC Specialty Provider: Go to Question 5
☐ Other Specialty Provider: Go to Question 6

3. If the patient is located at a Non-FQHC Medi-Cal Site is the specialist a:

☐ FQHC/RHC Specialty Provider (go to Question 7)
☐ Other: Contact CTRC to discuss possible reimbursement models

4. Is there a contract between the FQHC/RHC and the Specialist to provide compensation for services?

☐ Yes: Because the specialist has 'virtually' entered the "Four Walls" of the FQHC/RHC, the FQHC/RHC becomes the provider site. The FQHC/RHC Patient Site Bills PPS for a face-to-face-visit, specialist site does not bill. See Scenario 4.
☐ No: Go to Question 8

5. If the Specialist is an FQHC/RHC Specialty Provider is there a contract between the FQHC/RHC Patient site and the FQHC Specialist to provide compensation for services?
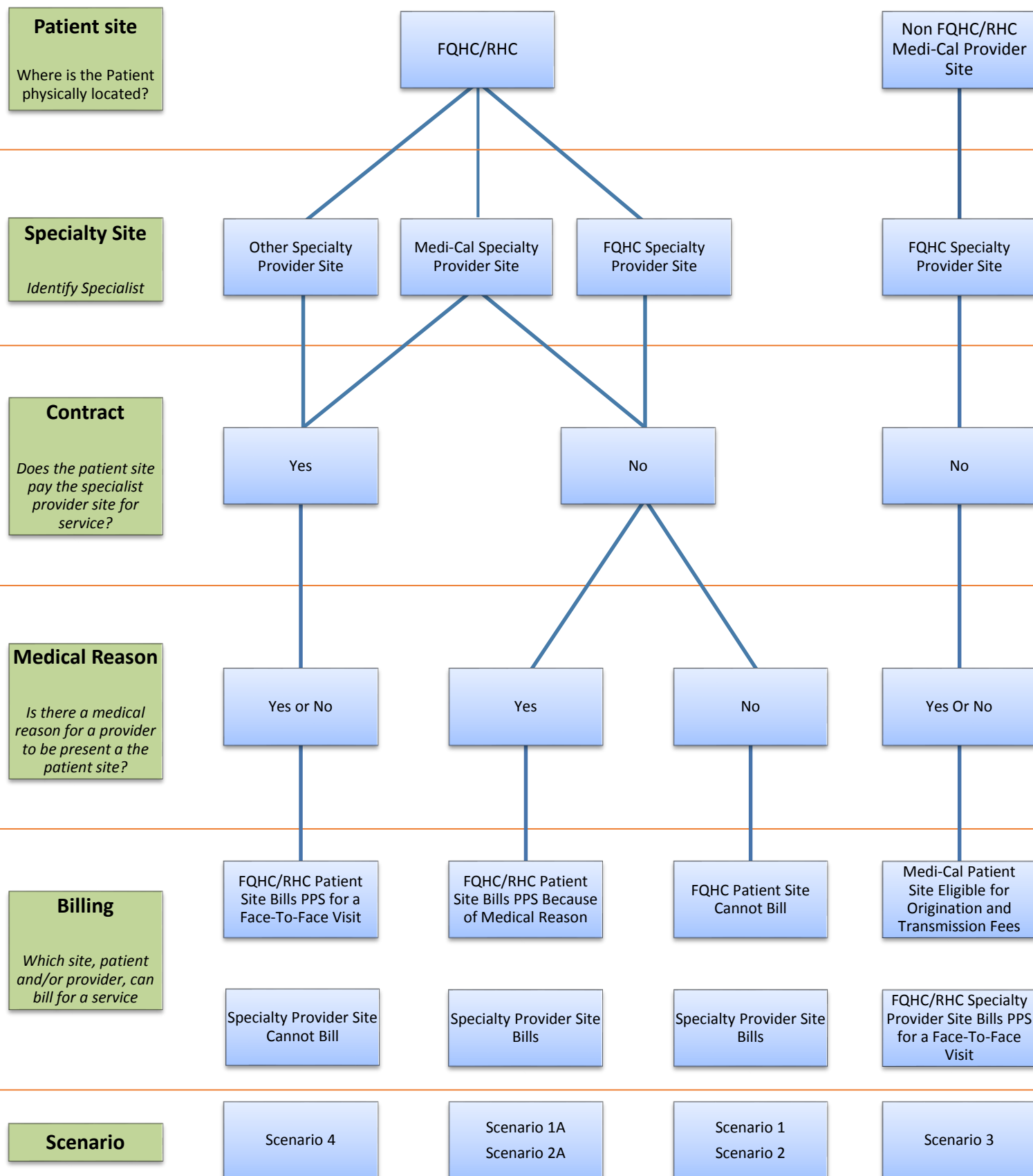
☐ Cannot be Yes: Because an FQHC/RHC's specialist's time is accounted for in the FQHC/RHC's PPS rate, an FQHC/RHC cannot contract to receive additional compensation from another FQHC/RHC or other patient site. See Scenarios 2 and 2a for appropriate reimbursement models.
☐ No: Go to Question 8

6. If the Specialist is an FQHC/RHC Specialty Provider is there a contract between the FQHC/RHC Patient site and the FQHC/RHC Specialist to provide compensation for services?

☐ Yes: Because the specialist has 'virtually' entered the "Four Walls" of the FQHC/RHC, the FQHC/RHC becomes the provider site. The FQHC/RHC Patient Site Bills PPS for a face-to-face-visit, specialist site does not bill. See Scenario 4.
☐ No: Contact CTRC to discuss possible reimbursement models

7. If the Specialist is an FQHC Specialty Provider is there a contract between the Medi-Cal site and the Specialist to provide compensation for services?

☐ Cannot be Yes: Because an FQHC/RHC's specialist's time is accounted for in the FQHC/RHC's PPS rate, an FQHC/RHC cannot contract to receive additional compensation from another FQHC or other patient site. See Scenarios 2 and 2a for appropriate reimbursement models.
☐ No: Medi-Cal patient sites are eligible to bill for origination and transmission fees. The FQHC/RHC specialty provider site bills PPS for a face to face visit. See Scenario 3.

8. Is there a medical reason for the provider to be present with the patient at the FQHC site?

☐ Yes: The FQHC/RHC patient site bills PPS because of the medical reason to have a provider present with the patient during the telemedicine visit. The specialist site also bills for a visit. See Scenario 1A and 2A.
☐ No: The FQHC/RHC did not provide a medical service and cannot bill. The specialist site is the provider site, and bills. See Scenario 1 and 2.

FQHC Specialty Care Frequently Asked Questions

Can an FQHC contract with a specialist to provide services?

FQHC's are allowed to contract with specialty providers to provide services to their patients. The 'live-interactive' component of telemedicine enables the FQHC to bill for a face-to-face encounter.

PIN 98-23 3–Contracting for Health Services Health centers may have contracts or other types of agreements to secure services for health center patients that it does not provide directly. The service delivery arrangement must contribute to the desired outcomes of availability, accessibility, quality, comprehensiveness, and coordination. Arrangements for the provision of services that the grantee organization provides through a subcontractor should be in writing and clearly state: the time period during which the agreement is in effect; the specific services it covers; any special conditions under which the services are to be provided; and the terms and mechanisms for billing and payment. Other areas that should be addressed in the written agreement include but are not limited to: credentialing of contracted service providers; the extent to which the contracted services and/or providers are subject to the health center's quality improvement and risk management guidelines and requirements; and any data reporting requirements.

Can an FQHC add a specialty care service to their practice?

If an FQHC wishes to provide a service via telemedicine that is not currently a part of their 'scope of project' they must contact their project officer for permission, or wait until their annual grant renewal to do so. HRSA PIN 2009-02 specifically addresses the topic of adding primary care services. In general, a health center must demonstrate how the new service will support the provision of the required primary care services provided by the health center. Although prior approval is still necessary, in general the addition of services listed as examples of 'additional health services', such as behavioral and mental health, will be considered appropriate for inclusion within the health center's federal scope of project. The request must not require any additional 330 funding.

Does FTCA coverage apply to contract employees?

FTCA coverage is an ongoing concern affecting the provision of telemedicine because there are various ways that telemedicine consults could potentially void this coverage. For this reason it is recommended that the health center has wrap-around coverage. PAL 2005-01 states that "for contract providers, the contract must be between the Health Center and the individual provider. All payments for services must be from the Health Center to individual contract provider. A contract between a deemed Health Center and a provider's corporation does not confer FTCA coverage on the provider."

Additionally, FTCA only applies to part-time contractors is 5) licensed or certified healthcare practitioner contractors (who are not corporations) providing part-time services in the fields of family practice, general internal medicine, general pediatrics, or obstetrics and gynecology.

Useful References

1. *State Telehealth Laws and Reimbursement Scan,* Center for Connected Health Policy 2013 http://telehealthpolicy.us/sites/telehealthpolicy.us/files/uploader/50%20State%20October%20Update%20Final.pdf

2. California Department of Health Services, Medi-Cal Program, Internet version, Sacramento, California. http://www.dhcs.ca.gov/provgovpart/Pages/Telehealth.aspx

3. Medicare Telehealth Program http://www.cms.gov/Medicare/Medicare-General-Information/Telehealth/

4. *Medicare payment of telemedicine and telehealth services (2013),* American Telemedicine Association http://www.americantelemed.org/docs/default-source/policy/medicare-payment-of-telemedicine-and-telehealth-services.pdf

5. *Medicare Intermediary Manual* (CMS Publication 13-3), Baltimore, Maryland, Centers for Medicare and Medicaid Services.

6. *Medicare Benefit Policy* (CMS Publication 100-02), Internet publication only, Baltimore, Maryland, Centers for Medicare and Medicaid Services. http://www.cms.gov/Regulations-and-Guidance/Guidance/Manuals/Downloads/bp102c15.pdf

7. *Medicare Claims Processing Manual* (CMS Publication 100-04), Internet publication only, Baltimore, Maryland, Centers for Medicare and Medicaid Services. http://www.cms.gov/Regulations-and-Guidance/Guidance/Manuals/Downloads/clm104c12.pdf

8. *Medicare Benefit Policy Manual - Chapter 13 - Rural Health Clinic (RHC) and Federally Qualified Health Center (FQHC) Services* http://www.cms.gov/Regulations-and-Guidance/Guidance/Manuals/downloads/bp102c13.pdf

9. *CMS Carriers Manual,* Part 3 Chapter XV Fee Schedule for Physicians' Service, Part 15516.

10. May 18, 2004 letter from Marian Dalsey, M.D., M.P.H., Acting Chief, Children's Medical Services Branch, California Department of Health Services.

11. Anthem Blue Cross of California, *Anthem Blue Cross of California Telemedicine Program for Healthy Families and Medi-Cal Program – Telemedicine Billing Guidelines,* http://w2.anthem.com/bcc_state/tm/info/index.asp

tab 2 goes before page 50

Staffing

Staffing a Telehealth Program

PROGRAM GUIDE

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Staffing a Telehealth Program

Program Guide

A Publication of:

California Telehealth Resource Center

Introduction

Staffing is often viewed as one of the most costly and critical components in developing and operating a successful telehealth program, but it is the staff that will ultimately determine the success of the program. It is important to take a good look at how best to develop this important program component.

Staffing consists of a variety of functions, roles and responsibilities, each role necessary for smooth and efficient delivery of services and operation of the telehealth program. As part of the development process, each telehealth program will need to determine how each function will be addressed – with existing staff? With new staff? Within which department? Developing telehealth program staffing will be influenced by factors including the type of service site, anticipated services and service levels, size of the site, anticipated volume, and available funding.

While the roles and functions necessary for telehealth operations have been well defined and described, each program will need to adapt the general knowledge for their unique needs and resources. Additionally, organizations have staff with different skills, strengths and interests. Making the most of existing staff strengths and structure will be an important consideration when developing your staffing plan.

In the CTRC Program Development process, staffing considerations, analysis and decisions occur during Step Two, Define A Program Model and Step Four, Develop The Detailed Program Description and Plan. The staffing plan that is needed for any given program should be developed as the program's design is established. The size, scope and type of program will impact staffing requirements and should be taken into account before staffing decisions are finalized.

This guide provides information and suggestions for staffing a successful telehealth program. It describes the functions, roles and responsibilities most often associated with telehealth programs. This guide contains a template to assist programs in identifying and assigning critical functions, roles and responsibilities and contains sample duty statements for some commonly used positions. This guide can be used to identify any gaps in the staffing plan for your new program, as well as to provide a few ideas to help strengthen an existing, growing telehealth program.

The information presented is generally adaptable to all types of telehealth programs.

CTRC has three on line training videos that support this guide: Patient Site Roles and Responsibilities, Provider Site Roles and Responsibilities and What Every Telemedicine Presenter Needs To Know. Other program assistance materials can be found at CTRC website - www.caltrc. org.

Eight Key Functions and Corresponding Staff Roles

Eight functions have been identified as essential when establishing and then sustaining a telehealth program. Covering all these functions and roles is vital to success. It is important to understand these functions, how they differ and how they work together. It is valuable to consider each of the functions before deciding on staff roles, responsibilities and assignments. The eight functions are:

1. Project Management
2. Program Management
3. Program Operation and Site Coordination
4. Clinical Direction and Oversight
5. Clinical Referrals
6. Clinical Service Provision
7. Patient Presentation
8. Technical Support

After considering the necessary functions for a telehealth program, each function needs to have a more defined set of roles and responsibilities. These can then be assigned to specific staff, either new or existing. In many programs one person may be responsible for or perform more than one function or role. The actual number of staff will need to be identified as your program scope, service type and service levels are identified.

1. Project Management
Function

Program Development / Project Management – The Project Management function is part of the initial development or subsequent expansion of a telehealth program. The Project Management function coordinates all the efforts necessary to research, plan, build, implement and manage the program. Project management involves using specific tools to define the project, identify and involve stakeholders, track and manage the specific steps (including timelines), resources, and goals necessary for the project to be successful. Proper project planning and management (including the use of appropriate tools and processes) helps to assure that clinical, operational and technical expectations and requirements are identified, met, or exceeded, therefore encouraging the successful outcome of the project.

Projects by their nature are limited in scope and time and the Project Management function concludes at the end of the development process. The project management function is different than the on-going program management function discussed below. Best Practice: Successful program development has an assigned project manager.

Make sure to identify the differences between the "project" of the initial implementation or expansion of a telehealth project, and the on-going operations of the institutionalized and sustained telehealth program. It is common in smaller programs to have the project management function combined with the program management function. The same individual developing the program is then responsible for managing ongoing operation.

The Program Development Function should be assigned before any of the work begins on the development of the telehealth program.

Role

Program Developer / Project Manager – The Project Manager role assumes responsibility for overall development of the telehealth program, including research, creation of development products such as needs assessments and program descriptions, create and execute project work plans and revise as appropriate to meet changing needs and requirements, identify resources needed and assign individual responsibilities, manage day-to-day operational aspects of specific projects and the corresponding scope. This position is responsible for all project accounting aspects including the tracking and reporting of team hours and expenses and managing of the project budget.

This position is responsible for identifying the key stakeholders and incorporating them in the planning and implementati on processes. At this point, many of the positions that are indicated below may not have been identified, but there should be representation from the various stakeholders they represent (administration, nursing, IT, rural/specialty medical staff, clinic staff, etc.)

If your organization is fortunate to have a full time project manager on staff, this person will transition the project, at its completion, to the program manager. However, in small clinics it is often the case that the program manager also functions as the project manager. The description of the role simply shifts from that of getting the project up and running to that of the long-term operational aspects.

It can be very helpful to obtain technical assistance from experienced telehealth program developers during the initial development of a telehealth program. They bring expertise, experience and often tools to support the development process.

2. Program Management
Function

Program Management – The on-going operational aspects of the telehealth program fall under this function. This includes general management activities such as increasing organizational awareness, on-going staffing, human resources management, policies and procedures, coordinating with other patient care departments, educating patient-care departments, providing the guidance and training necessary to meet the needs of patients being served, coordinating the licensing/credenti aling needs of practitioners, encouraging and coordinating service development and expansion, tracking customer satisfaction (remote sites, patients, providers, etc), data collection (service utilization, service access, etc.) and performance monitoring and reporti ng.

Role

Program Manager – The Program Manager role is responsible for managing all the operational aspects of the telehealth program including but not limited to needs assessment, policy and procedures, workflow and staffing. This position is usually responsible for planning, designing, controlling, directing, coordinating, and evaluating the performance and status of all resources (personnel, hardware, software, bandwidth, etc.) of the telehealth department.

This position works in cooperation with all of the positions indicated below to provide guidance and assistance. Additionally, this is the position that interacts regularly with the organizational leadership to keep them educated and updated on telehealth activities.

3. Program Operation and Site Coordination

Function

Program Operation / Site Coordination – This function includes activities related to operations and providing assistance as needed to the practitioners at both the patient and practitioner's locations. The success of the remote patient site is critical to the overall success of the entire telehealth program. A significant amount of coordination and commitment is required at the patient site. It is important to have a specific point of contact to provide assistance to other local staff and to serve as a champion for the telehealth program within the facility.

Roles

Telehealth Operations Manager or Telehealth Coordinator – The Telehealth Coordinator is perhaps the most used role for telehealth programs. In smaller organizations the Telehealth Coordinator often functions as the Program Manager, the Service Coordinator and the Clinical Presenter. This position is usually responsible for developing and enhancing clinical telehealth services and applications. This includes, but is not limited to, consulting with partner sites to determine and assess clinical needs and requirements; establishing and documenting proper procedures and policies regarding telehealth consultations, training personnel involved, assuring scheduling and other processes operate effectively and integrate with overall organizational processes; and communicatig regularly with the medical director and program manager. These positions are used at both patient and provider sites.

As clinical services are identified and developed, this position will likely have some interaction with the organization's clinic management and/or business development leader(s), and with the billing, quality, and credentialing departments as well.

While the ultimate goal is to incorporate telehealth services as a component and tool of a clinical practice, thereby allowing clinic staff to be responsible for conducting their own telehealth events, as a program is initiated it is likely that this position will be actively involved in the delivery of patients services. Assistance may be needed with scheduling medical specialists for telehealth consultations, coordinating with remote sites and verifying the presence of the patients to be seen, ensuring that the necessary clinical records and informati on is available for the Patient and the clinician, confirming licensing and credentialing, and verifying that the equipment is functional prior to the beginning of consultati ons. The telehealth coordinator may function as a clinical presenter during patient care visits and may also complete any necessary paperwork including billing forms and communications with referring practitioners.

Because of the functions of this position and the knowledge and skills required in the area of patient care and issues surrounding providing that care, many programs fill this role with a Registered Nurse (RN).

Patient Site Coordinator – Some programs differentiate between the Provider Site Coordinator (sometimes called a Hub site) and a Patient Site Coordinator role. Patient site coordinator serves as the prime contact person at the remote (Patient) service location. This position is often required to handle multiple functions serving as an advocate for telehealth within the facility, coordinating the actual use of the equipment by various interested parties (education, patient services, administration), assuring proper policies and procedures are in place, assisting with data collection and evaluation activities, and coordinating with other staff to assure Medical Staff requirements are met.

Many rural sites do not have the luxury of multiple individuals to serve in the many roles indicated in this listing, so often one person has to be versed in a variety of responsibilities.
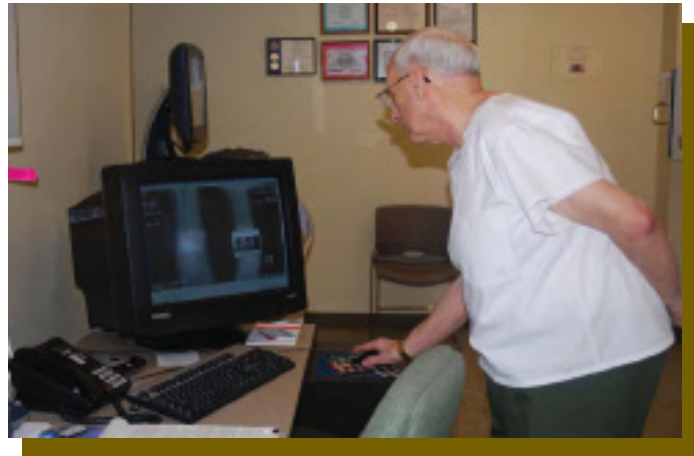
4. Clinical Direction and Oversight

Function

Clinical Direction and Oversight – This function assures that there is adequate and appropriate clinical oversight to the services being provided by telehealth. Making sure that telehealth services are provided appropriately, are meeting the identified needs and are accessible, all without undue burden to the patients and staff being served is important. This function occurs at both the patient site and the provider site.

Role

Clinical Director – The Clinical Director serves as the liaison between the telehealth program and the rest of the organizati on's clinical staff for the purposes of program awareness, provider recruitment, service development, provider training, and general communicati on. This position often serves as the program champion by providing encouragement, direction, and medical/clinical oversight of the telehealth program. The Clinical Director works closely with the Program Manager, Operations Manager and Telehealth Coordinator. A Clinical Director should be assigned at both the patient and provider sites.

5. Clinical Referrals

Function

Clinical Referrals – The practitioner at the patient site is often the gate-keeper for patients as they access telehealth services. Often, it is the practitioner who will identify a patient with a need to receive specialty care utilizing telehealth services. Already-established relationships with specialty providers is often what determines the referral.

Role

Patient Site Referring Clinician – In medical settings, this is usually performed by the patient site primary care provider. The referring clinician at the patient site determines when a patient needs a service not available on site and will make the referral to a telehealth practitioner. The referring clinician identifies patients that may be suitable for telehealth services and often is the initiator of the consult for specialty services.

This positi on relies on the combined skills of the remote site coordinator and the patient presenter to facilitate the telehealth interaction between patient and telehealth specialty practitioner. Additionally, there may also be interaction with the Telehealth Coordinator and the Medical Director to ensure that services are available to meet the community's needs and to address any quality improvement issues.

6. Clinical Service Provision

Function

Clinical Service Provision – The practitioner at the specialty or other service site provides the service being requested by the referring practitioner. The clinician may also directly request telehealth services for a patient as part of their follow-up care.

Role

Telehealth Provider / Clinician / Practitioner –The practitioner is located remotely from the patient and is often a clinical specialist of some kind. This position is responsible for leading and conducting the actual patient interaction as well as directing the actions of those assisting the patient. In some cases, the practitioner is actually directing the care of the patient remotely. In other cases, the practitioner is serving only in a consultative role to the patient's primary provider.

This position usually relies heavily on the services of the patient presenter when seeing a patient. In many patient events, informati on from an electronic stethoscope, various video scopes, or other peripheral devices may be needed, as well as informati on from the patient's electronic medical record.

7. Patient Presentation

Function

Patient Presentation – Since the idea of telehealth is to access services not available within the facility, it is expected that the practitioner providing the service is not physically located with the patient. In most cases, the remote clinician will require some level of clinical or techological assistance with the patient interaction or examinati on. This includes serving as an extension of the clinician by assisting the patient, operating the telehealth equipment, utilizing peripherals, as needed, and ensuring that a patient's needs and the standards of care are being met.

Role

Patient Presenter – The patient presenter works with the remote telehealth clinician to present the patient. This presenter explains the visit to the patient and introduces the patient to the practitioner. The presenter is tasked with obtaining informed consent based upon the facility's policy, ensuring that the patient's charts are available and accessible, and anticipating and preparing the patient for the event. This person serves as the extended hands, eyes and ears of the practitioner at the patient-end of the connection during live interactive consults. This requires the ability to operate the telehealth equipment and usually requires the understanding and use of various scopes and other peripheral devices. This also involves patient discharge, patient educati on and coordinating of additional care. When store and forward equipment is used, the presenter captures the digital images as well as the necessary clinical information to forward to the remote practitioner.

The role of Patient Presenter can be filled by many individuals. Many organizations have determined that having only one or two individuals trained to serve as the patient presenter is not very efficient. In order to incorporate telehealth as a core service, some organizations have determined that all nursing and/or medical staff should be able to serve in this capability, tol be able to present patoents to the telehealth practitioner as the need arises.

8. Technical Support

Function

Technical Support – Making sure that the equipment and network is set-up to encourage the smallest amount of "down time" and the highest level of "usability" is a significant part of the technical support function. While the technology has certainly become much easier to use over the past many years, there is still a need to be able to provide on-going technical support to the users of the telehealth services. Nothing is infallible, and while the frequency of equipment failure or glitches are small, there is a likelihood that equipment challenges will occur when you least want them.

Role

Technical Specialist/Network Analyst – The technician is responsible for the day-to-day functioning of the telehealth equipment and related network issues and peripherals (i.e. bridge, stethoscopes, routers, etc.). This includes the appropriate testing, operations and maintenance of the equipment, supporting proper and appropriate usage by the users, establishing/maintaining appropriate network infrastructure, and adhering to appropriate equipment-related organizational policies and procedures. This person should be available when there are technical difficulties with live telehealth sessions.

This position works in regular cooperation with Telehealth Coordinator in order to maintain a usable network to best meet the needs of the patients served. In larger organizations, the technical and network roles are often served by different people.

Some Additional Functions

There may be, depending on the services provided, additional functions that should be addressed. Some of these include:

Function

Distance Education Coordination – Some organizations have established a very specific focus on educational offerings. As a result, the coordination of these events is important for proper delivery and improved educational value. Making sure that both presenters and participants have a rewarding experience is the primary goal.

Function

Event Scheduling – If the volume of your services climbs to a level of use that can justify it, having someone tasked specifically with scheduling may be helpful. Some programs establish different scheduling processes between administrative and education events and clinical events and have chosen to keep these two focuses separate in the scheduling process. Some programs have not necessitated the need for the separation and both focus areas are scheduled through the same process.

Function

Administrative Assistance/Accounting – In some larger health system-based programs and some university-based programs, the involvement of and sometimes volume of grants dictates the need for additi onal administrative and accounting assistance.

Function
Quality and Research – In some organizations, the importance of evaluation and data comparison is at such a level that it is established as a separate function.

Function
Patient Monitoring – In the case of home health programs, establishing and maintaining a relationship with the patient being monitored is a key function. Observing and communicating with the patients involved in the program is the core to home-based telehealth services.

Identify Other Key Stakeholders
Additional organizational members on both ends of the service need to be involved in and aware of the telehealth implementation as well as be kept apprised of the continuing activities and services of the telehealth program. This on-going communication will encourage long-term support of your telehealth program and lead to its ultimate sustainability. The first step to figuring out how to incorporate telehealth into the organizational infrastructure is through regular communications and awareness building.

Chief Executive Officer/CFO/CIO/Lead Administrative Team – Organizational leaders need to be infomed and educated about the benefits and operation of telehealth. As organizational priorities are identified, it is important for them to understand exactly how telehealth services can make an impact and assist the organization in accomplishing annual and long-term goals. If they understand the value that telehealth can bring to the organization, they are much more likely to support it, philosophically and budgetarily, in the future.

Chief of Medical Staff – In many organizations this is a rotating position, but it is important to establish communication early and often with whomever is serving in this role (and then again when the next person takes over). Gaining this person's support, or at least building their awareness, is an important block in the foundation of the program. If the organization has a full-time position for this role, it would be highly beneficial to engage this person as a telehealth champion. As new providers/physicians are recruited to serve within the organization, that person has the opportunity to encourage or require the use of telehealth services.

Director of Nursing/Chief Nursing Officer – This person directs the overall activities of the organization's nursing staff. This person is pivotal to telehealth program success. Gaining their support and buy-in from the beginning of the project planning phase is important.

Business Office/Billing Staff – Communicating with someone who understands your organization's billing process and working with them to make a plan for incorporating telehealth services into the established structure will be important.

Outreach/Service Development Staff – As you consider and evaluate services to provide and/or receive, make sure to stay in regular contact with other staff also involved in outreach activities. It is important to collaborate with others striving to develop and grow services so as to not present conflicting messages and to create partnerships that support the efforts of the outreach staff.

Training/Education Staff – Often one of the services offered by a telehealth program is education. It is important to involve the education staff in the initial planning and stay in regular communications with them along the way. Staying informed about current and future educational needs as well as current in-house offerings will help to develop a plan for future development efforts. Additionally, they can help identify appropriate training methods for training staff of the telehealth program. They may also have

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regularly scheduled education sessions where awareness-building for telehealth could be incorporated. It is also necessary to appropriately train individuals to be successful clinical presenters.

IT Staff – Keeping in close communication and establishing a partnership with this group will be a critical key to the overall, and long-term success of the telehealth program. Providing telehealth services will have an impact on the facility's current network infrastructure. Establishing regular communications with this group, including making plans to manage the initial impact, as well as the on-going anticipated usage and potential service growth, will strengthen their understanding of, commitment to and ultimately their support of telehealth services within the organization. This group often does not get to see the impact they have on direct patient care, so make sure to share your success stories with them.

It is important to keep in mind that these positions need to be addressed at both the patient site and the provider site. It is important that communications be active to and from the leadership at both the remote facility and the provider location. Garnering support for the telehealth efforts is important at both ends of the telehealth services link. A weakness on either end can lead to failure.

Organizational Placement of Telehealth

Many developing programs ask about the ideal placement within the structure of your organization. In May of 2007, the University of Kentucky, Kentucky Telecare telehealth program conducted a survey of telemedicine programs across the country to obtain informati n on this subject. The results indicate that there is not one best answer, but each organization had to try to identify the best fit for their program. The survey results indicate:

- 44% administration-level department

- 15% Information Technology

- 11% Clinical Enterprise

- 9% Education

- 21% Other

It is likely that as the telehealth program is initiated within a facility or organization the staffing will be organizationally located across several already established departments, with one or two individuals serving as the leader(s) responsible for the success of the overall program.

There may be logic for dividing out components of your program which will always remain under another department's control. Some examples of this might be: credentialing and privileging – it might be best to simply coordinate with the current credentialing department instead of taking on those complicated processes specifically for the telehealth-related services; or technology – there may be some value in having the information technology department be in charge of the actual telehealth hardware as they may already have processes and understanding for hardware installation requirements, upgrades, net-work issues, tracking and more.

In situations where responsibilities are delineated out to other departments, it is highly recommended that a specific individual (or individuals) be identified as the department lead for telehealth. This helps to develop a level of expertise in telehealth-specific issues and needs and identifies a "go to" person for questions and difficulties that might arise.

Developing A Staffing Plan

Now that you have an understanding of the functions and commonly used roles, it is time to develop a staffing plan for your organization.

The number of staff recommended for your program will depend on the size of your organization as well as the anticipated size and volume of your initial program. While often one person can be involved in multiple program roles, especially at the beginning, organizations are strongly encouraged to be careful not to overload one person with too many various components. This not only can weigh very heavily on one person, it can also have a detrimental impact on your program. By spreading the responsibilities across multiple individuals, a program builds multiple levels of buy-in and commitment to the success of the program. As the number of clients being served through the program grows, the staffing will also need to grow to meet the patient need. At some point in the program development, it may be necessary to have a stand-alone telehealth department and staff. However, as the program begins, the responsibilities of telehealth may be best served by existing staff.

While program structure may vary significantly, the core functions and responsibilities of those same programs are often very similar.

A matrix similar to the one below can be used to identify who is doing what at both ends of the service and to also identify responsibilities that may not be currently covered. A more detailed Sample Staffing Matrix and a corresponding template is found in the Appendix of this Guide. This matrix can be used to identify large functional group responsibility but can also be used to add specific activities and tasks as they are identified and assigned.

Sample Staffing Matrix

Functional Area	Identified Staff Role / Position						
	Project Manager	Program Manager	Program Coordinator	Patient Presenter	Referring Clinician	IT Staff	Clinical Director
Program Development /Project Management	X						
Program Management		X					
Program Operations / Site Coordination			X		X		
Clinical Direction and Oversight							X
Clinical Referrals					X		
Clincial Service Provision							X
Patient Presentation				X			
Technical Support			X			X	

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Identifying Necessary Skills and Knowledge

Telehealth will require that staff learn some new skills and expand their knowledge base to incorporate the technical and clinical aspects of telehealth. For some staff, operation of the equipment and medical peripherals will be a necessary competency. Learning to work with clinicians and patients using video conference technology will be critical.

The Skills and Knowledge Area Matrix found in the Template Section of this Guide provides a listing of skills that each position should have and its related importance for the indicated position. This information will help you identify what training will be required and may assist in determining which staff may be right for certain functions and roles.

Assigning Responsible Staff

The following is a list of high level functions that should be addressed, in some manner, as you begin to establish, or expand, your telehealth program. These functi ons may be filled by individuals identified as telehealth staff or by those in other departments providing directed assistance.

Function	Position Responsible for Function	Staff Member Assigned
Project Management		
Program Management		
Operati ons/Coordination		
Clinical Direction		
Clinical Referrals		
Clinical Service Provision		
Patient Presentation		

Program Challenges Related To Staffing

Staffing challenges can impact developing and maintaining a successful, progressive telehealth program. Program Development efforts and ongoing management will need to consider strategies to address these areas. Some of those challenges center on staffing issues.

1. Finding The Right People

Implementing telehealth takes flexibility and a commitment to change. Often the first challenge is finding interested and enthusiastic individuals who will be committed to the program and making things work. It is important to have key staff that have a flexible work style, a customer-service/ patient-centered focus, and an interest in fiuring out how to make things work. Knowing that bringing something new or different into an organization can be complicated, the people working on the project, and hopefully ultimately the long-standing institutionalized program, must understand the difficulties before them and still be excited about the opportunities telehealth can bring to the organization in spite of the challenges. Good communication skills are a must and a willingness to learn about new technologies are a must.

2. Staff Retention

Many programs report that staff turn over is on-going challenge, particularly in rural health clinics. As the program is initiated, having an understanding that this will happen, and being prepared for it when it does happen, will help sustain the program in the long run. One of the important things to consider when developing the telehealth program is how much of the success of the program is tied to one person… and what would happen if that one person was no longer there. Making sure that appropriate policies and procedures are identified and in place, as well as having detailed job descriptions, will be helpful as transitions occur. Additionally, it is important to make sure that departmental staff are cross-trained in all roles to reduce the challenge of staff transitions. Some of the key staff that could see regular change include: administrators, program managers, clinical presenters, practitioners/physicians at both the patient and specialist locations, remote site telehealth coordinators and technical staff. Assuring that the organization supports and understands the program will significantly lessen the impact of staff turn-over issues when they occur.

3. Obtaining Adequate and Appropriate Training At The Right Time

Training of staff is an ongoing need. As vacancies occur and telehealth program staff are hired, training will be necessary in both clinical and technical aspects of the program. In addition, keeping up skills is necessary when use of the telehealth equipment is infrequent. Both of these situati ons require the availability of training. Newly developing programs will need to identi fy strategies for training. This guide contains a detailed matrix on skill sets required by different staff involved with telehealth. CTRC has a series of training videos that can be used for training. The National School for Applied Telehealth, the Univerity of Minnesota, the University of California and others have on-line and in person training programs available.

4. Budgeting for Required Staff

Identifying on-going budget dollars to support the program in the long run can be a significant challenge. Often initial start-up funding can be obtained from local, state, federal, or foundation grant dollars to support the initial pilot project. The on-going dollars needed to support the staff necessary for maintaining strong, sustainable programs is often more difficult to identify. This is where your on-going evaluation and data tracking activities will show their value. The ability to demonstrate dollars-saved, revenue gained, increased patient volume, a reduction in provider turn-over, increased patient satisfaction and more, will go a long way to help in securing those annual operating dollars that are needed to sustain the program, including the positions identified above.

Conclusions and Best Practices

As determinati ons are being made regarding the appropriate staffing structure and model for your organization, it is important to remember that there are no carbon copies. Each organization has a unique history, culture, need, and structure. Additionally, each team member brings unique skills and interests to the program. Understanding your organization, your team members, and then making sure that all of the necessary program needs and functions are being met, will certainly help you develop a staffing structure that will best meet the needs of your telehealth program.

Ultimately, it is important to keep the main goal of telehealth in mind during all planning and discussion sessions: how the program can best meet the needs of the patients served as well as the clinicians serving them. Keeping the patient in mind, among all of the other factors being considered as the program is being developed (strategy, budget, equipment, etc.), will help to guide your decisions.

Best Practices related to staffing include:

- Assure that the function of project management has been assigned to a staff member or a contractor

- Contractors with telemedicine development experience can be used to assist a newly development program with project management and with program development expertise.

- Find training programs that support different staff functions.

- Find ways to regularly assess staff skill levels and to provide immediate training to newly assigned staff.

- Have more than one staff member skilled and assigned to patient presentation

Tools & Templates

Template: Staff Positions Responsible for Functional Areas

Template: Staff Assignments by Functional Area

Skill and Knowledge Area Matrix (CTRC Document)

Sample Duty Statements: Program Manager, Telehealth Program Coordinator, and Clinical Presenter

Sample Staffing Matrix

Functional Area	Identified Staff Role / Position						
	Project Manager	Program Manager	Program Coordinator	Patient Presenter	Referring Clinician	IT Staff	Clinical Director
Program Development /Project Management	X						
Program Management		X					
Program Operations / Site Coordination			X		X		
Clinical Direction and Oversight							X
Clinical Referrals					X		
Clincial Service Provision							X
Patient Presentation				X			
Technical Support			X			X	

Template
Staff Assignments by Functional Area

Function	Position Responsible for Function	Staff Member Assigned
Project Management		
Program Management		
Operations/Coordination		
Clinical Direction		
Clinical Referrals		
Clinical Service Provision		
Patient Presentation		

Skills and Knowledge Area Matrix

Listed below are some important skills and knowledge areas for telehealth program staff. Six commonly used roles are identified and roles may be assigned to one staff person. For a brief definition of each role, please refer to the end of this document.

THIS MATRIX IS PROVIDED AS A GUIDE. EVERY PROGRAM WILL NEED TO DETERMINE THE SPECIFICATIONS FOR ROLES WITHIN THEIR OWN PROGRAM.

Skill or Knowledge Area	Program Manager	Telemedicine Site Coordinator	Patient Presenter	Referring Clinician	Remote Practitioner	Technical Specialist
Understand the benefits of telehealth program	++++	+++++	++++	++++	++++	++
Preparing a needs/market Analysis	++++	++	+	+	+	+
Business Model Development and Sustainability	++++	++	+	+	+	+
Organizational Readiness	++++	++	+	+	+	+
Strategic Planning and Telehealth Applications	++++	++	+	++	++	+
Project Management for Telehealth	++++	+				+
Managing Organizational Change	++++	+++	++	++	++	++

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Skill or Knowledge Area	Program Manager	Telemedicine Site Coordinator	Patient Presenter	Referring Clinician	Remote Practitioner	Technical Specialist
Impact of Telehealth on Organizational Operations	++++	++++	+++	++++	++++	++
Legal Considerations	++++	++++	++	++++	++++	+
Privacy and Security	++++	++++	++++	++++	++++	++++
Reimbursement	++++	++++	++	+++	++	+
Practices of Successful Programs	++++	++++	++++	++++	++++	++++
Evaluation of Program Operation and Effectiveness	++++	+++	++	++	++	+
Management Reporting	++++	+++	+	+	+	+
Telemedicine Applications	++++	++++	++++	++++	++++	++
Telehealth Technologies	++	++	++	++	++	++++
Equipment Types	++	++	+++	+++	+++	++++
Equipment Specifications and Standards	++	++	+	+	+	++++
Equipment Selection	++	++	++	+++	+++	++++
Operation of Telemedicine Equipment	++	+	+++	+	++	++++
Equipment Maintenance	+	+	+	+	+	++++
Equipment Troubleshooting	+	+	++	+	+	++++
Telecommunications Fundamentals	+	++	++	+	+	++++

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Skill or Knowledge Area	Program Manager	Telemedicine Site Coordinator	Patient Presenter	Referring Clinician	Remote Practitioner	Technical Specialist
Video Standards and Specifications	+	+	+	+	+	++++
Telecommunications Installation	+	+	+			++++
Telecommunications Operation	+	++	++			++++
Telecommunications Maintenance		+	++			++++
Troubleshoot Telecommunications Connections		++	++		+	++++
Service level Agreements	++	+	+			++++
Telemedicine Specific Clinic Operation Proceedures	+++	++++	++++	+++	+++	+
Scheduling Follow-up	++	++++	++++	++	+	
Telemedicine Specific Referral Procedures	++	++++	++++	++++	++++	
Managing Medical Record	++	+++	+++	++	+	
Reimbursement	++	++++	+	+	+	
Clinical Protocols	++	+++	++++	++++	++++	
Role of the Patient Presenter and How to Work with Presenters	+	+++	++++	++	++++	
Preforming Telemedicine Consultations	++	++++	++++	++++	++++	
Inform Patients About Telemedicine Process		++	++++	++++	++++	+
Using the Telemedicine Equipment	+	+++	++++	+	++++	++++
Data Collection	++	++++	++	+		++

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Definitions for Commonly Identified Telemedicine Staff Members

Program Manager: The program manager provides overall management and oversight of program activities. The program manager is the leader of the telemedicine team. He or she represents the group, advocates on its behalf to the organization and manages the staff. The manager reports on the function and progress of the service, directs any process and improvement activities, negotiates budgetary issues, recruits and hires staff, sets priorities in consultation with the team, and supervises its functioning.

Telemedicine Site Coordinator: The telemedicine coordinator manages the day-to-day clinic operations. He or she develops operational protocols, schedules medical specialists for telemedicine consultations, schedules and verifies the presence of the patients to be seen, ensures that the necessary clinical records information is available for the patient, and verifies that the equipment is functional prior to the beginning of consultations.

Patient Presenter: The patient presenter works with the remote practitioner to present the patient. This person introduces the patient to the practitioner and explains the visit to the patient. The presenter is usually tasked with providing and documenting the written and verbal patient consents (required in California) and ensuring that the patient's charts are available. This person is the extended "eyes and ears" of the practitioner at the other end of the connection during live interactive consults. When store and forward equipment is used, the presenter captures the digital images as well as the necessary clinical informati on to forward to the remote practitioner.

Referring Clinician: The referring clinician determines when a patient needs to be seen by a remote practitioner. The clinician screens patients that may be suitable for telemedicine services and initiates the consult for specialty service.

Remote Practitioner: The remote or consulting practitioner is responsible for conducting the actual telemedicine visit.

Technical Specialist: The technical specialist possesses the technical skills to set up and maintain all telemedicine equipment. This person is tasked with ensuring that telecommunications and networking issues are addressed and resolved and should be available when there are technical difficulties with live examination sessions.

Sample Duties Statement

Program Manager

Manage all aspects of the telehealth department including but not limited to staff, programming and system implementation, hardware/software requirements, system/user priorities, and workflow. Responsible for planning, designing, controlling, directing, coordinating, and evaluating the performance and status of all resources (personnel, hardware, software, bandwidth, etc.) of the telehealth department.

Duties and Responsibilities

- Reviews and establishes departmental policies, procedures and plans.

- Develops and directs telehealth priorities for the organizati on in concert with and at the direction of leadership.

- Responsible for the collection, analysis, maintenance and reporting of statistical data to identify, diagnose, and correct problems/factors affecting performance, to track utilization, and other needs.

- Designs methods and procedures for efficiency, productivity, and control of operations and coordinates day-to-day operations.

- Provides planning, consultation and advisory services on telehealth development and issues to determine feasibility and applicability to organizational needs.

- Maintains effective communicati on and awareness by consulting with physicians, physician offices, affiliates, and department directors and/or representatives to discuss telehealth needs and directions.

- Prepare the departmental annual budget and with on-going review and action assure that budgeted objectives are achieved and that cost and expense objectives are met.

- Represent the organization on appropriate telehealth-related activity and/or planning groups on an organizational, regional and national level.

- Supervise the administration of telehealth-related grant funds.

- Serve on any and all grant fund related committees (federal, regional, state, and local).

- Be knowledgeable on public policy issues and the possible impact to telehealth services

- Actively advocate and build the awareness for telehealth at all governmental levels.

- Balances limited resources with conflicting priorities.

- Oversees the coordination efforts with the Education Departments on the availability of programs to be broadcast via video conferencing.

- Approves the purchase, license, or other acquisition of telehealth-related systems for the organization in order to encourage cohesion and compatibility.

Sample Duties Statement

Telemedicine Coordinator

Responsible for developing and enhancing clinical telehealth applications. This includes, but is not limited to, consulting with rural partner sites to determine and to assess their clinical needs and requirements; establishing and documenting proper procedures and policies regarding telehealth consultations; and training personnel involved.

Duties and Responsibilities

- Serve as primary liaison with primary care physicians and their clinical staff.

- Assist clinicians with the telehealth applications.

- Promote the awareness of telehealth usage/applications among medical staff, the nursing community and allied health professionals within the organization and the region.

- Develop/manage/coordinate clinical efforts within the organization and at partner sites.

- Work with the program manager and other clinicians to conceptualize and develop clinical applications.

- Assist the clinicians during consultations when necessary.

- Train rural partner site nurses, physicians, and care extenders to perform clinics.

- Become familiar with issues and concerns that may arise regarding patient billing.

- Be involved with educational program development and assist presenters as necessary.

- Participate in and develop appropriate documentation of usage, satisfaction, and other relevant statistical and quality data and information.

- Travel to partner sites to promote clinical involvement of rural clinicians.

- Work in cooperation with all telehealth staff to develop appropriate guidelines and policies/procedures.

Clinical Presenter

Responsible for scheduling patients, preparing charts, presenting patients to the remote physician, completing required patient charting and collecting encounter data.

Duties and Responsibilitiies

- The clinical presenter is present during every telemedicine visit to properly inform and introduce all parties involed prior to the start of each visit.

- Excellent verbal and written communication skills to convey information clearly to the remote physician.

- Maintains patient confidentiality.

- Presents each patient visit and locates and presents medical informati on from the medical record as directed by the attending physician.

- Assures that the required clinical follow up, diagnostic testing and medication processing are completed.

- Responsible for operating and basic trouble shooting of telemedicine equipment.

- Regularly communicates with the Telemedicine Coordinator and provides feedback on institutaional procedures that may exsit that impact the operati on of telemedicine.

Sample Telemedicine
Job Descriptions

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STAFF ROLES AND JOB DESCRIPTIONS

The Telemedicine clinic staff, from the Medical Director to the Site Coordinator, have a unique set of duties and responsibilities, in addition to their traditional roles within their organization. These responsibilities require an elevated skill set that is reflected in the sample job duties and job descriptions in the following pages.

In this document, you will find reference to the following roles on the telemedicine team:

1. Medical Director

2. Site Coordinator for the Patient Site

3. Site Coordinator for the Specialty Site

4. Instructor

5. Clinic Manager

6. Technical Support

TELEMEDICINE MEDICAL DIRECTOR

Purpose:

To provide oversight of all clinical activities, including clinical quality improvement, and serve as a liaison between referring and consulting physicians.

Duties:

- Oversee the implementation plan of sites, specialties, and other telemedicine clinical and educational services.

- Assist in coordinating clinical activities with participating specialists, evaluates scopes and other peripheral devices for clinical appropriateness, provides guidance on the potential uses of telemedicine, and outlines the opportunities and limitations of the technology.

- Responsible for evaluation and research in the areas of equipment utilization, cost-benefit analysis, and clinical efficacy and outcomes.

- Participate in policy development at the local, state, and federal level.

- Incorporate telemedicine as a strategy in the area of rural health and affiliation development.

- Act as liaison to the medical community, providing education regarding the appropriate applications and opportunities provided by telemedicine.

TELEMEDICINE SITE COORDINATOR PATIENT SITE

General:

Serve as point-of-contact for telemedicine activities at health care facility. Responsible for operation of telemedicine program at individual site. Schedule appointments, set up and test equipment, collect evaluation data, support physicians and other providers during consultation, promote program in local community.

PROGRAM COORDINATION

- Serve as the primary contact for scheduling of the telemedicine and videoconferencing
- equipment.

- Organize on-site training for users of the telemedicine, videoconferencing, and remote monitoring systems.

- Responsible for working with appropriate site staff to bill for telemedicine services.

- Organize demonstrations of the system for visitors.

- Provide or arrange for basic technical support and perform or provide for general system maintenance.

- Coordinate with the technical support team to ensure that problems and system development needs are addressed.

- Assist in data collection and report generation.

TELEMEDICINE CLINIC ADMINISTRATION

- Triage incoming telephone calls and appropriately handle each call by obtaining adequate information to make a proper telemedicine referral, and schedule the teleconsultation.

- Prepare consult room and equipment prior to scheduled consults. Make sure successful video connection has been made and stand by during consult to provide technical assistance when necessary.

- Create and distribute telemedicine clinic schedules, promotional material, documents, consent forms, satisfaction surveys, and various items of information to on-site medical staff and patients.

PATIENT CARE COORDINATION

- Answer patient/family and referring physician questions appropriately and within the realm of knowledge/expertise, and expediently and appropriately relay the information to the proper. Provide follow-through to ensure that all issues/questions are resolved .

- Act as a liaison between referring physicians, patients, staff and consultants, clinic staff, patient accounts, funding sources, and other departments or services as needed.

- Assist the consultant physician with scheduling the patient for clinic appointments, procedures or with a direct admission, if the patient requires hospitalization, as outlined in health facility protocols.

EDUCATION AND OUTREACH

- Facilitate the operation of continuing educational programming utilizing the telemedicine equipment.

- Responsible for scheduling telemedicine facilities and for the technical preparation for educational sessions.

SKILLS, KNOWLEDGE AND ABILITIES

- Good verbal and written communication skills.

- Experience working in a clinical setting with technicians, nurses and physicians.

- General knowledge of patient scheduling systems and billing system.

- Computer skills and an ability to learn and understand the general technical requirements for the telemedicine system. With training, ability to provide basic technical support and to triage more difficult problems to appropriate staff.

- Proficiently operate a PC, and experience with/or ability to learn word processing, spreadsheet, database, e-mail and internet programs (Excel, Word, Access, etc.).

- Organizational skills to prioritize workload and meet deadlines, develop and carry-out project assignments in an efficient and timely manner and to provide accurate and succinct documentation of activities.

- Demonstrated ability to communicate effectively with physicians and clinical staff. Ability to positively represent telemedicine to external organizations and participants.

- Ability to exercise tact, courtesy and diplomacy when dealing with individuals at any level.

- Ability to maintain confidentiality, exercise discretion, use independent and mature judgment, work independently without supervision and commitment to excellence.

TELEMEDICINE SITE COORDINATOR SPECIALTY SITE

General:

This position reports directly to the Telemedicine clinic supervisor, and has primary responsibility for the daily operation of a Telemedicine Clinic. The Telemedicine Program utilizes systems designed for clinical episodes, but will also manage lower-end videoconferencing systems that will be used for administrative meetings and distance education. Thus, this position will be responsible for different levels of equipment usage. The incumbent will also assist with front office services which will include reception, scheduling, registration, authorizations and referrals, billing support, medical records, database creation, management, and report generation, and administrative support.

Purpose:

As Clinic Operations Coordinator, provide support for all activities involving specialty consultation services via telemedicine at various telemedicine consult sites throughout the Specialty Center Campus. Ensure that remote sites adhere to registration, referral authorization, delivery and evaluation protocols; collect data for analysis; provide support to physicians and other providers during consultations, and provide basic registration, billing, and database management and reporting services. Responsible for basic troubleshooting of video equipment as needed.

Duties:

CLINIC ASSISTANCE AND PATIENT CARE COORDINATION

- Answer referring physician questions appropriately and within the realm of knowledge/expertise, and expediently and appropriately relay the information to the proper clinician. Provide follow-through to ensure that all issues/questions are resolved.

- Serve as the primary contact for scheduling telemedicine consultations in the Main Hospital telemedicine suites. Act as a liaison between referring physicians, Specialty physicians, and clinic staff.

- Prepare main consult room and equipment prior to scheduled consults. Make sure successful video connection has been made, and stand-by during consult to provide technical assistance when necessary.

- Communicate with Telemedicine clinic staff regarding consult and patient schedules, and advise when changes are needed.

- Distribute clinic schedules, promotional material, documents, satisfaction surveys, and various items of information to on-site medical staff.

- Responsible for the smooth operation of the consult clinic. Duties include notifying specialist of upcoming appointments, printing daily patient schedules, gathering appropriate medical record information, and remaining on-site during consults to assist with unforeseen difficulties.

- Triage incoming telephone calls and appropriately handle each call by obtaining adequate information to make a proper telemedicine referral and schedule the teleconsultation.

- Responsible for patient registration, scheduling and billing activities for all patients seen via telemedicine. Prepare bills, check for completeness, and forward to billing personnel for processing. Reconcile reports and resolve discrepancies.

ADMINISTRATION

- Adhere to performance standards specified in Operations Policy and Procedures Manual.

- Responsible for data collection, entry, and report generation utilizing database software.

- Assist in scheduling faculty coverage for telemedicine clinic.

- Participate in quality improvement and program development activities.

- Coordinate and participate in demonstrations upon request from Program Coordinator, Department Manager and Medical Director.

- Provide back-up coverage for clinic phones, and clinic-related activities at other Telemedicine consult suite sites on an as-needed basis.

- Other related telemedicine duties as defined by Clinic Supervisor.

TECHNICAL ASSISTANCE

- Independently troubleshoot minor technical difficulties, and escalate to technical staff when appropriate.

- Coordinate with the technical support team to ensure problems and system development needs are addressed.

SKILLS, KNOWLEDGE AND ABILITIES

- Excellent verbal and written communication skills, and the demonstrated ability to understand and to convey information clearly.

- Telemedicine clinic experience and Knowledge of various telemedicine technologies preferred.

- Experience working in or with a rural clinical setting with technicians, nurses and physicians preferred.

- Experience working in an academic clinical environment preferred.

- Experience working in or with correctional facilities preferred.

- Excellent computer skills and an ability to learn and understand the general technical requirements for the telemedicine systems.

- Ability to provide basic technical support and to triage more difficult problems to appropriate staff.

- Ability and skill to proficiently operate a PC for Excel, Word, Word Perfect, Access, Internet.

- Organizational skills to prioritize workload and meet deadlines, develop and carry-out project assignments in an efficient and timely manner and to provide accurate and succinct documentation of activities.

- Demonstrated ability to communicate effectively with physicians, clinical and technical staff.
- Ability to positively represent Specialty Center to external organizations and remote sites.

- Skill to exercise tact, courtesy and diplomacy when dealing with individuals at any level within or outside the Specialty Center.

- Ability to recognize relationship challenges with referring sites and specialists, and the ability to initiate appropriate action to resolve them.

- Analytical skills to independently and tactfully assume responsibility for coordination and completion of complex projects requiring interactions with many individuals in a matrix organizational structure.

- Skill and ability to analyze financial data and compile accurate reports to meet monthly deadlines.

- Ability to maintain confidentiality, exercise discretion, use independent and mature judgment, work without close supervision and commit to excellence.

- Ability to work with minimal direction and to take the initiative to follow-up on projects.

- Ability to work in an isolated environment without the assistance of team members for extended periods of time.

TELEMEDICINE INSTRUCTOR

TRAINING & USER SUPPORT

- Conduct classes and independent training sessions both on-site at the Specialty Center and at remote locations utilizing pre-established guidelines and curriculum

- Assess training needs and develop skill-appropriate sessions

- Prepare for users a comprehensive, clear, and understandable set of instructions describing system processes and user support processes as necessary to maintain and verify system operations.

- Assist in the preparation of technical documentation of the system for several levels of expertise: general users, system administrators, programmers.

- Document user questions and develop a log system to track technical problems and develop solutions

- Respond to phone and videoconference user questions in an organized and productive manner

- Assist Telemedicine Team members in deployment of multi-media presentations, oftentimes resulting in traveling to remote sites and overtime.

SYSTEM TEST AND INSTALLATION

- Plan and coordinate with user to develop validation, performance and acceptance criteria

- Through testing, identify and coordinate corrective modifications to the system

- Provide back-up for the Installer to ensure that implementation deadlines are met

SYSTEM DEVELOPMENT

- Provide technical assistance to other Development Team programmers and/or user analysts

- Coordinate directly with user management and other Team members during development phases

- Maintain knowledge of programming and analysis technologies as needed to design improved computerized systems

- Evaluate and suggest technologies/methodologies that may improve the development/support effort of the programming staff

- Participate in site visits to evaluate location and technology infrastructure needs

- Integrate various hardware components, as needed (e.g. CPU, monitor/s, speakers, microphone, cameras, scopes, VCR, scanners, printers)to develop clinical tools

- Update program W/O diagrams to reflect modifications

SKILLS, KNOWLEDGE, AND ABILITIES

- Ability to work as a team member with excellent communication skills necessary to effectively contribute to a creative group

- Demonstrated experience in creating and presenting oral and written material to large and small groups

- Ability to travel by car to remote locations, driving for up to 4 hours each way .

- Ability to work independently and to set and meet deadlines

- Demonstrated technical writing skills sufficient to communicate complex systems to diverse audiences

- Experience working in a clinical setting and demonstrated ability to communicate effectively with physicians and clinical staff

- Proven ability to train clinical and administrative staff who have various levels of technical expertise

- Ability to be focused to accomplish goals, but to be flexible and adapt to diverse situations

- Demonstrated organizational skills necessary to set and meet deadlines

- Ability to isolate and diagnose hardware and software problems in a LANIWAN environment and to recommend and implement the most effective course of correction

- Experience with installation, configuration, maintenance, and trouble-shooting

- Knowledge of analysis and design techniques needed to understand user requirements and compose a functional computerized application system.

- Ability to use logic and flow diagrams to describe the functional processes of the system at a level that both end users and programmers can understand.

- Demonstrated comprehensive understanding of the capabilities and limitations of computers. Ability to recognize processes that can easily be automated and those that cannot.

TELEMEDICINE SPECIALTY SITE CLINIC MANAGER

This position reports directly to the Medical Director and has primary responsibility for the daily operation of the outpatient Telemedicine Clinics. This position is responsible for supervising the telemedicine clinic staff, for implementing new clinical contracts, for process improvement, and for coordinating with many specialty departments to ensure coverage for this "virtual" multi-specialty clinic.

CLINIC MANAGEMENT:

- Responsible for direct supervision of Telemedicine clinic staff.
- Act as liaison between customers (specialists and remote site referring physicians) and clinic staff to assure effective communication and efficient clinic operation.
- Assure all clinics are covered at all times (phone coverage and clinic coverage). Prepare annual employee evaluations for clinic staff.
- Provide coverage for clinic coordinators for sick and vacation leave, etc.
- Work with clinic coordinators, et al., to develop communication and program marketing activities to introduce new clinical services or increase referrals for specialty clinics on an as-needed basis.
- Supervise the design and maintenance of scheduling templates for clinic operations.
- Responsible for immediate decision making that would involve issues such as canceling clinics due to technical difficulties, releasing specialists due to patients not keeping their appointments, and/or for releasing contracted customers from specific payment responsibility (i.e. phone charges if appointments are missed or rescheduled).
- Prepare capacity projections by reviewing clinic productivity and collections reports. Based on these reports, and an understanding of new contracting opportunities created by business development activities, recommend specialty coverage needs. Reports must integrate volume and payer mix analysis. Responsible for specialty department negotiations and documentation of these agreements, as well as ensuring payment to specialty departments, in coordination with Finance team.
- Prepare and analyze monthly reports on wait-times for TM clinic appointments in each specialty to support capacity planning recommendations
- Oversee staff operations to assure all patients seen in the clinic are registered prior to the consult, and bills have been processed according to hospital Ambulatory Care standards. Assure all consults have been dictated, and dictation is received at remote site, as well as in the patient's medical record at the hospital site. Perform
- random audits at remote sites and in hospital Medical Records as part of the program's overall Clinical Quality Improvement activity. Assure timeliness of patient scheduling. Monitor and analyze clinic performance reports and make recommendations designed to improve or enhance clinic performance.
- Responsible for assuring clinics and coordinators are equipped with all necessary programs, computers, Information Services access needed to complete job duties. Responsible for assuring telemedicine equipment in each consult suite is adequate for the current need, as well as in reliable working order, and upgraded to meet current industry standards.
- From billing system, produce regular reports on billing and collection activities. Develop recommendations and solutions if issues are identified.

• Supervise abstracting and billing function of the billing analyst. Assure coding and billing activities are in compliance with Ambulatory Clinic standards for accuracy as well as timeliness. Work with clinic coordinators, physicians and billing analyst to minimize lag times.

• Perform billing and financial analysis, and provide recommendations regarding the budget as it pertains to purchasing or releasing specialty time.

• In partnership with Medical Director, act as primary contact and liaison to the professional billing group on behalf of center for all process and policy issues.

• Analyze insurance denial reports for process improvement. Work with professional billing group and/or clinic staff to determine further action (training of clinic staff or educating payers) to prevent reoccurrence.

• Audit patient database. Compare database with clinic schedule and billing reports to make sure invoices have been processed for all patients seen.

PROCESS IMPROVEMENT & CUSTOMER SERVICE QUALITY MAINTENANCE

• Work with technical team to automate as many clinic processes as possible. This includes resource scheduling, technical trouble-shooting, tracking of remote sites and their related technical information and personnel information, etc.

• Coordinate with the technical support team to ensure problems and system development needs are addressed. This includes tracking technical issues (e.g. closely monitoring trouble-shooting listserv) and jointly developing training opportunities and technical enhancements.

• Assess level of customer service for remote site coordinators by working directly with remote site coordinators and referring physicians. Act as primary point of contact for job performance feedback from remote site coordinators.

• Assess level of customer service for specialists. Work with team to poll all specialists on their satisfaction with the TM clinic operations, the quality of referrals from remote sites, as well as the quality of patient presentation. Notify instructor when training needs are identified.

• Provide organized feedback regarding operational issues and administrative matters to medical director, and make recommendations to facilitate further program development.

• From Excel spreadsheet received from billing group, prepare quarterly reports on collections by specialty, and collections by insurance provider. Produce quarterly collection reports for each specialty, comparing them to their department's overall collection ratio. Develop recommendations and solutions if issues are identified.

• Key member of department Clinical Quality Improvement meetings. Responsible for recommending, tracking and reporting on clinic-specific CQI measurements.

• Ensure that all regulatory and legal requirements are implemented in the unique telemedicine setting. Communicate with remote sites to ensure a clear understanding of the Telemedicine legal and regulatory environment (examples: JCAHO, HIPAA, reimbursement) .

DATABASE MANAGEMENT

- Oversee the clinic database (necessary for clinic operations and health services research), including coordination with programming staff for necessary enhancements of the application to support clinic operations. Review activity on Referral Status web page. Work with remote site coordinators to make sure all their referrals are showing up on the web correctly. If problems exist with data not showing up on the web, determine whether it's a system or staff problem, and resolve accordingly. If the remote site doesn't have access to the web, make sure they receive their reports on a weekly basis.

- From Excel pivot table, prepare and analyze monthly reports on the following: Clinic volume by specialty; clinic volume by location; DNKA by site and specialty. Develop recommendations and solutions if issues are identified.

MISCELLANEOUS

- Act as back-up to lead instructor on an as-needed basis.

- Coordinate Public Relations communication to hospital departments and remote sites. Participate in demonstrations to visiting news media, government officials, as well as partner hospital administrators and physicians.

- Other related telemedicine duties as defined by the Telemedicine Operations Manager, Chief Administrative Officer, and Medical Director.

SKILLS, KNOWLEDGE AND ABILITIES

- Minimum of 2 years of recent hospital Ambulatory Care or clinic supervision experience required. Demonstrated ability to motivate staff to achieve optimal individual and team performance.

- Completion of Supervisor Series course desired.

- Demonstrated analytic ability to identify process or performance issues and develop recommendations using multiple information sources.

- Excellent verbal and written communication skills, and the demonstrated ability to understand and to convey information clearly

- Understanding of the legal and regulatory health care environment and analytic skills to implement policies in the unique telemedicine setting.

- Excellent computer skills and an ability to learn and understand the general technical requirements for the telemedicine systems. Ability to provide basic technical support and to triage more difficult problems to appropriate staff. Ability and skill to proficiently operate a PC for Excel, Word, Lotus Notes, Internet, Invision, Signature, and all hospital registration, scheduling and billing systems.

- Organizational skills to prioritize workload and meet deadlines, develop and carry-out project assignments in an efficient and timely manner and to provide accurate and succinct documentation of activities.

- Demonstrated ability to communicate effectively with physicians, clinical and technical staff.

- Skill to exercise tact, courtesy and diplomacy when dealing with individuals at any level within or outside the organization.

- Ability to maintain confidentiality, exercise discretion, use independent and mature judgment, work without close supervision and commit to excellence.

- Ability to work with minimal direction and to take the initiative to follow-up on projects.

- Ability to lead a team in a dynamic and highly visible unit, which requires a high degree of professionalism and flexibility.

- Ability to develop new operational processes and to teach these procedures to team members, to site coordinators, and to clinicians.

TELEMEDICINE TECHNICAL SUPPORT

Purpose:

The Telemedicine Program primarily utilizes systems and devices for the distribution and dissemination of healthcare services, education, and information. The program also investigates, integrates, and maintains videoconferencing systems for use by administration, education, and patient care activities. The primary responsibility of this position is technical investigation and support for the telemedicine program and its related activities.

Duties:

HARDWARE/SOFTWARE INSTALLATION CONFIGURATION AND MAINTENANCE

- Install, configure, test and maintain application systems, operating systems and communication software in a heterogeneous environment.
- Install, configure, maintain, and test video conferencing hardware/software including PCs, NICS, hard drives, and RAM.
- Install, configure and test software packages including operating environments, application suites and communication methodologies.
- Work with vendor technical support and corresponding departments to resolve outstanding issues, shipping, receiving, etc.
- Coordinate installation and test of circuits associated with data and video communications including, but not limited to, ISDN, Frame Relay, and T1.
- Plan, coordinate, implement and document user-validation, performance and acceptance of installed applications at remote and local sites.
- Identify, implement and document corrective modifications to ineffective or malfunctioning systems as appropriate.
- Set up and maintain training environments, presentations, laptops, etc. as appropriate.
- Other Hardware/software installation, configuration and maintenance duties as required.

SYSTEMS ANALYSIS, ADMINISTRATION, AND DEVELOPMENT

- Investigate, document, and implement application and data interchange and interaction processes to insure efficient and effective information and data access and utilization.
- Based on user needs and feedback, implement new, and update existing, desktop applications and ensure integration with enterprise applications, standards, and processes.
- Assist as necessary with the maintenance and upgrades of web, file and database servers.
- Implement new services as needed.
- Assist in the research, planning, documentation, and implementation of repairs, feature enhancements and future growth of information systems infrastructure.

USER SUPPORT

- Assist user and other team members in diagnosis and correction of problems encountered during and after implementation of systems or projects.

OTHER DUTIES

- Assist with the technical activities of the Technical Team as necessary.
- Assist in the documentation, management, and inventory of technical equipment, shipping and receiving, coordination of equipment moves, etc.
- Assist with the installation, testing , maintenance, and training of remote or field equipment, systems, and processes.

SKILLS KNOWLEDGE AND ABILITIES

- Ability to work as a team member with excellent communication and customer service skills necessary to effectively contribute to a creative group.
- Ability to work in a clinical setting and to communicate effectively with physicians and clinical staff.
- Demonstrated organizational skills and flexibility to manage multiple tasks and meet deadlines.
- Knowledge and understanding of videoconferencing equipment, processes, and protocols.
- Formal training and/or experience in trouble shooting and repair of computers and peripherals, including disassembly, board and chip replacement, continuity, cabling and cable testing.
- Ability to isolate and diagnose hardware and software problems in a LANIWAN environment an to recommend and implement the most effective course of correction.
- Extensive PC hardware experience required including, but not limited to, configuration and installation of SCSI cards (all types), video cards, modems, network cards, motherboards and RAM.
- Perform IRQ and DMA troubleshooting and configuration.
- Must have experience with installation, configuration, maintenance, and trouble-shooting with a flavors of Windows & DOS. Linux experience a plus.
- Knowledge of TCP/IP utilities such as: FTP, telnet, ping, arp, rarp, etc.
- Knowledge of inverse multiplexors, ISDN, TI, and frame relay.
- In depth knowledge of MS Office Professional, and other office productivity software required.
- Comprehensive understanding of the capabilities and limitations of computers. Ability to recognize processes that can easily be automated and those that cannot.
- Knowledge of analysis and design techniques needed to understand user requirements and compose a functional computerized application system.
- Ability to use logic and flow diagrams to describe the functional processes of the system at a level that both end users and programmers can understand.
- Ability to work without direction in a networked computer environment. Ability to install and troubleshoot printers, other devices, relevant drivers and applicable software.
- Ability to manage small projects as appropriate.

SAMPLE TELEMEDICINE WORKFLOW

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Workflow varies from organization to organization. The following pages illustrate how a typical telemedicine clinic operates, and are intended to be used as a starting point in developing your own operational protocol. You will find differences and similarities between the duties of the patient site and the specialty site.

The flow charts illustrate how both the patient and specialty site clinics work together as a team to accomplish each patient consult. You will find your operational workflow to differ slightly, but the concept will remain the same.

The appointment scheduling flow chart was included in this document to give you an idea of the most common expectations for scheduling turn-around times. This chart has been used as a communication tool between the specialty site and the patient site, to establish realistic performance expectations.

The referral to billing process flow chart further illustrates the "back office" job duties of the telemedicine team. It also serves as a template for you to use when documenting your own work flow process within your organization.

DAY OF CONSULT - Patient Site
(Pease refer to the flow chart for event timing and site participation requirement)

1.   Telemedicine Coordinator gives their front desk receptionist the appropriate questionnaire packet to hand out when patient arrives (this may also be mailed to the patient prior to appointment). Patient should arrive 30 minutes prior to appointment if filling out a questionnaire is required.

      a. Patient must sign consent form (once per year).

      b. Patient must complete medical history form if not already done.

2.   Telemedicine coordinator will prepare exam room and turn on telemedicine unit 30 minutes (or as early as possible) prior to the consultation. If peripheral equipment (derm camera, nasopharyngoscope, stethoscope, etc.) will be used during consult, please turn on and test image/sound prior to consult.

3.   Fax completed history, and consent form, and any additional last minute test results to the Specialty site Telemedicine Coordinator.

      a. The specialist requires the completed history and questionnaire prior to the beginning of the consult.

4.   Ask the specialist if he/she has received all the necessary information before rooming the patient.

5.   Once the patient and the primary care provider are in the room , the site coordinator remains in the room to assist with the equipment as necessary.

AFTER THE VISIT - on the day of consult

1.   At this time, the specialist may wish to send (via fax, or other electronic format) written instructions for the patient. Any written Instructions from the Specialist are to be copied and distributed. You may wish to ask the patient to move to the waiting room while waiting for the information.

- Patient
- Primary care provider
- Patient medical record

2.   Clean equipment if used (any cameras or scopes that have touched the patient).

3.   If another patient is scheduled immediately following the previous appointment, ask the specialist "Are you ready for me to room the next patient?" before proceeding.

AFTER THE VISIT

1.   Telemedicine Coordinator receives the specialist's signed dictation, and places it in the referring provider's box for review prior to filing in the patient's medical record.

2.   Telemedicine Coordinator reviews the consult dictation from the specialist. If a follow up appointment as well as any further tests are required , work with the primary care provider and the patient to complete the required tests, fax the results to the specialty site, and schedule a follow up appointment.

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DAY OF CONSULT - Specialty Site

(Pease refer to the flow chart for event timing and site participation requirement)

1.   Telemedicine Coordinator receives electronically submitted information from the patient site, places it into the patient's medical record, and places the medical record in the specialist's box outside the consult room for review.

2.   Telemedicine Coordinator asks the specialist if there is any other information he/she may need prior to the consult.

3.   Consult begins. Telemedicine coordinator is not present in the room during specialty consults, but remains nearby in the event further information or technical support is
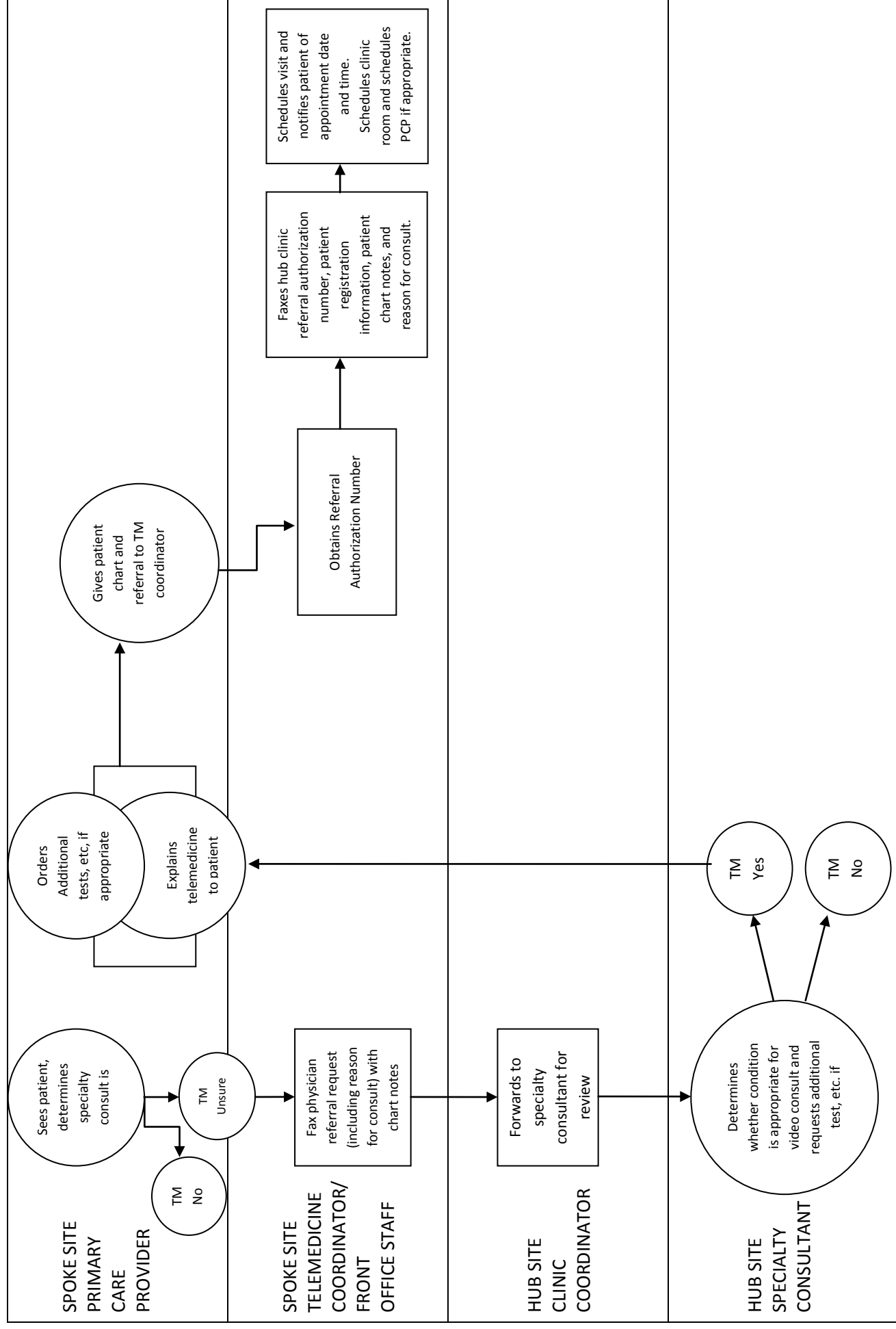needed.

AFTER THE VISIT - on the day of consult

1.   At this time, the specialist may wish to send written instructions for the patient. Any written instructions from the Specialist are to be sent (either via fax or other electronic format) by the telemedicine coordinator to the referring site immediately following the consult, and placed in the patient's medical record at the specialty site.

2.   Collect specialist billing and dictation materials.

AFTER THE VISIT

1.   After the specialist reviews and signs the dictation, send the original to the referring
physician (either via mail or electronic transmital), and place a copy in the patient's medical record .

2.   Telemedicine Coordinator reviews the consult dictation from the specialist. If a follow up appointment as well as any further tests are required, work with the patient site coordinator to schedule the appointment after the tests have been completed and received.
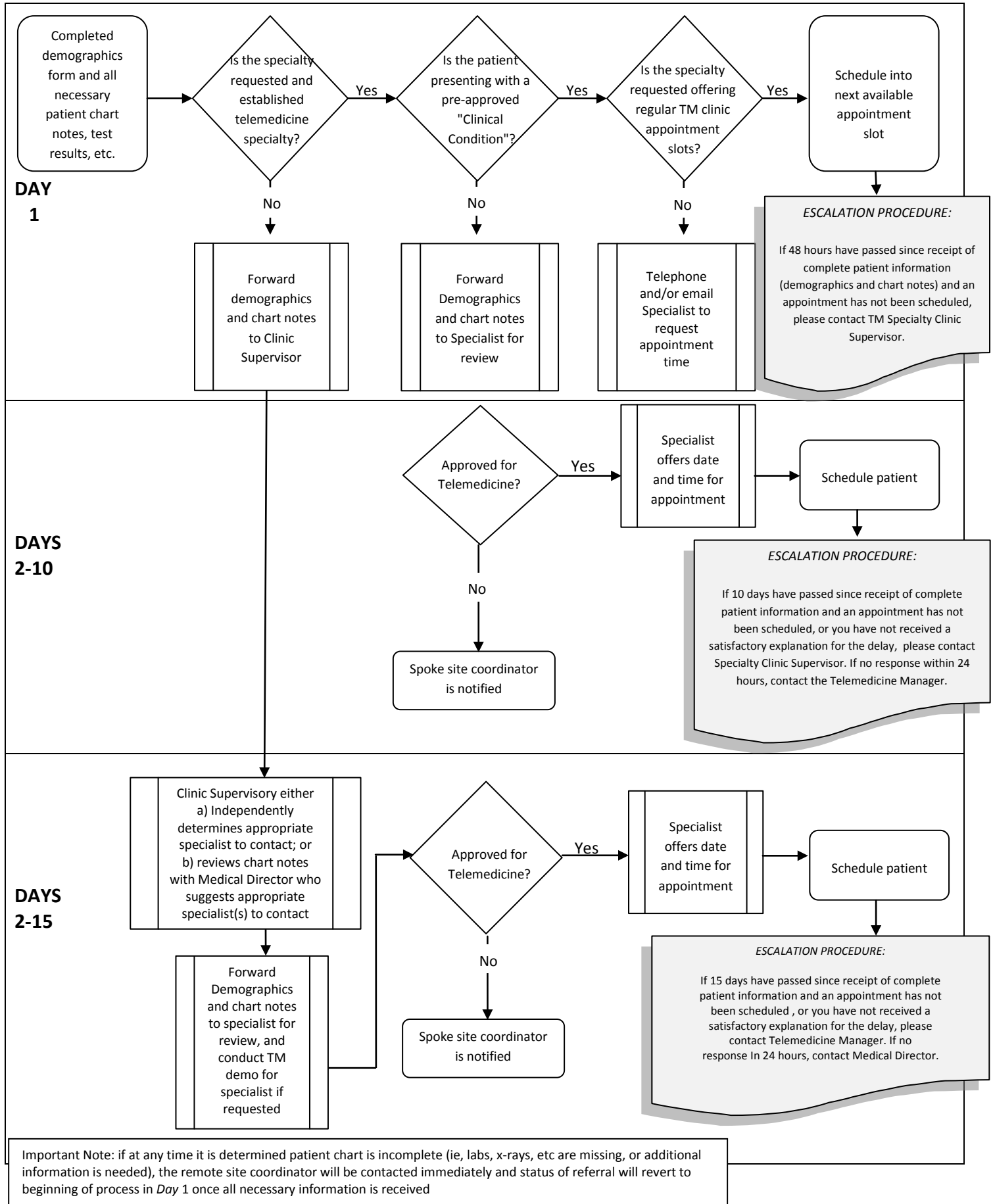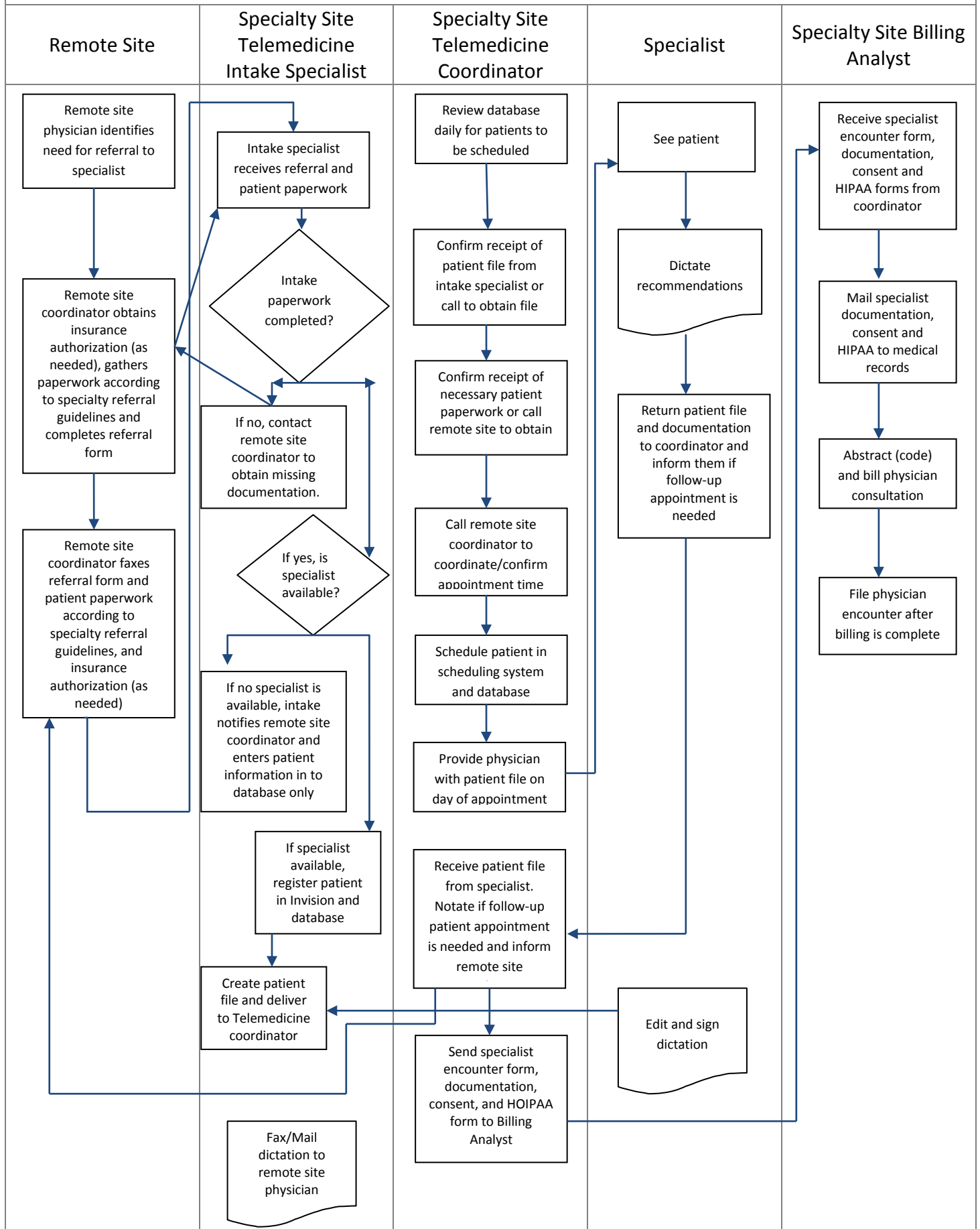
PRIOR TO CONSULT

SPOKE SITE PRIMARY CARE PROVIDER

- Sees patient, determines specialty consult is
- TM No
- TM Unsure
- Orders Additional tests, etc, if appropriate
- Explains telemedicine to patient
- Gives patient chart and referral to TM coordinator

SPOKE SITE TELEMEDICINE COORDINATOR/ FRONT OFFICE STAFF

- Fax physician referral request (including reason for consult) with chart notes
- Obtains Referral Authorization Number
- Faxes hub clinic referral authorization number, patient registration information, patient chart notes, and reason for consult.
- Schedules visit and notifies patient of appointment date and time. Schedules clinic room and schedules PCP if appropriate.

HUB SITE CLINIC COORDINATOR

- Forwards to specialty consultant for review

HUB SITE SPECIALTY CONSULTANT

- Determines whether condition is appropriate for video consult and requests additional test, etc. if
- TM Yes
- TM No

DAY OF CONSULT

SPOKE SITE PRIMARY CARE PROVIDER

(Complete Billing Form)

← (PCP participates in patient presentation/ physical exam when "medically)

SPOKE SITE TELEMEDICINE COORDINATOR/ FRONT OFFICE STAFF

[*Administer patient satisfaction form

*Distribute treatment plan
*Clean equipment

*Schedule follow-up appt, if appropriate.]

← [Patient is roomed and consult begins on time.

TM Coordinator remains present to assist with video equipment, if necessary]

[Patient arrives 30 min prior to consult, and is issues the following paperwork to complete:
*Consent form
*Medical History form (if appropriate)]

[Completed paperwork is faxed to Hub site clinic coordinator

Video equipment is turned on and call is placed]

HUB SITE CLINIC COORDINATOR

↔ [*Fax treatment plan to Spoke site

*Schedule follow-up (on-site or video) if appropriate

*Process billing and progress note transcription]

20 Minute prior to consult spoke site initiates video call to Hub site.

[Prepared consult desk:
*PCP transmittal (reason for consult)
*Patient chat notes, medical history, & consent forms
*Billing form]

HUB SITE SPECIALTY CONSULTANT

(*Complete treatment plan
*Dictate progress note)

← (Consultant begins on-time)

← (Consultant arrives 15 min early to review patient information)

SPECIALTY CLINIC APPOINTMENT SCHEDULING FLOW CHART

DAY 1

Completed demographics form and all necessary patient chart notes, test results, etc. →

Is the specialty requested and established telemedicine specialty? — Yes → Is the patient presenting with a pre-approved "Clinical Condition"? — Yes → Is the specialty requested offering regular TM clinic appointment slots? — Yes → Schedule into next available appointment slot

No ↓ Forward demographics and chart notes to Clinic Supervisor

No ↓ Forward Demographics and chart notes to Specialist for review

No ↓ Telephone and/or email Specialist to request appointment time

ESCALATION PROCEDURE:

If 48 hours have passed since receipt of complete patient information (demographics and chart notes) and an appointment has not been scheduled, please contact TM Specialty Clinic Supervisor.

DAYS 2-10

Approved for Telemedicine? — Yes → Specialist offers date and time for appointment → Schedule patient

No ↓ Spoke site coordinator is notified

ESCALATION PROCEDURE:

If 10 days have passed since receipt of complete patient information and an appointment has not been scheduled, or you have not received a satisfactory explanation for the delay, please contact Specialty Clinic Supervisor. If no response within 24 hours, contact the Telemedicine Manager.

DAYS 2-15

Clinic Supervisory either a) Independently determines appropriate specialist to contact; or b) reviews chart notes with Medical Director who suggests appropriate specialist(s) to contact

→ Forward Demographics and chart notes to specialist for review, and conduct TM demo for specialist if requested

→ Approved for Telemedicine? — Yes → Specialist offers date and time for appointment → Schedule patient

No ↓ Spoke site coordinator is notified

ESCALATION PROCEDURE:

If 15 days have passed since receipt of complete patient information and an appointment has not been scheduled , or you have not received a satisfactory explanation for the delay, please contact Telemedicine Manager. If no response In 24 hours, contact Medical Director.

Important Note: if at any time it is determined patient chart is incomplete (ie, labs, x-rays, etc are missing, or additional information is needed), the remote site coordinator will be contacted immediately and status of referral will revert to beginning of process in *Day* 1 once all necessary information is received

TELEMEDICINE REFERRAL TO BILLING PROCESS

Remote Site	Specialty Site Telemedicine Intake Specialist	Specialty Site Telemedicine Coordinator	Specialist	Specialty Site Billing Analyst

Remote Site

Remote site physician identifies need for referral to specialist

Remote site coordinator obtains insurance authorization (as needed), gathers paperwork according to specialty referral guidelines and completes referral form

Remote site coordinator faxes referral form and patient paperwork according to specialty referral guidelines, and insurance authorization (as needed)

Specialty Site Telemedicine Intake Specialist

Intake specialist receives referral and patient paperwork

Intake paperwork completed?

If no, contact remote site coordinator to obtain missing documentation.

If yes, is specialist available?

If no specialist is available, intake notifies remote site coordinator and enters patient information in to database only

If specialist available, register patient in Invision and database

Create patient file and deliver to Telemedicine coordinator

Fax/Mail dictation to remote site physician

Specialty Site Telemedicine Coordinator

Review database daily for patients to be scheduled

Confirm receipt of patient file from intake specialist or call to obtain file

Confirm receipt of necessary patient paperwork or call remote site to obtain

Call remote site coordinator to coordinate/confirm appointment time

Schedule patient in scheduling system and database

Provide physician with patient file on day of appointment

Receive patient file from specialist. Notate if follow-up patient appointment is needed and inform remote site.

Send specialist encounter form, documentation, consent, and HOIPAA form to Billing Analyst

Specialist

See patient

Dictate recommendations

Return patient file and documentation to coordinator and inform them if follow-up appointment is needed

Edit and sign dictation

Specialty Site Billing Analyst

Receive specialist encounter form, documentation, consent and HIPAA forms from coordinator

Mail specialist documentation, consent and HIPAA to medical records

Abstract (code) and bill physician consultation

File physician encounter after billing is complete

tab 3 goes before page 80

Room Design

Telemedicine Room Design

PROGRAM GUIDE

CALIFORNIA TELEHEALTH RESOURCE CENTER

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Telemedicine Room Design

Program Guide

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Introduction

Room design impacts the quality of the telemedicine services and should not be overlooked during the development of a telemedicine program. Good telemedicine room design will accomplish two major functions: it will create the visual and audio clarity and accuracy that is necessary to support clinical examination and diagnosis from a distance and a connection between the patient and the remote provider sites where the patient-clinician interaction, not the technology, is the focal point.

This document provides practical information and advice on the major components that need to be addressed in designing a telemedicine room. It will assist in selecting the best room for providing telemedicine services and identifying modifications that need to be made in the selected room. This guide includes a template that can be used in assessing the design of your telemedicine room. While the guide focuses on patient examination rooms, the same fundamentals apply to remote clinician rooms. A companion video is available at www.caltrc.org.

Design Considerations

The challenge in creating a telemedicine room is to integrate the technology into the regular flow of an examination and to reproduce the images at the consulting clinician site with clarity and accuracy. There are a number of aspects to consider when designing a telemedicine exam room. The most important design considerations are:

- Room Location
- Room Size
- Placement of Equipment and Furniture
- Electrical and Telecommunications Connections
- Lighting
- Acoustics
- Wall Color

Since most patient sites will be adapting an existing room for telemedicine, it is important to select the best possible fit and to budget, if necessary, for room modifications.

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Room Location

The telemedicine room should be in a quiet location, minimizing exposure to office noise, busy corridors, stairwells, parking lots, waiting rooms, restrooms or other sources of noise. Such noise can be picked up by microphones which can make it diffi cult for the remote site to hear. Rooms without windows are better for quality image transmission. Rooms with windows should have shades or blinds to reduce the light and glare.

Room Size

While there are no specific room size requirements, the optimal room size depends on the service being provided, as well as the type and size of the equipment in use. For example, clinical or patient education programs will require conference seating for many participants while specialty consultations will require examinati on tables and room for only a few people.

Telemedicine Patient Examination Room: A telemedicine exam room should be large enough to move around and work with patients comfortably. It should be large enough to accommodate an examinati on table, a couple of chairs, the telemedicine equipment, the patient, and the patient presenter. The patient should be able to sit in a chair as well as use the examination table; both should be within the cameras view. There should be enough room to easily use the telemedicine scopes and for the patient presenter to move around the patient during the examinati on. Most exam rooms should also contain a work surface for charting, a phone, a computer and when necessary, a fax machine available nearby.

The size of the room also impacts the camera viewing area. The distance between walls will determine the proximity of the camera and microphone to the patient. Ideally, the telemedicine camera should be located 6 - 8 feet from the patient. The camera needs to be able to pan out to a full view of the room with the patient and the patient presenter in the picture, and zoom in to have close-up views of the patient. A small room forces the camera to be located too close to the patient, limiting the consulting clinician's view.

Remote Clinician's Consultation Room: The remote clinician also needs to consider room design. The room design factors that impact a patient exam room generally impact the remote clinician's site as well. Room size can be smaller for a remote clinician site since the patient exam table is not necessary. They also need to consider the camera viewing area and angle of the camera, which is discussed under the Equipment Placement Section.

Clinical Education Rooms: Many telemedicine programs offer clinical education programs for clinicians or for patients. A well designed education room would follow guidelines for classroom development, which would include writing tables for attendees, lecterns, and white boards for the walls. From a videoconferencing perspective, the challenges are adequate audio feeds, camera coverage, and size of the viewing monitor. Many patient sites use the patient examination room to view clinician education programs. While this may be a necessity if a unit cannot be moved to a conference room, attendees may find this uncomfortable and it can impact the overall acceptance of the technology. Some programs install lines in both an examinati on room and a conference room to facilitate education programs. The small screen commonly used in an exam room may not be appropriate for viewing in a conference room. Early planning and budgeting can result in solutions that accommodate both needs.

Equipment Placement

Once an appropriate room has been located it will need to be evaluated for placement of the telemedicine equipment. The goal of placement is to optimize the camera's view of the patient, to allow staff to enter and exit without interrupting the visit, and to allow the presenter to easily use the scopes and peripherals. As you begin to consider placement of equipment, it may be helpful to create a drawing of the room with doors, windows, electrical outlets, and existing telecommunication connecti ons.

Positioning the Exam Table: The camera and exam table should be positioned so the patient presenter can see both the patient and the monitor when using scopes that transmit images to the remote clinician site. There should be a place for a chair which is often used for the patient at the beginning and end of the visit. A second chair should be available, should a family member be in attendance during the visit.

The exam table or patient chair should not be placed in front of a window because backlighting can degrade the patient image at the remote clinician site. Shades or blinds generally can not reduce backlighting enough to be acceptable. The remote clinician should also not be placed in front of a window unless the backlighting can be adequately addressed to allow the patient a clear view of the clinican.

Clean and Uncluttered

An uncluttered background optimizes camera function and improves the view at the remote site. Wires, telephones, fax machines, monitors, computers, peripheral equipment and furniture can contribute to a cluttered and inefficient workspace. Make an effort to arrange and store them in an organized, efficient way.

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Positioning the Camera: Cameras need to be placed so that both participants are looking directly at each other during a video call. If the camera is placed too close to the participant or mounted too high above the monitor, the person appears to be looking down at the monitor rather than directly at the remote participant, as shown in Figure A. This can occur at either the patient or the remote clinician side of the connection. The remote clinician site needs to be particularly aware of this affect when using a desktop computer with a camera mounted on top of the monitor. The distance can be too short resulting in the clinician looking down all the time. Correct camera positioning is shown below in Figure A.

Figure A: Impact of Camera Placement

Even though the patient is looking directly at the consultant, it does not appear that way because the camera is mounted too high. Mounting the camera too high makes it difficult for the consultant and patient to maintain eye contact.

When the camera is mounted at approximately the same height as the patient it produces a more precise view of the patient, allowing the patient and consultant to make eye contact.

Electrical and Telecom Outlets: Telecommunications and electrical outlets should be installed or expanded based on the best location for the exam table and telemedicine unit. Locating the telecommunications outlets near the unit will avoid long runs of cable on the floor. Depending on the complexity of equipment multiple outlets may be required for your equipment. Generally, a standard 120v outlet with a surge protector is appropriate for telemedicine equipment.

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Lighting

Lighting is perhaps the most critical factor in designing a telemedicine examination room. Lighting impacts the clinician's ability to see the patient clearly with true color reproduction, which is critical for patient evaluation. The goal of lighting is to create images that have even lighting and accurately reproduce colors - where the images are not too dark, and do not have shadows.

Telemedicine programs sometimes fail to fully address lighting requirements assuming the camera will be able to correct for any lighting problems. The telemedicine camera alone will not be able to compensate for poor lighting systems. In fact, good lighting will dramatically improve image quality even when using less expensive cameras.

Optimal Lighting

Optimal lighting is a diffused light source that does not create shadows and depicts colors accurately. Ideally, the telemedicine examination room will have both direct and indirect lighting. A good source of diffused light is needed in front of the patient shining diagonally toward the patient. Placing a light source in front of the patient reduces shadows that occur on the face if only overhead lighting is used or if there is a light source behind the patient. Spotlights or harsh directional lighting can create unwanted shadows, as shown in below Figure B.

Lighting Fundamentals

- Use diffused soft light falling in front of the patient

- Avoid backlighting from windows or overhead lights

- Avoid harsh lighting sources

- Consider full spectrum lighting

- Use supplemental lighting when necessary

Windows or other light sources behind the patient can cause deep shadows on the face that interferes with clinical evaluation as shown above in Figure C.

Figure B: Impact of Harsh Directional Lighting

Harsh directional lighting creates shadows and makes it difficult to see facial features.

Diffused lighting creates even lighting.

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Figure C: Impact of Backlighting

Backlighting from windows and other concentrated light sources can create dark images and shadows.

Diff sed light placed in front of the patient allows for a more accurate depiction of the colors and features in the image.

Most patient examination rooms have overhead fluorescent lighting as the standard lighting configurati on. Fluorescent overhead lighting alone may not provide optimal lighting for telemedicine clinical visits. They can provide excellent diffused light if the tubes can be placed in front of the patient. An additional source of light may be needed because fluorescent lighting can create washed out images. Full spectrum fluorescent light tubes can also be purchased to support accurate color transmission.

Special lighting needs should also be considered to assure that images have adequate color reproduction, contrast, and definiti on. Dermatology, in particular, requires accurate color reproduction which may not be achieved when relying solely on ceiling mounted fluorescent lighting, as shown below in Figure D. A supplemental light source may be necessary to obtain accurate color reproduction. The image on the right of Figure D shows the same subject with additional lighting from a supplemental light source. (Please note that color accuracy is also affected by the white balance of the camera or peripheral scopes.)

Figure D: Impact of Supplemental Lighting

Images taken using only ceiling-mounted fluorescent light fixtures can lack dimension and contrast.

Supplemental lighting enables the subject in the image to stand out against the background.

Wall color

Wall color also impacts how patients look on video. White or light walls can darken faces, making features hard to see at the remote site. A dark wall color can lighten faces. This occurs because automatic aperture settings on video and still cameras react to the wall color. If the wall is light, the camera lets in less light resulting in darkened faces. If the wall is dark, the camera lets in more light making the faces become washed out or too light. Use flat paint to avoid any reflecti on off the wall. Figure E demonstrates the difference between light and dark-colored backgrounds.

As illustrated in Figure F, a robin's egg blue or light gray background works well on all skin tones. It can be very helpful to test the selected color before painting the entire wall. Different lighting conditions will affect the shade of the color. Seeing the color on the remote end can help select the color that best suits the room. It is not necessary to paint the entire room the selected color. It can be limited to the walls that will be the backdrop for the camera views. This may include more that one wall depending on the configuration of the room.

Figure E: Impact of Wall Color

A light-colored background makes the image appear too dark.

A dark-colored background makes the image appear washed out or too light.

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Figure F: Ideal Wall Colors

Ideal: Light Blues

Ideal: Light Grey Background

Acoustics

Good acoustics design is also important to consider. Rooms that echo make conversation between the patient and remote clinician difficult. High ceilings and hard surfaces on fl oors and walls can create poor acoustics as can noises from facility mechanics and external sources. Installing materials that absorb or dampen sound will improve the acoustics of the room. Sound dampening is usually achieved by installing carpeting, drapes, tiles or paint. Since a clinic setting does not lend itself to carpeting or drapes, acoustic tiles can be installed on the ceiling or around the top of the walls.

Sound dampening wall paint is also available. Be sure to check on any facility licensing requirements before selecting a sound dampening solution. The remote clinician's room may be able to use carpeting and drapes if the room is not used for patient examinations.

It is important to consider the amount of outside noise when selecting a room because it can be difficult to reduce the level of noise that enters the room and it can become disruptive to patient visits. Unwanted noise from within the room often is the result of fans used to keep the telemedicine equipment cool. Fan noise can be reduced by installing the equipment inside a cart or case; however, any case needs to assure proper air flow or the equipment can overheat and be damaged.

Mobile Considerations

Telemedicine mobile units are becoming increasingly popular for disaster response and mobile clinics to reach migrant or remote populations. When setting up a mobile telehealth vehicle, be sure to consider the same key areas discussed for room design. Placement of equipment, lighting, and acoustics become an even bigger issue when your patient site has to be changed or moved regularly. Some mobile progrmas do not have a telehealth equiped vehicle and move equipment from loction to location, setting up upon arrival. Consider using the checklist in this guide each time the site is set up to ensure the success of the consultation. It may also be helpful to use one or two standard floor configurations for setup.

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Telemedicine Room Assessment and Design Worksheet

Type of Telemedicine Room: ❏ Patient exam ❏ Remote clinician ❏ Education / classroom

What type of clinical services will be provided: _____

_____

Are there any special spaces or lighting considerations related to the services: _____

_____

Name of room selected for assessment: _____

Room Location:

Yes   No

❏   ❏   Quiet
❏   ❏   Easily accessible
❏   ❏   Minimal exposure to office and outside noise
❏   ❏   Close to regular clinic operations

Room Size:

Identify the equipment that will be needed in this room.

❏ Telemedicine unit - specify size:_____
❏ Exam table
❏ Patient chair
❏ Other chairs – number:_____
❏ Work table
❏ Desk
❏ Computer
❏ Specialized lighting – specify type: _____
❏ Peripheral equipment
❏ Telephone
❏ Fax machine
❏ How many people does the room need to accommodate:_____

Yes No

❏   ❏   Room is large enough to accommodate needed equipment with adequate room for the patient presenter to comfortably move around

Equipment Placement:

Yes No

❏ ❏ Placement of plugs and lines will not interfere with movement or create hazard
❏ ❏ Camera can be placed to provide full view of patient
❏ ❏ Camera can be placed to create eye to eye contact
❏ ❏ Scopes and peripherals can be easily accessed

Modifications that will be required: _____

_____

_____

_____

Estimated cost of modifications: _____

_____

_____

_____

Lighting:

Yes No
- ☐ ☐ No windows in the room
- ☐ ☐ If the room has windows, can shades or blinds mitigate impact of lighting
- ☐ ☐ If the room has windows, can the exam table be placed to avoid backlighting
- ☐ ☐ Lighting provides adequate direct and indirect lighting
- ☐ ☐ Direct light source shines diagonally toward the patient
- ☐ ☐ Supplemental lighting adequate
- ☐ ☐ Full Spectrum light blubs are needed

Modifications that will be required: _____

_____

Estimated cost of modifications: _____

Room Color:

Yes No
- ☐ ☐ Paint color is appropriate for telemedicine
- ☐ ☐ Paint finish is flat

Modifications that will be required: _____

_____

Estimated cost of modifi cations: _____

Acoustics:

Yes No
- ☐ ☐ Room has minimal outside noise
- ☐ ☐ Room does not echo
- ☐ ☐ Equipment noise levels are minimal
- ☐ ☐ Facility license requirements allow modifi cations

Modifications that will be required: _____

_____

Estimated cost of modifications: _____

_____

Clean and Uncluttered Room:

Yes No
- ☐ ☐ Area is clear of clutter

Total estimated cost for room modifications: _____

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Marketing

DEVELOPING A TELEHEALTH MARKETING PLAN:

A Step by Step Guide

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This Marketing Plan is designed as a template that can be easily taken and adopted to suit the needs of a hospital or clinic which is the recipient of telehealth services that it can provide to its community.

There are multiple ways to put together a marketing plan. Some plans can go into a lot of traditional market research and analysis such as segmentation, targeting, positioning, the 4 P's (product, price, place, promotion), etc.

This plan does not take that approach because it can be too complicated and time consuming for professionals whose primary job is not actually marketing, but who need to generate and execute effective marketing strategies to drive telehealth awareness, increase its utilization, enhance its reputation, and ultimately drive growth.

So instead, we opted for a clear, simple way to help someone like a telemedicine director develop a marketing plan.

The plan assumes that XYZ Regional Medical Center has already gotten approval to start a telehealth program. Therefore, the marketing plan is (and should be) but one major element of the broader plan for successfully implementing the telehealth program.

This plan template is designed to help someone explain what they plan to do from a marketing perspective, why they want to do it, and how they will measure the results.

Someone could essentially take the goals, target audiences, marketing activities, success metrics, and economics in this plan; customize these for their particular situation, and have a marketing plan ready to go.

MARKETING PLAN COMPONENTS

This portion of the document describes the main sections that you should have in your marketing plan. When all of these components are present, the reader should have a good sense of how the marketing strategy and its execution come together. You can use the descriptions in these sections to create your own marketing plan from scratch. Whenever you get stuck, you can also look at the Sample Marketing Plan later in this document and copy/modify text to suit your specific needs.

EXECUTIVE SUMMARY

This section is for someone (e.g. an "executive") who does not have time to read the entire marketing plan. It enables them to scan the key details of the marketing plan:

- What are our goals?
- Who are we targeting?
- What is our budget?
- What do we plan to do with it?
- Are there any major activities or items worth noting?
- How will we measure success?

INTRODUCTION

This is a brief section that explains what the Marketing Plan will cover.

BACKGROUND

This section gives context to the Marketing Plan. Describe the circumstances under which these marketing activities will take place, what has been accomplished, and what product or service is being offered. These descriptions put the marketing plan in a business context, so that it is not a stand-alone effort.

STRATEGIC OBJECTIVES

While the previous section provided the business context, this section lays out specific strategic goals that can be measured. These goals should relate to the telehealth product or service you are offering. It is helpful to group related goals into categories like "business" and "clinical." Ultimately, the operational, marketing, and technical plans will support these primary goals.

For the business goals, outline any goals that apply in the following areas: Financial, Market Share, Market Leadership, Reputation, Facility's Mission, Operational effectiveness. Where possible, identify when these goals should be achieved and how the metrics for success will vary from one year to the next. For clinical goals, outline any goals that apply to: Patient care, Clinical support and participation.

MARKETING OBJECTIVES

Describe the key objectives of the marketing plan. Just as with the broader strategic objectives, include success metrics for each marketing objective.

MARKETING STRATEGY: OVERVIEW

This section is simply for overviewing the major elements that will go into the marketing strategy. They will be detailed in subsequent sections and provide market analysis to back up your strategic direction. In the classical approach taught in business schools, these major elements would be "Segmentation", "Targeting", and "Positioning". Another option is to go with "Market," "Message," and "Media." Whatever you pick will drive other sections of the marketing plan.

MARKET ANALYSIS: TARGET MARKET

How did we divide up the market of people we want to speak to? Who do we want to speak to? Who are the targets of our marketing campaigns? Why have we selected these targets versus others?

MARKET ANALYSIS: PROBLEMS, ALTERNATIVES, TELEHEALTH SOLUTION BENEFITS

Having selected the marketing targets, the next step is to figure out what we want to speak with them about. Before making the mistake of jumping right into a discussion of telehealth, identify their specific challenges and the options they have for addressing these challenges. Then identify the unique benefits that telehealth can bring by resolving the challenges in ways that the other alternatives do not. Ensure that the analysis is specific to each target market. A generic analysis is likely to fall flat because it does not dive deep enough into the specific issues for any one targeted group.

MESSAGE

Bring the elements from the Market Analysis together into guiding messages that can be used in marketing materials. This is where you get closer to "copy" – the actual words that will be used in your marketing materials. How do we want to attract our target? How will we differentiate our offering? What claims will we make (that we can justify)? Because this solution is in healthcare, be careful that your claims are defendable. In other words, you cannot guarantee patient outcomes, but you can promote the solution as having demonstrated certain outcomes.

RESOURCES

Identify the resources available to support various marketing activities. Resources can be team, financial, etc. Any changes in these could affect the ability to execute on time, within budget, or in a way that achieves targeted goals.

MEDIA

Identify the means by which we will reach our target audiences with our message. Explain why specific activities have been chosen over others.

MARKETING ACTIVITIES: SUMMARY

Provide a summary of the key marketing activities. Include information on each activity that could be easily compared across activities. These can include: Description, Objectives served, Target audiences, Frequency, Metrics for success, Resources involved, and Budget.

MARKETING ACTIVITIES: DETAILS

For specific marketing activities that require more details, provide them in this section. For example, for a website, include more info about the content that it could include.

SUCCESS METRICS

Marketing activities should produce measurable results. This is the section for describing how each marketing activity will be rated in terms of success. While the Marketing Activities Summary will identify success metrics each individual activity, this section will aggregate all success metrics across these activities (as some metrics will be served by multiple activities). In addition, identify the targeted value of these metrics and the various activities that contribute to each metric.

FINANCIALS

Summarize the financial outlay for the marketing plan. Break it out in different ways if possible – by month, by activity, by capital costs vs. operating costs.

SAMPLE MARKETING PLAN: XYZ REGIONAL MEDICAL CENTER

EXECUTIVE SUMMARY

This section is for someone (e.g. an "executive") who does not have time to read the entire marketing plan. It enables them to scan the key details of the marketing plan:

..... What are our goals?

..... Who are we targeting?

..... What is our budget?

..... What do we plan to do with it?

..... Are there any major activities or items worth noting?

..... How will we measure success?

XYZ Regional Medical Center's Marketing Plan is designed to increase the visibility, adoption, and use of our new telehealth services. Our marketing campaigns will primarily target:

- the patient community
- referring providers
- internal administration and staff

With an operating budget of $1,550 for the year ending in December, we will accomplish the following:

- Website and eNewsletter
- Brochures
- Press releases and Guest articles in the media
- Connected Health Media Day
- Satisfaction surveys from patients, providers, and administration
- Social media presence
- Face-to-face visits
- Attend a regional conference to pick up best practices for accelerating program growth.

The largest cost items will be the Connected Health Media Day and attendance of the CTN Conference.

The top measures of success for the marketing plan will be:

- # Website visitors. Target: 1,000
- # Newsletter subscribers. Target: 250
- Patient satisfaction score. Target: 90%
- % of Administrators that can identify at least 3 telehealth benefits. Target: 75%

INTRODUCTION

This document describes the Marketing Plan for XYZ Regional Medical Center's telehealth program.

It covers marketing strategy, marketing tactics, success metrics and financials.

All major marketing activities are summarized and described in the Marketing Activities section for quick reference.

BACKGROUND

....

This section gives context to the Marketing Plan. Describe the circumstances under which these marketing activities will take place. Describe what has already been accomplished, and what product or service is being offered. All of these descriptions put the marketing plan in a business context, so that it is not a stand-alone effort.

....

XYZ Regional Medical Center (XYZ RMC) has recently committed to participate in the California Telehealth Network (CTN). It will be utilizing CTN's services to provide patients in Alphabet County with a new suite of clinical services via telehealth.

These telehealth services will include both emergency and non-emergency services:

- NON-EMERGENCY SERVICES
  Cardiology
  Dermatology
  Gastroenterology
  Infectious Disease

- EMERGENCY SERVICES
  Neurology / Stroke

Telehealth technology for broadband services and video-conferencing was originally obtained through grant funding from Generous Organization of America.

STRATEGIC OBJECTIVES

While the previous section provided the business context, this section lays out specific strategic goals that can be measured. These goals should relate to the telehealth product or service you are offering. It is helpful to group related goals into categories like "business" and "clinical". Ultimately, the operational, marketing, and technical plans will support these primary goals.

We want to encourage participation in this network so that XYZ RMC sees a return on its new investment and ultimately provides better care to our patient population.

BUSINESS

Outline any goals that apply in the following areas: Financial, Market Share, Market Leadership, Reputation, Facility's Mission, Operational effectiveness. Where possible, identify when these goals should be achieved and how the metrics for success will vary from one year to the next.

OBJECTIVE	TIME FRAME
The hospital's CEO, CMO, and CTO should be able to identify the top benefits that the program is bringing to the medical center.	Within 6 months of program launch
3 external organizations in the local community will have recommended the service to their members.	Within the 1st year
Patient satisfaction with telehealth program will exceed 90%	Within the 1st year
Positive media coverage about the telehealth program	Within 6 months of launch
Measurable Return on Investment (ROI)	Within the 1st year

CLINICAL

Outline any goals that apply to: Patient care, Clinical support and participation

OBJECTIVE	TIME FRAME
Achieve 100 telehealth encounters.	Within the 1st year
10 clinicians will obtain training on telehealth and on topics related to the supported telehealth specialties, and earn CE credit.	Within the 1st year
Change at least one patient's life by reducing wait time significantly, enabling them to avoid taking time off of work to see a specialist, or helping them to get a diagnosis that alters their outcome.	Within the 1st year
Clinician satisfaction with telehealth program will exceed 80%	Within the 1st year

MARKETING OBJECTIVES

In support of the program's broad objectives, our telehealth marketing efforts are designed to:

- **Increase visibility and awareness** of our new telehealth services both internally and within our community

- **Drive internal support** for the program. Administrators will continue funding it and advocating its use. Physicians, nurses, and other clinicians will make use of the system.

- **Drive utilization** of our new services both by patients and referring providers.

- **Grow reputation** through media coverage, testimonials, and success stories.

Specific measures of success are outlined along with the selected marketing activities/campaigns in the section entitled "Success Metrics."

MARKET STRATEGY: OVERVIEW

Our marketing strategy is designed around addressing these 3 key elements:

- Market – who do we want to speak to?

- Message – what do we want to tell them?

- Media – how do we want to get our message across?

We will choose our market, message, and media based on the analysis in the next few sections.

MARKET ANALYSIS: TARGET MARKET

How did we divide up the market of people we want to speak to? Who do we want to speak to? Who are the targets of our marketing campaigns? Why have we selected these targets versus others?

We identified numerous groups that could influence the awareness, use, and reputation of the telehealth program (FIGURE 1). In the figure, the larger the rectangle, the larger the potential influence. The directions of the arrows indicate the direction of influence. Based on this analysis, we see that the Telehealth Director has potential to influence a number of other influencers as well.

Although not illustrated, a number of entities also influence the Patient's decision to accept and use telehealth as an alternative to their current means of receiving healthcare. These are the various Referring Providers; Supporting Organizations like employers, churches, and charities; and the media.

For our initial marketing strategy, we will only select a few of the entities that seem to have the most direct influence on the awareness of and successful utilization of the program.

Figure 1: Influencers of Telehealth Awareness, Utilization, and Reputation

The target audiences for our marketing efforts consist of the following constituents:

- **Hospital administration and staff** whose help we need to execute the telehealth program (through funding, advocacy, and actually using the telehealth solution for their patients).
- **Referring providers** who we want to participate in the service (by recommending their patients to take advantage of the service). Providers can be staffed at the hospital, be private practice physicians (e.g. primary care) who refer their patients into the RMC, or can also be clinicians at local nursing homes and long term care facilities.
- **Supporting organizations** who we want to use as channels to publicize and advocate the service to their members. These can be local employers, churches and charities that have close relationships with the local population and are more likely to know about their healthcare challenges.
- **Patients** who we want to use the service.

The map also shows us that the local media has strong influence on hospital administration, legislators, supporting organizations, and referring providers. A key element of our marketing strategy will therefore be to leverage the media to help advocate for telehealth with these other key influencers.

MARKET ANALYSIS:
PROBLEMS, ALTERNATIVES, TELEHEALTH SOLUTION BENEFITS

Having selected the marketing targets, the next step is to figure out what we want to speak with them about. Before making the mistake of jumping right into a discussion of telehealth, identify their specific challenges and the options they have for addressing these challenges. Then identify the unique benefits that telehealth can bring by resolving the challenges in ways that the other alternatives do not.

Ensure that the analysis is specific to each target market. A generic analysis is likely to fall flat because it does not dive deep enough into the specific issues for any one targeted group.

In this section, we review each of our top target audiences in terms of the challenges they or their constituents face, the available alternatives for addressing these challenges, and the benefits that the telehealth solution brings to the table.

This section is critical because:

- The **Challenges** inform us on what is really troubling our target audience and causing "pain" or stress that they would welcome help in relieving. Alleviating these issues should be the main talking points of the telehealth solution.

- The **Alternatives** tell us what is directly or indirectly competing with the telehealth solution, so that we can figure out our relative strengths and weaknesses.

- The **Benefits** section helps us see what are likely to be the top benefits of our solution in the eyes of our target audience. Many benefits will overlap across different audiences, while others will be more unique. The goal is to identify the benefits associated with resolving the challenges identified earlier.

HOSPITAL ADMINISTRATION & STAFF

Challenges

- Attracting specialized healthcare resources needed to serve the community effectively.
- Fiduciary responsibilities to the hospital are incompatible with the cost of providing highly specialized care.
- Patients from the community end up at more sophisticated care facilities because they cannot be served at the RMC.

Alternatives

- Continue to provide the same limited level of healthcare services.
- Sacrifice profits and/or other expenses in order to hire more specialists.

Telehealth Solution Benefits

- Provide better healthcare services to the community.
- Keep patients at our facility rather than having to transfer them out just to see a provider.
- Retain revenues for providing care to the local community.
- Showing the community that its local hospital has access to leading edge technology and services.
- Effective stewardship of the hospital.

REFERRING PROVIDERS

Challenges

- Patients need the help of specialists that are not in our local community.

- Patient care plans and treatments are delayed because they don't have the time, resources, or funds to see the specialists whose expertise is needed to diagnose their situation.

- Some patients are lost to other providers or facilities because they have to be referred out.

Alternatives

- Keep patients local with limited access to specialists.

- Send patients to far away facilities – which is suboptimal for their quality of life; in addition, many of them don't go anyway and their situation deteriorates.

Telehealth Solution Benefits

- Enable their patients to stay local and not get transferred away.

- Enable their patients to see a specialist more quickly (reducing wait time from months to days).

- Get faster diagnosis to create more effective treatment plans for their patients.

- Use technology on the leading edge of healthcare.

- Retain the patient and the associated revenues.

PATIENTS

Challenges

- Lingering healthcare issues for which they cannot get local help.

- Care is delayed because they cannot take the time off to drive hundreds of miles or many hours to see a specialist.

- Care is delayed because the wait time to see the specialist is many months away.

- Don't want to go far away and leave their support network behind (in case they are required to stay).

- Don't want to go far away for care and put an undue burden on their support network to take time off of work to be with them, etc.

Alternatives

- Try in vain to find someone local who can help.

- Delay care and live with the problem until their situation deteriorates to the point they need to be admitted or they eventually go to see a specialist who is many hours and/or miles away.

Telehealth Solution Benefits

- Access to clinical specialists that are not in their community, but who can address their issues.

- Eliminate long wait times to see specialists who are far away.

- Avoid the costs of having to drive 2-5 hours to see the specialist (time off from work, time away from family, etc.).

- Taking advantage of technology that is at the leading edge of healthcare.

SUPPORTING ORGANIZATIONS: EMPLOYERS

Challenges

- Employees are suffering from health problems that they cannot resolve, and it is affecting their productivity.
- When employees take time off for sick leave, it disrupts the shift schedule and affects production and increases costs.

Alternatives

- Let employees live with their situation and let the business suffer the consequences.
- Try to find a way (legally) to replace unproductive employees.

Telehealth Solution Benefits

- Employees stay healthier and more productive.
- Employees need less time off for sick leave if they have local access to healthcare.
- Employee attendance becomes more reliable and predictable.

SUPPORTING ORGANIZATIONS: CHURCHES AND CHARITIES

Challenges

- Members share health issues that are negatively impacting home and work life, and there is nothing the organization can do or recommend to help them.

Alternatives

- Provide consolation and resources to help deal with the symptoms, but not the cause.

Telehealth Solution Benefits

- Members stay healthier and have less life challenges when their healthcare issues can be addressed more quickly.

In summary, the telehealth program is well-positioned to provide a wide variety of benefits for our different audiences. The primary alternative which is the status quo does not provide much benefit.

MESSAGE

....

Bring the elements from the Market Analysis together into guiding messages that can be used in marketing materials. This is where you get closer to "copy" – actual words that will be used in your marketing materials.

How do we want to attract our target? How will we differentiate our offering?

What claims will we make (that we can justify)? Because this solution is in healthcare, be careful that your claims are defendable. In other words, you cannot guarantee patient outcomes, but you can promote the solution as having demonstrated certain outcomes.

....

To gain the interest of our target audiences, we will use opening messages that ask questions related to the problems they are experiencing.

PATIENTS: "Do you have a healthcare problem that just won't go away? Are you delaying care because (1) you can't take the time off to drive 3 hours to see a specialist (2) the wait time to see the specialist is many months away (3) you're afraid of having to go for care outside our community and end up having to stay? (leaving your family and friends behind or creating another burden on them)"

EMPLOYERS: "Does it seem like your employees are not as healthy as they could be? Is it impacting their productivity or increasing their use of sick leave? Would you like to find a way to help them get the care they need to improve their health, need less time off, and be happier and more productive?"

CHURCHES AND CHARITIES: "Have any of your members spoken with you about health issues that are causing terrible stress on their personal or professional life? Have they delayed treatment because they can't get help locally and don't have the time or work flexibility to get the help they need?"

REFERRING PROVIDERS: "Do any of your patients need the help of specialists that are not in our local community? Is their treatment being delayed because they don't have the time, resources, or funds to get to that care? Are you concerned with losing these patients to other providers or facilities if you refer them elsewhere?"

ADMINISTRATION: "Are you challenged with attracting the healthcare resources needed to serve your community effectively? Does it feel like your fiduciary responsibilities to the hospital are incompatible with the cost of providing highly specialized care? Wouldn't it be nice to not lose patients to facilities who have more sophisticated care capabilities?"

We will follow up these opening messages with an introduction of our telehealth solution and how it can help. This is where we can talk about the benefits that the telehealth solution can bring to them.

SAMPLE HEADLINES

No matter what the message, we will need attractive headlines to get people to open / read our marketing materials whether these are in the form of emails, brochures, press releases, etc. Below are some ideas for the kinds of headlines we will want to use:

- Your wait time for a neurologist just went down from 9 months to 3 days
- XYZ RMC's new telehealth program reduces wait time for medical specialists by up to 99%
- "I couldn't have imagined a better outcome" – a patient's comeback with the help of telehealth
- Acme Inc. reduces employee sick leave by 25% through cutting edge healthcare
- 5 UC-Davis pediatric specialists make visits to XYZ RMC – over the Internet

RESILIENCE

RESOURCES

Identify the resources available to support various marketing activities. Resources can be team, financial, etc. Changes in these could affect ability to execute on time, within budget, or in a way that achieves targeted goals.

TEAM

We will leverage the hospital staff as follows:

- IT – Website development
- Marketing – Copywriting (for website, brochures, press releases, etc.), brochure development, organizing Connected Health Media Day, media relations.

FINANCIAL

Our entire marketing budget for the year will be $1,600, excluding the Connected Health Media Day which will be funded separately by Administration after further details are ironed out.

MEDIA

Identify the means by which we will reach our target audiences with our message. Explain why specific activities have been chosen over others.

We have many options for getting the word out about the new program.

We have evaluated the various options according to the following criteria:

- Skills / resources to execute
- Time and effort required
- Potential Impact
- Cost

Our analysis indicates that the top opportunities consist of the following:

- Web site
- eNewsletter
- Brochures
- Press Releases & Articles
- Satisfaction Surveys (from Patients, Clinicians, and Administration)
- Connected Health Media Day
- Social media
- Face-to-face visits

The underlying strategy in all the marketing efforts is to consistently communicate the benefits of the solution, over and over, so that the message drives home. The intent is that at the point that a member of our target audience comes across an opportunity to talk about, use, or recommend telehealth versus another option, they will actually recall (1) that the telehealth option exists and (2) the benefits of the solution. These should be lodged in their mind powerfully enough for them to choose or at least consider the telehealth option.

MARKETING ACTIVITIES

Provide a summary of the key marketing activities. Include information on each activity that could be easily compared across activities. These can include: Description, Objectives Served, Target Audiences, Frequency, Metrics for Success, Resources Involved, and Budget.

Each Marketing activity has been laid out in terms of the following components:

- Activity
- Brief Description
- Objectives served (e.g. Visibility, Utilization, and / or Reputation)
- Target audiences – which audiences will be the beneficiaries of this marketing activity
- Frequency – how often this particular activity will take place
- Metrics for success – how we will measure successful progress on the activity
- Resources involved – which human resources will be involved in the activity
- Budget – both startup costs and operating costs are estimated

The table at right provides a detailed view of these elements for the different activities we have identified.

Activity	Description	Objectives Served			Target Audience(s)	Frequency	Metrics for Success	Resources Involved	Budget	
		Visibility	Utilization	Reputation					Startup costs	Ongoing costs
Website	Include overview of telehealth program, team, providers, technology, and benefits. Also include contact info and sign-up form to receive eNewsletter.	x			Patients, Hospital Administration, Referring Providers, Supporting Organizations	Ongoing updates as needed	# of Visitors # Signing up for newsletter	Telehealth Director, IT	$200-$1,000 extended RMC website to include Telehealth Section	$0 (use existing website)
eNewsletter	Using Constant Contact to send out info on telehealth benefits, technology, consulting physician profiles, and success stories.	x	x	x	Patients, Hospital Administration, Referring Providers, Supporting Organizations	Monthly	# of subscribers Open rate	Telehealth Director, IT	$0	$10-$30 / month
Brochure – general	Printed brochure or flyer that explains telehealth and its benefits to patients.		x	x	Patients, Supporting Organizations	One Time	# of people contacting us for more info	Telehealth Director, Marketing	$20-$1,000 depending on # of reprints and quality of material / design	$0
Brochure – referring providers	Printed brochure or flyer that explains telehealth and its benefits to providers and their patients.		x	x	Referring Providers	One Time	# of people contacting us for more info	Telehealth Director, Marketing	$20-$500 depending on # of reprints and quality of material / design	$0
Press Release	Stories that highlight the local healthcare problem and the solution. Use patient stories to convey the message. Press releases will also be posted on the website	x		x	Patients, Hospital Administration, Referring Providers, Supporting Organizations	2-3 / year	# of people contacting us for more info	Telehealth Director, Marketing	$20-$750 / release depending on length and outlet used	$0
Satisfaction Survey – Patient	How would you rate the experience (1-10)? Would you recommend it to a family member or friend (1-10)? What can we do to improve it?		x	x	Patients, Hospital Administration, Referring Providers, Supporting Organizations	Per encounter	Satisfaction score	Telehealth Director	$0	$0
Satisfaction Survey – Clinician	How would you rate the experience (1-10)? Would you recommend it to a colleague (1-10)? What can we do to improve it?		x	x	Hospital Administration, Referring Providers	Every 6 months	Satisfaction score % that would use it again	Telehealth Director	$0	$0
Satisfaction Survey – Administration	How would you rate the success of the telehealth program (1-10)? What benefits do you see?		x	x	Hospital Administration	Annual	Satisfaction score % that can identify telehealth benefits	Telehealth Director, Administration, Marketing	$0	$0
Connected Health Media day	Event designed around showcasing and demonstrating the new solution. Will include administrators. Will also have specialists from UC-Davis on by video-conference to talk about what they do during a consult.	x	x	x	Patients, Hospital Administration, Referring Providers	Annual	# of Attendees # Signing up for newsletter	Telehealth Director, Marketing, Administration	TBD	$0
Guest article in local paper	Stories that highlight the local healthcare problem and the solution. Use patient stories to convey the message. Guest articles will also be posted to the web site.		x	x	Patients, Hospital Administration, Referring Providers, Supporting Organizations	2-3 / year	# signing up for newsletter	Telehealth Director, Marketing	$0	$0
Social media	Videos on YouTube profiling consulting physicians, participating clinicians, benefitted patients, and technology in use. Links embedded in web site.	x		x	Patients, Supporting Organizations, Referring Providers	At least 1 / quarter	# signing up for newsletter #of Views	Telehealth Director, Marketing	$0 (possible video production costs)	$0
Face-to-face visits	In-person visits with referring providers, supporting organizations, and administrators to talk about the problems that the telehealth solution will address and to alleviate questions and concerns	x	x	x	Hospital Administration, Referring Providers, Supporting Organizations	As many as possible	# of people contacting us for more info	Telehealth Director	$0	Minimal local travel expenses
Conference attendance	The regional rural health association's annual conference in July will be a good place to network and pick up best practices. We will also attend the CTN annual conference in April.	x	x		Supporting Organizations	Annual		Telehealth Director	$750/conference	$0

MARKETING ACTIVITY DETAILS

For specific marketing activities that require more details, provide them in this section. For example, for a website, include more info about the content that it could include. The previous section provided a brief description of the key marketing activities. In this section, we look at some of the key activities in more detail.

WEBSITE

The web site is intended to be useful to all of our target audiences – patients, providers, internal administration and staff, and supporting organizations.

The site will be a one-stop resource for information about:

- The clinical services offered
- Profiles of the physicians (and other clinical specialists) who will be providing telehealth services
- Stories of how telehealth has changed people's lives
- Telehealth technology (as demonstrated by YouTube videos embedded on the website)
- Telehealth benefits (broken out by different constituents)
- How to get started
- Articles that highlight demonstrated proof that telehealth works both clinically and economically
- Links to resources for info on telehealth (e.g. CTRC, CTN, American Telemedicine Association)
- The telehealth team
- Contact info

The site will also include a sign-up form for people to receive our telehealth newsletter.

The intent of the website is to:

- Make patients more comfortable with using the service
- Make referring providers more comfortable with recommending that their patients take advantage of the service
- Make supporting organizations more comfortable with recommending the service
- Help administrators better understand the program so that they support the telehealth program through continued/increased funding and general advocacy
- Help internal staff better understand the program so that they support the telehealth program through continued participation and advocacy
- Get website visitors to sign up for the newsletter

While this is a lot of content to develop, it will serve multiple purposes. Portions of the content can be re-used for other media as well – for brochures, flyers, presentations, videos, etc.

NEWSLETTER

The newsletter will provide a continuous drip of the content that is already available through the website. This way, people don't have to remember to visit the website to get more info. The newsletter will also provide new information as it develops. For example, new clinical disciplines being added to the program, or patient success stories.

The benefit of the newsletter is that it maintains continuous communication with subscribers. As a result, the telehealth program will be front and center when it comes time for a subscriber to consider a healthcare situation where telehealth could be of use.

BROCHURE

The brochure will serve as a leave behind for supporting organizations to remind them of the telehealth program. Because of budget limitations, this will likely be in the simple form of a 1-page 4-color flyer, front-and-back. It will contain essential info about clinical specialties covered, benefits, success stories, a few testimonials, and how to get access to the program.

PRESS RELEASES / GUEST ARTICLES IN NEWSPAPERS

The goal of the press release and guest articles is to raise broad awareness for the program and to develop a strong relationship with the media. Ultimately, we would like to use the print-based outreach as an avenue to get exposure through our local TV and radio stations.

CONNECTED HEALTH MEDIA DAY

This 3-hour "open house" is designed to introduce telehealth to the community by way of a big event. It will involve press releases and other media announcements leading up to the event. We will try to have 2 or more of the consulting physicians available through the telehealth video-conferencing system to talk about how they do consults and share some success stories.We will encourage the public to stop by and see a demonstration of the new technology – and to virtually meet some of the physicians.

Attendees will also be provided an opportunity to sign up for the newsletter or pick up a brochure.

Additional goals for the event:
- Get business sponsors to provide food and drinks (which always bring in people)
- Have legislators from the city, county, and region in attendance.

SATISFACTION SURVEY

Satisfaction surveys will be our primary means of getting direct systematic feedback on the success of our program. This needs to be holistic in that we will solicit feedback not just from patients (as is typical), but also from clinicians that participate in the program, and even from administration.

Survey results will be used for both external marketing efforts (info on website or in press releases) and internal marketing efforts (presentations to administration and staff).

SOCIAL MEDIA

Our initial target for social media is YouTube. It is a popular multi-media site where we can create our own channel for free. We can also embed videos from our YouTube channel into our own website – thereby, getting more leverage out of the work already done to create the videos. Ideas for videos include:
- Patient success stories
- A demo of how the telehealth technology works
- Testimonials from staff who have used the technology
- Interviews with physicians who provide telehealth consults

FACE-TO-FACE VISITS

Face-to-face visits are critical for educating and creating comfort for telehealth with supporting organizations like local churches, the local HIV/AIDS support center (for Infectious Disease consults), EMS, local mental health counselors, and the region's top employers.

We will sit down with them to talk about the challenges in their environment and identify ways that telehealth could help them out. We will provide brochures as a leave behind.

SUCCESS METRICS

Marketing activities should produce measurable results. This is the section for describing how each marketing activity will be rated in terms of success. While the Marketing Activities Summary will identify success metrics each individual activity, this section will aggregate all success metrics across these activities (as some metrics will be served by multiple activities). In addition, identify the targeted value of these metrics and the various activities that contribute to each metric.

Below are our success metrics and targets:

METRIC	TARGET (1st year)	ACHIEVED THROUGH
# Website visitors	1,000	Google Analytics installed on website, Calls to Action that drive people to the website.
# Sign-ups for newsletter	250	Website, newsletter shares, brochures, social media
Open rate	25%	Newsletter content
# People contacting us for more info	50	Website, Brochures, Press releases, face-to-face visits
Satisfaction score: Patients	90%	Survey
Satisfaction score: Clinicians	80%	Survey
% of clinicians that would use telehealth again	90%	Survey
Satisfaction score: Administration	80%	Survey
% of Administrators that can identify at least 3 telehealth benefits	75%	Survey
# Views in Social Media	300	YouTube metrics

FINANCIALS

Summarize the financial outlay for the marketing plan. Break it out in different ways if possible – by month, by activity, by capital costs vs. operating costs.

The total budget for this plan is $1,550.

Below are the projected monthly marketing expenses for the program:

Monthly Expenses

This marketing plan was prepared by Nirav Desai, Founder and CEO of Hands On Telehealth, on behalf of the California Telehealth Resource Center

Technology

Telehealth Technology Toolkit

August 2010

Developed by:
The California Telehealth Resource Center

Planning

What kinds of telehealth equipment choices are available?

Telehealth equipment and telemedicine systems are available for various telehealth applications and come in many sizes, such as mobile laptop-based units, desktop models, units in movable carts, wall mounted units and unit for the home. Live interactive telemedicine uses a camera, monitor, speakers, microphone and CODEC, for real time two way audio and video. Store and forward telemedicine uses software specifically designed for the secure transmittal of digital information to a provider. Store and forward may use digital cameras to capture images, electronic stethoscopes or other devices to capture sounds. Home telehealth employs equipment to monitor vital signs or other chronic disease related information that can be transmitted over phone lines to a provider or case manager. Home monitoring devices often include blood pressure meters, pulse oximeters, scales, blood glucose monitors and others.

While this toolbox focuses primarily on clinical use, it should be noted that distance learning equipment uses the same equipment as that used for live interactive, although usually configured with larger monitors and additional input sources for connecting additional cameras and computers.

How do I go about identifying equipment requirements that meet my program's need?

Equipment should be selected to work with the type of telemedicine application you are implementing. Before equipment is selected, a needs assessment is usually undertaken to determine the clinical need for telehealth services and decisions are made about the services the organization plans to provide or receive. This information will determine the type of telehealth application and the type of equipment that is suitable to that application. You want to make sure that the hardware and software will meet the requirements of your selected service and will meet any technology requirements of your organizations. This is also the time to consider the flexibility and interoperability of the equipment. Each component of the telehealth equipment has operating specifications and features. Monitors, microphones, cameras and CODECs each have different models with different capabilities. The specifications for each component need to match your program's requirements.

With input from clinical staff, create a list of the technical specifications and features that are required for your program and a list of those specifications and features that are desirable. This exercise will ensure that the program's needs are met and at the same time allows the eventual users of the telehealth technology to feel they are involved and invested in the decision making process. Your intended use of the equipment will drive the equipment requirements. For example, medical specialty services in a small remote clinic exam room may require a small monitor while a distance education

program in a conference room would optimally have a large monitor. Look at the product lines of different manufacturers to determine which models meet your requirements. It would be very wise to discuss specific hardware and software requirements with the specialists you intend to call upon for telehealth services before purchasing anything. If you are new to telehealth equipment and technical specifications it can be worthwhile to seek the advice of an expert when creating or reviewing equipment requirements to ensure that the needs of the telemedicine program will be met. It is advisable that your team dedicate focused time and effort on evaluating different product lines prior to moving on to the vendor selection.

Regional Telehealth Resource Centers or another experienced telehealth program staff can assist you in determining what equipment would be used for the desired telehealth services and what technical specifications are necessary for that service.

When should I select and purchase equipment?

The equipment selected for your telehealth program needs to be appropriate for the clinical or program need and the environment in which it is to be used.   Therefore, equipment selection should be done only after a needs assessment and market analysis have been completed to determine what services the facility hopes to provide or receive. Different telehealth applications have different modes of services and different equipment requirements.   For example, dermatology services can be provided in a live interactive setting or with a store and forward approach. Each approach has different equipment requirements. Selecting equipment too early in the process can result in inappropriate equipment that may lead to wasted money or leave your program in a situation where it cannot provide the intended services.

Connectivity needs and availability should also be assessed prior to making any purchase decisions for telehealth equipment. If, for example, you will be connecting via ISDN, you may need to purchase additional equipment for this type of connectivity. Other factors to consider are placement of the equipment, electrical requirements and availability of network cabling at the installation location.

How do I select a vendor?

A new telehealth program may require vendors for telecommunications, equipment, and support. Most telehealth equipment manufacturers do not sell directly to healthcare organizations. The manufacturers work with partners and resellers, that often offer value added services to their customers, such as installation, training and support services. A list of resellers can be found on each manufacturer's website. Resellers are usually ranked by the manufacturer in tiers based on the level of services they provide and amount of business they do with the vendor. Resellers in higher tiers will most likely receive more favorable pricing based on the volume of their purchases and may be required to receive additional training for their staff in order to maintain their status. This can translate into a better pricing and support for their customers.

Criteria for selecting a vendor includes: type of equipment required, availability of desired equipment, price of equipment, delivery schedule, cost for installation, training, support services, maintenance agreements, and response time requirements. The vendor may be able to provide discounts for bundling multiple pieces of equipment and for volume purchases. The vendor's references should be contacted to discuss the vendor's performance and support response times.

A Request for Proposal (RFP) or Request for Information (RFI) can be developed, outlining the telehealth program you want to develop and the equipment you believe is needed. Creating and distributing an

RFP and then analyzing the results can lead to conversations with vendors that may lead to changing your mind about what equipment you need. If you do consider changing your hardware, software, or services requirements as a result of a vendor contact, be sure to validate that change with an objective party (e.g. your Telehealth Resource Center, a trusted and experienced telehealth advisor from a peer organization).

What are videoconference standards and is all telehealth equipment interoperable?

There are many standards that are utilized by videoconference equipment manufacturers in their equipment and software. Standards are used for video compression, audio compression, connectivity, encryption and other aspects of the equipment. The standards are defined by the Telecommunication Standardization Sector (ITU-T) on behalf of the International Telecommunication Union (ITU). Videoconference systems that use the same standards will almost certainly be interoperable with each other, allowing successful videoconferencing between units of different manufacturers. Some videoconference manufacturers use protocols that are proprietary, meaning their equipment does not use open standards for communicating voice or data. This equipment is most likely not interoperable with standards-based equipment. When selecting equipment, is it important to ask for specifics on interoperability between different manufacturers equipment and to determine the impact of selecting a standards-based or proprietary system.

The two main standards used in videoconferencing today are H.320 for ISDN based networks and H.323 for packet switched or IP networks. Within these two umbrella standards are contained additional standards that control the many aspects of a videoconference session.

A relatively new standard has been developed by the Internet Engineering Task Force (IETF) Network Working Group. The Session Initiation Protocol (SIP) enables users to seamlessly communicate via instant messaging, phone, e-mail, voicemail and videoconference technologies and is widely used for controlling audio, video and multimedia communications.

Is telehealth equipment HIPAA compliant?

Patient and provider sites are required to adhere to Health Insurance Portability and Accountability Act (HIPAA) regulations when providing services by telehealth. HIPAA regulations require an entity to determine the risk associated with a particular service or technology and to implement procedures to mitigate that risk. Most telehealth equipment is HIPAA compliant. This is achieved through the use of data encryption, which secures the data from unauthorized users and allows only an authorized user to decode and view the data transmitted. When a CODEC establishes a connection with the encryption option enabled, the connection between the two units will be secured using a common encryption algorithm, such as the Data Encryption Standard (DES), Triple DES (3DES) or the Advanced Encryption Standard (AES). Proper safeguards should be taken to secure Protected Health Information (PHI), including that transmitted through telehealth.

It is important to note that the videoconference equipment is not the only area of the telehealth program that requires HIPAA compliance. For example, documents transmitted from the patient site to the provider sites (paper and electronic) must be protected from unauthorized access and facilities at both the patient and provider sites must ensure that the telemedicine consultation takes place in a quiet and confidential setting.

How much should I budget for the purchase of equipment?

Telehealth equipment costs can vary substantially depending on the size of the unit, configuration, features selected and specialized equipment (e.g. telemedicine ready otoscope, dermascope, etc.) required. These decisions will depend of the type of telehealth service that is going to be implemented. When budgeting for equipment, it is important to understand all of the costs that will be incurred both initially and on an ongoing basis. Some of the options you will need to consider include dual monitor support, multipoint capabilities (i.e. the ability to have more than two sites simultaneously connected to the video session), additional cameras, and high definition.

Costs vary. Desktop based units are priced around $4,000, high definition units for midsized conference rooms are priced around $20,000, pole mounted clinical exam units are priced around $10,000 mobile battery powered clinical carts are priced around $40,000 and remotely controlled telemedicine systems can cost upwards of $250,000. Many vendors offer leasing options for their equipment so that payments can be spread out over time or so that the equipment can be traded in when the lease expires. The need for specialized scopes (ie, stethoscopes, otoscopes) and general use cameras will increase the procurement cost for patient sites wishing to do specialty services. Provider sites typically do not need diagnostic equipment, although some devices occasionally require a peripheral for receiving and reviewing data from the originating site.

Initial costs also include installation and configuration of the equipment, training for staff and any consultation costs associated with evaluating and selecting equipment. Ongoing budgets need to include funding for support and maintenance. Support and maintenance agreements are usually available from the equipment vendor, usually in one, two or three year terms. The support and maintenance agreements cover technical support from the vendor for equipment issues, repair or replacement if the equipment fails and periodic software and firmware upgrades. Support and maintenance agreements are usually based on a percentage (15-20%) per year of the equipment costs. Programs should also budget for ongoing IT support and for additional training that may be required due to staff turnover or program expansion.

How much should I budget for connectivity?

Connectivity charges are recurring monthly costs that will vary depending on the amount of bandwidth you are purchasing, your location, and the competition by service providers. In some cases, as with ISDN, in addition to Monthly Recurring Charges (MRC) for the circuit, there are also per minute usage charges. When purchasing telecommunication circuits, there are usually discounts if you agree to a two or three year term. For many circuits there is also a onetime Non-Recurring Charge (NRC) for installation. This fee is usually waived by the telecommunications provider if you agree to a multiyear term. Circuit costs can range from $30/month for DSL circuits to $500/month for a T1 1.5Mbps MPLS circuit to $5,000/month for a DS3 45Mbps circuits. The cost for circuits in rural areas, where bandwidth may be very limited and advanced telecommunications may be non-existent can be significantly higher. Many states are implementing FCC funded broadband expansion projects with discounts for rural healthcare providers. These programs are designed to improve access to healthcare by expanding access to affordable broadband services.

In addition to the costs for the telecommunications circuits, other hardware may be needed to establish connectivity for your telehealth program. A router, firewall, and/or VPN appliance may be needed to establish connectivity or to secure the connection to the remote site. In some cases, telecommunications providers can bundle the cost of the additional hardware and provide management of the circuit and hardware. This may be preferable in cases where in-house expertise is not available to configure and maintain the telecommunications equipment or where there is no budget for such equipment.

What discounts are available for telecommunications?

The Federal Communications Commission (FCC), through the Universal Service Program, offers subsidies on telecommunications circuits. Funded by the Universal Service Fee and administered by the Universal Service Administrative Company (USAC), the program aims to increase access to telecommunications and advanced services in schools, libraries and rural health care facilities. For eligible regions, costs for circuits under this program are subsidized to the cost of equivalent service in urban areas. This program allows rural health care facilities to receive subsidies on telecommunication that provide relief from the disparity between urban and rural rates. For more information on USAC, visit www.usac.org.

In 2007, the FCC created the Rural Health Care Pilot Program (RHCPP), which funded many collaborative groups, telemedicine networks, hospitals, health information exchange organizations and others for the construction of 69 statewide or regional broadband telehealth networks in 42 states and three U.S. territories. Using the $417 million in dedicated funds, these groups are making broadband available to many health care facilities at reasonable rates. For more information on the Rural Health Care Pilot Program, visit www.usac.org/rhc-pilot-program/.

In addition to these programs, some states have developed their own telecommunication discount programs. For example, the State of California's California Teleconnect Fund (CTF) program managed by the Public Utilities Commission, offers a 50% discount on covered services for eligible entities. To determine if a program such as this exists in your state, contact your state's Public Utilities Commission or your regional Telehealth Resource Center. You can find a listing of telehealth resource centers at www.telehealthresourcecenter.org.

Can I use telehealth from home or while on the road?

Yes, telehealth can be used from home or while on the road. As with any telehealth equipment, sufficient bandwidth should be available at the location to ensure that video and audio quality do not degrade during the session. It is also important to remember that if, during the telehealth connection, patient information will be discussed, the connection should be encrypted to secure the connection and that other safeguards should be taken to protect patient's privacy. For example, telehealth sessions should only be conducted in private areas in which conversations cannot be overhead.

Videoconference manufacturers understand the need to have mobile connectivity to their videoconference systems. Several vendors offer software-based videoconference systems that can be installed on laptops or desktop computers. Many laptops now offer built in webcams, microphones, speakers and mobile broadband connections, making these ideal for providers who must have the ability to connect from anywhere at any time. Patients may also use telehealth equipment in the home. Video based home units can allow for services such as wound care and behavioral health from the home. Home monitoring units allow patients to transmit vital signs and some diagnostic data to allow for regular monitoring.

When considering mobile applications the same needs for security, picture and audio quality, and confidentiality apply.

Equipment

What kind of equipment is used for live interactive telemedicine?

In order to participate in a live interactive telemedicine session, equipment capable of sending and receiving audio and video is needed. The basic components needed for sending and receiving audio and video are: a microphone to capture audio, a speaker to hear transmitted audio, a camera to capture video, a screen to view the transmitted video, and a CODEC to compress the signal and transmit it over a network. The CODEC is the heart of the videoconferencing system. CODEC stands for coding/decoding and can be either hardware or software based. All of the inputs and outputs for all the devices are incorporated into the CODEC.

The equipment described above can be configured in many different ways to meet your needs. Software-based CODECs can be installed on laptop or desktop computers for use while traveling or from home. Compact desktop videoconference units are ideal for providers' desks, as these units incorporate the CODEC, camera, monitor, microphone and speakers into a single device. Equipment can also be wall mounted in an exam room to minimize the footprint of the equipment in space-constrained areas.   Telemedicine carts or poles are popular in clinical settings because of their mobility. Some offer wireless connectivity and built in battery supplied power.

Advanced telemedicine solutions are being used in Operating Rooms and Intensive Care Units where telemedicine devices can interface with patient monitors and EHRs. Using this equipment, remote physicians, surgeons, and Critical Care Intensivists have access to diagnostic data provided by the patient monitoring systems and the remote physician can direct patient care.

What are some considerations when looking at features of live interactive telehealth equipment? Some important features include:

- Standards-based operating systems
- Transmission speeds of at least 384 Kbps
- Full duplex audio
- Picture in picture capability
- Pan/tilt/zoom functionality for patient sites
- Remote site camera control (primarily to allow the remote provider site to control camera at the patient site)
- Standard ports for peripheral equipment and data transmission
- Storage and workspaces for peripheral equipment
- Ease of use
- Software-based upgrades

What kind of equipment is used for store and forward telemedicine?

Store and forward telemedicine, unlike live interactive, is not viewed by the examining provider in real time. Store and forward telehealth consists of recording an image, audio, or video and transmitting it to a specialist for review at a later time. Because a live interactive connection is not required, the equipment needed for store and forward telemedicine is not as complex. Store and forward provides some workflow flexibility at both the patient and provider sites. Patient sites can collect patient images or data and transmit it to a provider at a later time. Providers have the flexibility of reviewing the images at convenient times. Images for dermatology are typically captured using a digital camera capable of taking close up pictures (macro mode). Digital cameras are also used for digital retinopathy screenings.

Handheld cameras are used for retinopathy screens as well as highly specialized units that include head placement frames. Electronic stethoscopes can capture heart and lung sounds and transmit those sounds as electronic files or signals to remote cardiologists or pulmonologists for diagnosis.

Capturing the image, audio, or video is only part of the equation for store and forward telemedicine. The store and forward applications require equipment or software to securely transmit the image, audio, or video. The secure transmission of the recorded information can be accomplished in several different ways. One way is to use third party e-mail encryption software to secure the information being sent to and from the specialists. There are software programs that can do this automatically and are specifically designed for use with store and forward telemedicine. Another option is to upload the image to a secure Picture Archiving and Communication System (PACS). Consultation reports are then transmitted from the specialist to the primary care provider through fax or electronically through an encrypted connection.

In-Home and chronic disease telehealth monitoring equipment also falls within the general definition of Store and Forward telehealth. Devices at the home of the patient are setup to capture vitals and other diagnostic information which can be transmitted to a provider for analysis and review. Using the information captured in the home, a treatment plan can be assessed and modified for the patient with near real time determination of the impact the plan is having on the patient.

What kind of equipment is used for distance learning?

Distance learning equipment follows along the same lines as equipment used for live interactive telemedicine. The equipment is adapted for use in conference rooms by adding multiple monitors, additional microphones and more speakers, depending on the size of the room. Most videoconference equipment also allows the user to connect a laptop and/or DVD player for transmitting a PowerPoint presentation or instructional material through the videoconference. There are also additional network components that are available for recording distance learning events for playback at a future time. Most distance learning events are coordinated events where multiple sites connect to a single presenter site through a Multipoint Control Unit (MCU), otherwise known as a bridge.

What are peripherals and what peripherals can I use with my equipment?

Most videoconference hardware has the ability to connect additional diagnostic tools, referred to as peripherals, using additional input sources on the CODEC. These peripherals include commonly used diagnostic equipment such as otoscopes and hand held cameras that allow the provider at the remote site to further assess the patient with the assistance of a patient presenter. These devices can be used to capture vital signs, listen to heart and lung sounds, examine the eyes, ears, nose, and throat, and much more. The most commonly used peripherals include the general examination camera, vital sign monitor, stethoscope and otoscope. These peripherals are plugged into the auxiliary input sources and by switching to that input during a telemedicine encounter, the provider is able to have a more thorough examination of the patient.

How can I engage my local IT staff in evaluating and selecting equipment?

Your local IT staff or a qualified consultant should be engaged to determine that network requirements can be met for any telehealth equipment that will be installed. This would include determining if appropriate network cabling exists in the areas where the telehealth equipment is to be installed and that adequate bandwidth is available to accommodate the heavy demand placed on the local area network and Internet connection or wide area network by live interactive telemedicine. If any upgrades need to be done in preparation for the telehealth equipment, it is best to have that done prior to ordering equipment so that equipment is not stored for a long period of time while awaiting installation. Some states and accreditation programs require that wall mounted equipment be inspected or meet certain criteria, such as extra wall reinforcement. Because of this, it is advisable to involve plant or facility management staff when determining placement of any equipment that will be fixed.

Should I select standard definition or high definition?

High Definition (HD) videoconferencing equipment is capable of better quality video and audio than are standard definition videoconference units. Most new monitors are designed for HD connections and are best matched up with high definition outputs such as HDMI or Component. In order establish a HD connection, additional bandwidth will be needed, however, HD equipment is capable of connecting at standard rates at the lower bandwidth settings. Considering that HD is commonplace, while standard definition is quickly becoming legacy technology, and that the cost of HD technology continues to decrease while offering much higher quality video and audio, high definition would seem to be the better option for the long term usage within a telemedicine program. In addition, HD equipment uses the same protocols as standard definition equipment, making high definition technology compatible with any standard definition equipment that may still be in operation.

Should I have a fixed or mobile configuration?

When determining whether to have a fixed wall mounted telehealth installation or a mobile cart or pole mounted solution it is important to determine how and where the equipment will be used. A mobile solution works well in areas where equipment is moved from room to room. If a mobile cart is preferred, determine where the equipment will be stored, charged and how it will connect to the network. It is also advisable to check the facility layout to determine if the cart can be safely transported to the different areas where it will be needed. Pole mounted telehealth solutions are self contained and have a small footprint and have been found to be advantageous for many patient site settings. Some patient sites identify one room for telemedicine in order to avoid regular moving of the equipment. If patients presenting for telemedicine encounters will be directed to a determined location or if several areas will be designated for telehealth, a fixed wall mounted installations allow for a sleek, professional look with a minimal footprint and are advantageous when the unit does not require mobility. Wall mounted installations are typically found in conference rooms and classrooms.

Can I just attach a webcam to my laptop and start telehealth services?

While it is possible to use a laptop with a webcam to establish a video and audio connection, careful planning is necessary to ensure that the equipment is appropriate for the situation and that the equipment operates properly and with appropriate safeguards. It is important to ensure that sufficient bandwidth is available from the location where the laptop is connecting. Privacy and security are also very important. Ensuring that proper encryption of the connection is established is also required when connecting from a laptop. If the laptop will be used in public places, it is advisable to get headphones and a privacy screen filter to ensure the privacy of Protected Health Information (PHI). It is also important to note that built-in laptop webcams may present a lower picture quality to the recipient of the laptop transmission. The camera on either end of the connection is always a key factor when it comes to the maximum possible picture quality. A webcam external to the laptop will usually be a better choice for applications requiring higher video quality. Have your videoconference or IT expert evaluate the laptop camera specifications before purchasing either the laptop or an external webcam.

What is a bridge and is it required for telemedicine?

A Multipoint Control Unit (MCU), also known as a bridge, is a network device that allows for conferencing together multiple videoconference connections. MCU's can also function as gateways, allowing incompatible endpoints (IP and ISDN) to connect to each other. Bridges allow people from many locations to come together in a live interactive format where multiple sites can see and hear each other in real time.

Bridges handle the display of all the participants in different ways depending on the number of participants and the option selected. Bridges can show all parties in small squares on the screen or can show only the person currently talking. Many telehealth units now include bridge functionality for a small number of sites. When the capacity of a single bridge is not enough for a particular event, MCU's can be connected provide the capacity to allow more participants to join the videoconference.

In a typical telemedicine scenario, known as a point to point connection, where a patient is connecting with a specialist, there is no need for a bridge, unless a gateway is required. Large capacity MCU's are often used for telehealth events and distance learning such as grand rounds or continuing medical education (CME) trainings. Bridges are also used in multisite environments for peer group meetings, administrative meetings and trainings.

How do I obtain bridging capacity?

You can purchase a bridge or purchase bridge time from a bridging service. Many telehealth units now come with the ability to bridge a few sites together. If this is sufficient for your application, a separate bridge will not be necessary. If your application requires regular multipoint site connections, a thorough analysis of the cost to purchase a bridge should be undertaken. The bridge could be the single most expensive piece of equipment you purchase. The cost of a bridge is typically priced based on port count. The port count (the number of audio, video and telecommunications ports) will determine how many simultaneous connections can be handled by the bridge. If the use of a bridge is only an occasional need, many videoconference vendors, telecommunication companies and other organizations offer bridging services on demand and as needed. These services manage the calls and provide technical support during the call including assistance with audio and video problems and site connection problems.

Connectivity

What kinds of telecommunications connections are available?

Over the years, many different telecommunication technologies have been used for telemedicine. These include ISDN BRI, ISDN PRI, T1 and Frame Relay. In more recent times, the telecommunications industry has developed new technologies specifically for use with videoconference and Voice over IP (VoIP). Multiprotocol Label Switching (MPLS) circuits, one of these new technologies, provide better quality connections through the use of data packet prioritization and Quality of Service (QoS). In addition to these technologies, many telehealth programs are connecting using the public internet through broadband connections such as DSL, Cable or Wireless, and in some cases utilizing a Virtual Private Network (VPN). In some areas, high speed fiber optic circuits or MetroEthernet connections are used to provide connectivity for the facility. Regular telephone service is still used in some areas for telehealth live interactive clinical visits by bonding together many phone lines to create a line large enough to handle the bandwidth of videoconferencing. This is called Integrated Services Digital Network(ISDN). In some very remote areas where little or no telecommunications infrastructure exists or for mobile disaster response vehicles, microwave or satellite connections have been adapted for use with telemedicine.

How do I determine what telecommunications I need?

After analyzing how much bandwidth is needed for your telehealth program, a search for telecommunication providers with service in your area and a review of their service offerings will provide you with a good starting point for determining which telecommunications service will best meet your needs. You would want to determine if a dedicated circuit is preferred or if you can get by with sharing the connection with other networked devices. This can be determined by analyzing how much bandwidth is currently available for all of your computers and whether sufficient bandwidth is available for a telehealth connection. Other factors that should be considered include who you expect to connect with, what type of connection they are using and whether your organization is planning any other health IT projects that will require increased bandwidth. The safest approach is to coordinate your analysis with your IT and telecommunications support providers.

Some telecommunication services do not communicate with each other without requiring additional hardware to translate the signals. Items that should be reviewed when selecting a telecommunication service include, how much bandwidth is included (upstream and downstream), latency, jitter and quality of service. Also important is to determine what type of support or service level agreement the telecommunications provider offers for the circuit, since this will determine how a vendor will respond if an issue occurs.

How much bandwidth is required for telemedicine?

Live interactive telemedicine requires continuous bandwidth. A connection speed of 384 Kbps is common in many telemedicine programs for clinic and hospital based programs. At these connection speeds, a standard quality connection would be established, similar to broadcast television at 30 frames per second. In order to achieve High Definition (HD), at least 1 Mbps of bandwidth is required. A certain amount of bandwidth is needed on each connection to transmit packet identifier information. This additional bandwidth is referred to as overhead. This overhead bandwidth takes away from the bandwidth available for the video and audio. This extra bandwidth requirement should also be considered when determining how much bandwidth is needed.

Store and forward telemedicine is not as bandwidth intensive. A set amount of information needs to be either transmitted or received. After the package has been transferred, the bandwidth is no longer needed. The amount of available bandwidth will dictate how long it takes to transfer the information. In-Home telehealth monitoring equipment needs only minimal bandwidth. The equipment is usually connected to a phone line which dials out at regular intervals or during the night to transmit the data collected during the day.

What happens when I don't have enough bandwidth?

Not having sufficient bandwidth will result in loss of quality of the videoconference connection. The first thing that will degrade is the video. Video will appear jerky, pixilated, or may even freeze up for some moments. If even less bandwidth becomes available, the audio can also become garbled and there will be a loss of synchronization between the video and the audio. If the connection degrades enough, the signal can be lost all together, causing the telemedicine connection to be terminated. Acquiring connectivity that includes Quality of Service (QoS) levels from the telecommunications carrier will make it possible to allocate the necessary bandwidth for a quality video and audio transmission.

What is Quality of Service?

Quality of Service (QoS) is a feature of network equipment that can tag packets of information while they travel through the network to ensure that they are given priority over other kinds of traffic. For example, videoconference data can be tagged by the telemedicine equipment, giving it a higher priority than web browsing traffic. In the event a decision needs to be made about which packet goes first, the telemedicine traffic would be high priority. Another feature of QoS is that packets are received in the same order in which they were transmitted, which improves video and audio quality. When information is received in sequence, it requires less processing power to reassemble the packets. QoS also allow for reserving blocks of bandwidth for a particular purpose, such as videoconference. This can ensure that bandwidth is available when it is needed and that a successful connection will take place.

Can I use my personal internet connection for telemedicine?

While it is possible to establish a videoconference connection over a public internet connection, this solution should be approached with caution. The internet can become bottlenecked requiring your data packets to be rerouted, adding delay to the time it will take for your data to reach its destination. The internet does not have Quality of Service, which means that there is no guarantee that the packets will be delivered, in what order, or that they will be prioritized over any other kind of traffic. Packet loss can also occur over the internet, which can degrade the quality of the connection. Additionally, information transmitted over the public internet should be secured using either a virtual private network or enabling encryption on the connection.

Can I send store and forward images over the public internet using an email account from my organization or my home?

No. Store and forward images are considered Protected Health Information if they contain identifying information about a patient. Even if the image does not contain any identifying information, it is not advisable to send medical images over the public internet. Personal e-mail accounts typically are not encryption enabled, which means that the e-mail could be intercepted and viewed by someone other than the intended recipient. Likewise, not all organizations have e-mail encryption on their corporate e-mail systems. Your system administrator can determine if your organization's policies allow for sending of medical information through e-mail.

Operational

What will I need to setup telehealth equipment?

There are two aspects to the setup of telehealth equipment, physical and technical. The location where equipment will be installed will require electrical power and a network connection. When equipment arrives from the vendor, it is important to verify that all equipment that was ordered has been received and a careful inspection should be made to confirm that no parts were damaged during shipping. It is advisable to document for future reference serial numbers and purchase dates of equipment. If support is needed on any piece of equipment, the vendor will ask for the serial number of the device in order to confirm that the device is covered under warranty.

Once the physical setup has been completed, we can move onto the technical setup. The technical setup of the videoconference equipment should be completed by either IT staff or a qualified consultant. Vendors also offer installation services, but they will require specific technical information from the customer. At this stage of the installation, the emphasis is placed on the configuration of the network to pass information to and from the equipment and is normally handled by technical experts. Information required for the setup of the telehealth equipment includes IP address, subnet mask, default gateway, DNS servers and device name. In addition to that, other services such as Simple Network Time Protocol (SNTP) for time synchronization and Simple Network Management Protocol (SNMP) for monitoring of the device can be configured. After this initial configuration has been completed, the device can be accessed through the network using the built in web interface for the videoconference unit. The next step in the configuration would be to setup either the H.320 (ISDN) or H.323 (IP) services and to test connectivity to a test unit. Any other peripherals could then be attached and tested to ensure proper functionality. If the unit is to be used with a bridge, the administrator of the bridge will provide the necessary information to ensure that the video unit can be correctly \identified and connected to the bridge.

What kind of space is needed for live interactive telemedicine?

Live interactive telemedicine equipment can be mounted on a wall on a mobile cart or a rolling pole. Manufacturer design, screen size and type of unit affect the footprint of the unit. Placement and storage of any peripheral devices should also be considered when assessing space needs and mounting options. Consideration should also be given to determining how the unit will be secured or stored when the device is not in use.

Special consideration should be given to wall color, lighting and sound. The colors that have proven successful in telemedicine are light blues and blue grays. These colors provide a nice contrast to skin tones that allow providers to capture relevant clinical information visually from the patient. Lighting should be sufficient to illuminate the area, especially from behind the camera. Volume levels should be set so that the patient can comfortably hear the provider, but not so loud that those in nearby areas can overhear the conversation. To eliminate hollow, tinny sound, it is best to have objects that can absorb sound. In some cases, sound absorbing panels can be installed to dampen the sound from traveling to other areas. Microphone placement is likewise important so that sound the microphone does not pick up the sound coming from the speakers, which would create an echo. Speech should be at normal levels. Patients, providers, and clinical presenters should not need to elevate their voices in order be clearly heard and understood. Sufficient space should be allowed in the exam room between the patient and the equipment so that the provider can position the camera to achieve their desired view of the patient.

For wall mounted installation, there will need to be enough room on the wall to mount the camera, monitor, speakers (if not built into the monitor), and the CODEC. Consideration should be given to cable management to ensure cables are not tangled and damaged. There are many wall mount solutions that are specifically designed for telehealth installations. These have shelves for placement of all of the necessary components. The space will vary, primarily due to the size of the monitors. It is important to remember that proper installation requires that the wall mount brackets which will support the monitors be either stud mounted or properly anchored to prevent the equipment from falling.

What kind of space is needed for store and forward telemedicine?

Store and forward telemedicine equipment comes in many different shapes and sizes depending on the clinical application. Store and forward dermatology uses a digital camera to capture images and

requires little space except a secure place to store the camera and accessories. Equipment for capturing digital retinal images used for diabetic retinopathy screening, comes in different sizes ranging from digital cameras to larger units designed to support the patients head during image capture. No matter what the size of the equipment, the space should allow for proper use of the equipment while considering the comfort of the patient.

Home monitoring equipment does not usually require a lot of physical space, but it is important to set it up near an electrical outlet and a phone connection.

How much space is needed for distance learning?

Distance learning and telehealth equipment is usually installed in conference rooms and can be either wall mounted or on a cart. The presenting site is typically also a conference room where individuals gather to watch the presentation in person. In some cases, the equipment is integrated into the room. This means that wiring and equipment are installed so that they are not visible to the occupants. This could be in an A/V room specially designed for this purpose or in a closet nearby the conference room. The largest piece of equipment in almost all distance learning and telehealth installations are the video displays. These can vary in size and number. It is important to remember that proper installation requires that the wall mount brackets which will support the monitors be either stud mounted or properly anchored to prevent the equipment from falling. Some additional consideration should be given to the acoustics of the room and the need for proper sound, proper lighting, avoidance of glare from windows and outside lighting which could whitewash the room at certain times of the day, and proper placement of the monitors so that all attendees have an adequate view.

How much training will I need to operate the equipment?

Training plays a key role in ensuring success of your telehealth program. If staff are not comfortable with the telehealth equipment, they will be less likely to use it and patients may likewise feel apprehension to using the technology. If staff are in control of using the equipment, the patient will more likely be at ease. The level of training needed depends on the role and responsibilities of each staff member.   The simple answer is that patient and provider site staff will need sufficient training to feel comfortable handling assigned responsibilities that include interacting with and operating the telehealth technology. Some staff adapt quickly to the technology, while others may need additional opportunities to become comfortable with use of the equipment.

Proper training should also be given by qualified individuals in the use of specialized peripherals such as otoscopes, stethoscopes and cameras to assure appropriate capture of images or sounds. Additional training should be given to IT staff so that they understand how the equipment functions. This will allow them to quickly troubleshoot or escalate problems should they arise. In the absence of local IT support, it may be worthwhile to have a qualified consultant available who can provide technical assistance should it become necessary.

It is also important to remember that training needs to be ongoing and should not just occur at the beginning of your telehealth program. An ongoing training program will ensure that new staff are properly trained and existing staff maintain their skills. Many telehealth programs regularly evaluate staff at regular intervals to assure that skills are up to date. Additional training must also be given when new equipment or new sites are added to the telehealth program.

What technical support is needed for a successful telemedicine/telehealth program?

Telehealth technology can be very complex and requires that clinical and support staff are properly trained to address problems when something is not working. It is advisable to have a binder that includes troubleshooting steps, equipment information, and who to call for further assistance.   This may include the IT department, telecommunications provider, videoconference equipment vendor or the remote site. Having well documented contact information will assure prompt resolution of problems. Over time, all of these contacts are likely to change so it is important to regularly review this information and update it as needed.

A simple way to prevent technical problems during clinical visits is to test the equipment and connections frequently and to connect sites early enough to address issues before clinics begin. This is especially true if the equipment is not used often or if you are connecting with a site for the first time. Because patient care is involved, it is imperative that priority is given to resolving telehealth related technical issues.

How do I integrate an Electronic Health Record system with my telemedicine program?

If an Electronic Health Record (EHR) system is implemented at your facility, you can incorporate the use of that technology with telemedicine technology. When a patient is referred to a specialist, they will likely request a copy of certain information, such as a patient demographics, problem list, medication list, allergies, social history and family history. An EHR can transfer a Continuity of Care Record (CCR) or a Continuity of Care Document (CCD), a snapshot of a patient's information useful when referring to a specialist. EHRs eliminate the need to fax paper records between the patient and provider site, removing one of the labor intensive inefficiencies of working with paper records in the telehealth environment.

Where can I go for assistance?

For more information please contact a Telehealth Resource Centers. They can provide qualified experts and/or consultants, and often have tools and templates to assist in the process of developing your telehealth program. For a list of regional telehealth resource centers go to www.telehealthresourcecenters.org.

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Clinical Guides

Diabetic Retinopathy Screening

Practice Guide

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Diabetic Retinopathy Screening

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Jorge Cuadros, OD, PhD, is Director of Informatics Research, University of California Berkeley Clinical Research Center, School of Optometry. Starting in 1994, Dr. Cuadros has developed several programs for remote clinical diagnosis and distance learning, including programs in China and Latin America. Dr. Cuadros' EyePACS system was developed at the UC Berkeley School of Optometry as an open access system for clinical communication in eye care, and has been used for teleconsultation, retinopathy screening, nursing home care, education, digital grand rounds, and research. He is also co-editor of an international collaborative book, "Teleophthalmology" which was published in February 2006.

Introduction

By far, the most common use of telemedicine in eye care is detection of diabetic retinopathy using asynchronous or store-and-forward (SAF) telemedicine. This has proven to be a viable and less expensive alternative to real-time telemedicine in ophthalmology and has been increasingly used for diabetic retinopathy screening for nearly two decades. Thousands of sites across the United States are now performing diabetic retinopathy screening remotely via several varieties of SAF.

This guide presents the practical aspects of developing a diabetic retinopathy screening (DRS) program along with general guidelines and recommendations for performing DRS based on experiences in community clinics in California. A comprehensive set of guidelines describing requirements and recommendations for DRS is available from the American Telemedicine Association's (ATA) Ocular Telehealth Special Interest Group.[1]

The Need for Diabetic Retinopathy Screening Programs

Diabetic retinopathy (DR) is a microvascular complication of diabetes where leakage and blockage of small vessels in the retina cause swelling of retinal tissue, abnormal blood vessel growth, cell death, and retinal detachments. DR is the leading cause of blindness among working age adults in the United States. Vision loss can be prevented in most cases by performing retinal laser photocoagulation in a timely manner.[2] Although early detection and treatment of sight threatening DR can prevent blinding complications, less than half of all diabetics receive recommended yearly eye examinations.[3]

Primary health care providers have traditionally referred their patients to eye care providers for the annual diabetic retinal exam. Patients often fail to visit referred eye care providers for timely eye exams because of geographic, social, economic, and other barriers. Failed visits lead to preventable complications, including blindness from diabetes, glaucoma, and other diseases. DRS via telemedicine can effectively detect sight-threatening DR in the primary care setting, and can often detect other previously undetected diseases, but it does not yet take the place of a comprehensive eye examination. Problems such as cataracts and refractive errors have not been proven to be adequately assessed via DRS; therefore all patients are encouraged to continue with their routine eye care. Future advancements and experience with remote monitoring and diagnostic technology will facilitate the development of comprehensive blindness prevention programs in primary care through telemedicine.

Guidelines for Referring Patients

The following guideline summary is presented for better understanding of the screening process. Diabetic retinopathy screening does not take the place of a comprehensive eye examination by an optometrist or ophthalmologist. The guidelines are derived from the Position Statement of the American Diabetes Association in cooperation with the American Optometric Association (Michael Duneas, OD), and the American Academy of Ophthalmology (Donald S. Fong, MD, MPH).[4] Readers are advised to view the complete position statement.

1. Patients with type 1 diabetes should have a retinal examination 3–5 years after the onset of diabetes. In general, evaluation for diabetic eye disease is not necessary before 10 years of age. However, some evidence suggests that the prepubertal duration of diabetes may be important in the development of microvascular complications; therefore, clinical judgment should be used when applying these recommendations to individual patients.

2. Patients with type 2 diabetes should have a retinal examination shortly after diabetes diagnosis because the onset of the disease may occur several years before the diagnosis. Subsequent examinations for both type 1 and type 2 diabetic patients should be repeated annually. Examinations will be required more frequently if retinopathy is progressing.

3. When planning pregnancy, women with preexisting diabetes should have a retinal examination and should be counseled on the risk of development and/or progression of diabetic retinopathy. Women with diabetes who become pregnant should have a retinal examination in the first trimester and close follow-up throughout pregnancy. This guideline does not apply to women who develop gestational diabetes, because such individuals are not at increased risk for diabetic retinopathy.

Referring Patients with Sight-threatening Diabetic Retinopathy

Patients with any level of macular edema, severe nonproliferative diabetic retinopathy (NPDR), or any proliferative diabetic retinopathy (PDR) require prompt care of an ophthalmologist who is knowledgeable and experienced in the management and treatment of diabetic retinopathy. Referral to an ophthalmologist should not be delayed until PDR has developed in patients who are known to have severe nonproliferative or more advanced retinopathy. Early referral to an ophthalmologist is particularly important for patients with type 2 diabetes and severe NPDR, since laser treatment at this stage is associated with a 50% reduction in the risk of severe visual loss and vitrectomy.

4. Patients who experience vision loss from diabetes should be encouraged to pursue visual rehabilitation with an ophthalmologist or optometrist who is trained or experienced in low-vision care.

Program Validation – Defining Program Goals and Performance

The Ocular Telehealth section of the American Telemedicine Association defined four categories of performance of DRS programs using the Early Treatment Diabetic Retinopathy Study (ETDRS) film-based retinopathy diagnosis system as the gold standard[6] :

A. Category 1 validation indicates a system can separate patients into two categories: those who have no or very mild nonproliferative and those with more severe levels of DR. This level generally identifies patients who may potentially require the care of an ophthalmologist within a year.

B. Category 2 validation indicates a system can accurately determine if sight-threatening DR as evidenced by any level of macular edema or severe diabetic retinal changes. This category of validation allows identification of patients who do not have sight-threatening DR and those who have potentially sight-threatening DR. These patients with sight-threatening DR generally require prompt referral for possible laser surgery.

C. Category 3 validation indicates a system can identify ETDRS defined levels of non proliferative DR (mild, moderate, or severe), proliferative DR (early, high-risk), and macular edema with accuracy sufficient to determine appropriate follow-up and treatment strategies. Category 3 validation allows patient management to match clinical recommendations based on clinical retinal examination through dilated pupils.

D. Category 4 validation indicates a system matches or exceeds the ability of ETDRS photos to identify lesions of DR to determine levels of DR and DME. Functionally, Category 4 validation indicates a program can replace ETDRS photos in any clinical or research program.

The cost and complexity of performing DRS generally increases with higher category of validation. DRS program administrators must determine the appropriate program goals and performance and select a service that matches these expectations.

Program Models for Diabetic Retinopathy Screening

Organizations must consider how to adapt telemedicine based diabetic retinopathy screening to their clinicians' workflow without disrupting their work while ensuring that all patients who require screening are attended to. Three predominant strategies have emerged to manage screening:

1. **Appointments for Retinopathy Screening.** The most obvious and intuitive option is to set up appointments for diabetic patients to return for retinal imaging. An appointment schedule is set up when screening personnel process patients to be screened. Unfortunately, many patients fail to return for the retinal imaging, just as they often fail to attend an eye exam.

2. **Integrating Screenings into Clinic Workflow.** The success of any clinical program depends on how well it is integrated into the workflow of the care process. One straightforward way to ensure that this happens is to create a simple set of clinical scenarios and then map out suggestions for a modified workflow, including alerts and reminders for all the people involved with the patient. For diabetic retinopathy screening, there are a few basic scenarios:

    a. Clinical Scenarios

        i. Current diabetic patient visiting the clinic for a regular exam or unrelated issue. The key is for physicians and case managers to have retinopathy screening at the front of their minds. They should be making referrals for retinopathy screening to all diabetic or borderline diabetic patients.

        ii. Current diabetic patient who is not scheduled for a clinic visit. Many diabetics have never had a retinopathy screening and do not know that it is necessary. Others may have received a retinopathy screening more than a year ago and are due for another screening. Patient outreach – mailings and phone calls – can educate these patients and motivate them to schedule a visit. Electronic registry systems can help simplify identification of patients needing screens and outreach.

        iii. New diabetic patient who visits the clinic specifically for retinopathy screening. One result of community outreach is that new patients may come to the clinic just to have their eyes tested for retinopathy. Since retinopathy screening is part of a whole program of diabetes management, it is critical to provide these patients with a more comprehensive care program.

3. DRS Events. Diabetic patients are gathered at an event where they can be screened for retinopathy. Diabetes education seminars, health fairs, or other community events are often excellent locations for performing DRS. Care should be taken to include all patients, not just the compliant patients who are most likely to attend these events.

Typical Diabetic Retinopathy Screening Workflow[7]:

Check- In:	**Physician:**	**Photographer:**	**Consultant:**	**Physician or Case Manager:**
See if patient is up to date on screening	Refers all diabetic patients for screening	Captures and uploads images and clinical data	Interprets images and creates report	Communicates results to patient and makes referral if needed

Program Personnel and Operations

In addition to the technical requirements, a successful retinopathy screening program must have organizational features in place.

Personnel involved in the screening include:

- primary care clinicians who refer patients for DRS

- photographers who acquire and transmit retinal images

- reviewers who interpret images and generate assessments of retinopathy

- administrators who oversee the process

- technical personnel that develop and maintain the technical components of the system

DRS programs also require policies and procedures including:

- templates and protocols to manage data

- procedures for interfacing with medical records, billing, and administrative tasks.

A DRS requires a primary care provider, photographer, clinical consultant, administrator, and technical support. The following are recommendations for ensuring adequate assignment of personnel for DRS.

1. **Primary Care Providers**

   Primary care providers are usually in charge of coordinating the care of their chronic disease patients so it is crucial that they understand and agree about the importance of on-site DRS. Any DRS program should include meetings with all providers and staff to present the rationale for the program, address any concerns, and develop the processes and protocols for referring patients for screening and subsequent care. These meetings should occur early in the program development process.

   Five typical concerns of primary care providers are:

   - Duplication of services with regular eye exams with eye care providers. Why perform DRS if patients are already getting eye exams? Review of a clinic's own compliance level with yearly eye exams (usually less than 50%) can effectively address this concern, given that high risk patients are often the least likely to receive yearly eye exams. Furthermore, eye exams reported by patients are often not accurate. Patients often state that they have had a DR exam when they have only had a simple eye exam for eyeglasses or visual acuity. Patients sometimes misunderstand the results of their retinal exams or can't effectively relay the pertinent information to their primary care provider. Often the reports from the eye care providers are not available in the patients' records. It is important to emphasize that DRS does not take the place of a regular eye exam, whereas, DRS is more effective for detecting retinopathy.

- DRS requires the participation of high level clinicians, taking resources away from other necessary services (lost opportunity cost). The DRS process requires minimal to no active participation by physicians. The photography and communication can be managed by medical assistants, interpreters, volunteers, and others (see section on photographers below).

- Insufficient resources for treating patients with detected retinopathy. Providers are sometimes concerned that patients that are found to have sight-threatening retinopathy will not have access to treatment. This is a real concern (discussed further in the section on follow-up), however, the rationale for screening at the primary care site is to refer only those patients with sight-threatening conditions to the local retinal specialists, thereby preserving retinal specialist resources for treatment, rather than using their time to see diabetic patients that don't have serious retinopathy. Furthermore, it is usually better for the patient to be aware of sight-threatening retinopathy rather than to think that the eyes are normal.

- Inadequate follow up on referrals. Who will refer the patient in the event of a positive finding on the screening? The clinic and off-site retinal consultants must have a mechanism for ensuring that patients can be contacted and referred to appropriate eye care providers in the event that serious retinopathy is found. Primary care providers should use their regular specialty referral mechanisms to follow up with patients.

- Inadequate validation of DRS and reading consultants. Several landmark studies have validated the use of digital retinal imaging, summarized by John Whited[8] for the US Veterans Administration. Ensuring that the proposed DRS is validated against the standard programs should effectively address this concern.

2. **Photographers**

Digital retinal photography is generally much easier to learn than film-based retinal photography. Personnel at all levels can usually be trained to perform adequate digital photography in a matter of hours. Sites that perform DRS have designated medical assistants, x-ray techs, interpreters, volunteers, medical and pre-medical students, optometric interns, diabetic care coordinators, diabetic educators, nurses, and doctors to acquire retinal images. High level personnel (e.g. nurses and educators) may use retinal images to educate patients and to assess their general microvascular status; however, all levels of photographers can acquire adequate images for DRS.

Individuals that are well-suited as retinal photographers have the following qualities:

- Familiarity and comfort with technological devices, such as digital cameras, video games, and computers.

- Patience in working with patients.

- Attention to detail. Consistently high quality images are important for the success of DRS.

- Dedicated time for performing the photography. If the photographer has too many other assigned activities, then DRS may be avoided.

- Enthusiasm for DRS. Most photographers soon become enthusiastic about performing DRS, which creates motivation to overcome the changes to clinic activities that are necessary during the initial phase of the DRS program.

Certification of photographers is important to ensure consistently adequate images. Certification programs for photographers are available through the University of Wisconsin Fundus Photograph Reading Center

(http://eyephoto.ophth.wisc.edu/) as well as the University of California, Berkeley Retinal Reading Program (https://www.eyepacs.org). Continuous quality improvement should also be implemented by tying quality assessment of retinal images with the remote clinical consultation. The clinicians that interpret the images should provide feedback to the photographers regarding the quality of their images. Retraining and remediation can then follow the consultants' feedback.

3. **Clinical Consultants**

The professionals that read transmitted retinal images for DRS programs are varied and can be anywhere in the world. DRS programs have used retinal specialist ophthalmologists, general ophthalmologists, optometrists, or trained non-clinical staff. Most programs, including Kaiser Permanente and the Veterans Administration, have employed both ophthalmologists and optometrists to read images, while others, like the University of Wisconsin Fundus Photograph Reading Center, have employed trained non-clinical staff to interpret images using a highly developed lesion detection protocol.

Following are qualities of clinical consultants that should be considered when selecting and contracting with appropriate consultants:

• Experience

• Capacity

• Availability

• Cost

• Liability

• Turnaround time

Certification and quality assurance of clinical consultants is of utmost importance. Inconsistent assessments and recommendations among consultants can cause uncertainty regarding the disposition of screened patients. A certification program "calibrates" consultants and allows for better quality assurance of the DRS program. Certification programs for consultants are available through the University of Wisconsin Fundus

Photograph Reading Center (http://eyephoto.ophth.wisc.edu/) as well as the University of California, Berkeley Retinal Reading Program (https://www.eyepacs.org).
An adjudicating consultant makes decisions resolving issues of ambiguous or controversial interpretation. In most cases, an adjudicating consultant will be a retinal specialist ophthalmologist. Adjudicating consultants may also perform quality control by reviewing a sub-sample of cases that have been reviewed by other clinical consultants.

4. **Administrators**

In most retinopathy screening programs, high-level administrators participate in the initial interactions to review the expected benefits and costs of the program. Once the decision has been made to incorporate retinopathy screening in a clinic, the administration will usually assign a project manager who will perform the following on-going administrative duties:

• Manage schedules and duties of photographers and assistants involved in the day-to-day processing of encounters

• Coordinate billing for services

• Manage referrals for treatment of patients by retinal specialists

• Act as liaison between retinal consultants and the clinic

• Communicate technical difficulties to retinal camera vendors

• Ensure compliance with DRS policies and procedures

• Generate reports on performance of program

A Note to CEOs, Operations Directors, and Clinic Managers

There are a few key ways that administrators can ensure a successful diabetic retinopathy screening program:

1. Communicate your support for the program at its inception and on an ongoing basis – your buy-in is absolutely essential in motivating the clinic staff. Ask for updates at staff meetings, and promote the clinic's goals, milestones and successes.

2. Take a team approach to integrating screening into clinic workflow, enlisting the support of case managers, providers, photographers, and support staff. This may require the flexibility to accept walk-in appointments for people who were not aware at the time of making their appointment that they should be having retinopathy exams.

3. Emphasize the critical role of primary care in overall management of diabetic eye health. Make sure that everyone at the clinic understands that screening is part of every diabetic's care management program at the normal site of care, not something performed only by specialists.

4. Embrace telemedicine as a new model of care, communicate with IT professionals to ensure their support, and educate your clinic team about the key benefits of this approach, including speed of service, ease of process, lower costs, and better patient care.

5. Provide training, support, and recognition for staff to fit retinopathy screening into a comprehensive diabetes management plan. Make sure that participation in the program is reflected in performance measures.

Policies and Procedures

The success of a diabetic retinopathy screening program can be measured by the percentage of diabetic patients who receive annual retinal examinations. Close attention to identifying diabetic patients who have not had a retinal examination within one year will ensure that all patients will receive appropriate care. The following are recommendations about identifying patients for retinal screening that have proven effective to ensuring a high level of compliance with yearly retinal exams:

- Identify and screen diabetic patients without requiring a referral from the primary care provider. Providers are often very busy and will neglect to initiate the referral for screening. Diabetic registries or electronic medical records are often effective in identifying patients that need DRS.

- Screen all diabetic patients regardless of previous eye exams. Patients often report having had a regular eye exam, but a report of the findings is not available in the patient record. Patients are sometimes mistaken when they receive a simple eye examination for eyeglasses, thinking that a thorough view of the retina was performed.

- Closely follow patients that fail the screening and are referred for retinal treatment. Diabetic retinopathy is often asymptomatic, even in the late stages, and patients will often neglect to obtain treatment. It is incumbent upon the primary care staff, as well as the retinal consultants, to ensure that the patient actually receives proper treatment.

Three sample protocols on screening services, photography review and pupil dilation can be found in the Appendix.

Technical Requirements

Diabetic retinopathy screening programs generally use store and forward technologies (SAF). A SAF telemedicine program generally relies upon a similar set of concepts and components, regardless of specialty, and a typical DRS program follows this similar format.

First, there must be a device used to capture imagery or data from the patient at a point in time. For DRS, there are a number of digital retinal imaging devices in common use. These vary significantly in both cost and features, and any prospective screening site should consider their needs, the needs of the referral specialist, and the capabilities of their staff when choosing a device.

Second, there must be access to an imaging and archival system for storing the images and clinical data, as well as a communications system for transmitting the images and data between the patient care site and consulting specialists. In many SAF disciplines, some systems are based on a central data repository referred to as "PACS" (Picture Archiving and Storage Systems). In other cases, PC-based image management and communications software systems concentrate on secure transmission of patient information from point to point, without the additional investment in central archiving. The example illustrated in this guide, EyePACS, is an open source transmission and archiving system.

Finally, there must be a system in place on the consultant's side which allows review and analysis of the imagery and data at an appropriate resolution and format. In the case of DRS, a viewing station is required for the consultants to view and interpret cases.

Connectivity

Because a DRS is an asynchronous program by nature, the connectivity requirements are generally more modest than those required for live interactive telemedicine protocols, and even less than those required by other SAF protocols which generate huge files, such as echocardiography for example. A successful DRS program can operate within the following connectivity and configuration parameters:

- Allows upload of image files to a trusted site

- Allows Secure Socket Layer (SSL) encryption at 128 bit strength in web browser

- Allows connections via VPN to imaging computer through network (for managing computer)

- 128 Kbps minimum connection to Internet

If the clinic will assign its own computers for the program then it must meet these minimum specifications:

- CPU: 2 GHz

- Hard Drive: 40 Gb – 5400 rpm

- RAM: 512 MB

- Two standard USB2 inputs

- Video Card: 128 Mb vRAM; supports 1152 X 864 resolution in 24-bit color

- Network Interface Card: 10 Mbps minimum

- Latest virus protection and operating system updates

- Monitor: 15" Flat screen or flat panel; 60 Hz refresh rate

- A printer for printing retinopathy reports (just text) can either be connected directly to imaging computer, or connected via the network.

The room used for DRS must be able to be darkened so that patients' pupils will dilate. Completely dark is preferable. There should be at least four electrical outlets available for imaging devices and computer. The maximum electrical requirement for all devices is approximately 5 Amps. There should also be a plain telephone line and telephone installed at the work station available for service calls, troubleshooting, and patient consults.

A comprehensive review of all retinal imaging modalities is well beyond the scope of this guide. Moreover, new imaging devices are quickly appearing on the market at an accelerating rate. Below are considerations that may be helpful in determining which devices are appropriate for a particular DRS program. Many diverse retinal imaging products are sold to eye clinicians. Prices for retinal imaging devices vary greatly and the quality of the acquired images also varies greatly.

Retinal imaging devices generally work by shining light (plain or laser) through the pupil of the eye to illuminate the retina. Lenses inside the device focus light from the retina onto camera sensors that convert the light into signals that are interpreted by a computer and rendered onto a viewing monitor or stored in computer files. The quality of the images that are viewed by the eye consultant depends on each link in this chain of events. The various factors that ultimately affect the quality of the displayed images include resolution, color, stereopsis (depth perception), image compression, and pupil dilation. These factors are discussed in the following sections.

Resolution

The optimum image resolution has been actively debated since the beginning of digital retinal imaging. Resolution of a digital retinal image is the number of pixels (the smallest elements of a digitized image) that are assigned to represent a given area of retina. High resolution images have finer detail, but they also require larger files for storage and more time for processing and transmission. Early digital retinal imaging devices (circa 1990) used video cameras mounted to adapters on the camera ports of film based retinal cameras. Images were acquired using video capture cards inside

computers that digitized analog video still frame signals. The typical image resolution was 640 X 480 pixels over a 30 to 45 degree circular field of the retina. Many clinicians felt that these images were sufficient to detect retinal abnormalities. Clinical studies, however, showed poor correlation with face-to-face examinations or film transparencies. Since then, image resolution has steadily increased. Most of today's retinal cameras have one million or more pixels of resolution on the image sensors. Jensen and Scherfig[9] found that 3 million pixels was the minimum resolution required for a digital camera to capture images comparable to slide film. Tom Cornsweet explains in "The Great Pixel Race"[10], however, that a camera sensor's resolution is not equivalent to the acquired retinal image resolution. He notes that there is a limit to the benefit of adding more pixels to a sensor. This limit is set by the optical quality of the eye that is being photographed. The size of the captured field in the retina also greatly affects the resolution. A 45 degree field requires more than twice as many pixels as a 30 degree field. Cornsweet also indicates that most digital cameras have rectangular sensors. A third or more of the space on rectangular sensors is wasted because retinal images are round. A square sensor would require less resolution than a rectangular one because less space would be wasted. Lastly, resolution is greatly affected when capturing color vs. grayscale ("black and white") images. More than twice as many pixels are needed to capture a color image than to capture a grayscale image because color pixels must be divided among the different wavelength sensors in order to get color images, whereas grayscale pixels match the image point for point. This leads to the question of whether color is necessary for retinal imaging in diabetic retinopathy, or is grayscale adequate for image interpretation.

Color

Rendering retinal images in color or grayscale, and how to do it, is open to debate. Although there are many different ways to analyze color, a color retinal image is typically separated into three components or channels: red, green, and blue. A more detailed discussion of digital color image theory can be found in Ken Davies' discussion of digital color models. Investigators generally agree that the green channel of a retinal image contains most of the important information regarding diabetic retinopathy. Clinicians often use green filters to isolate the green channel in order to enhance retinal lesions when viewing the retina with biomicroscopy. Many clinicians, however, prefer to view color images of the retina, perhaps because they are more accustomed to it. Hence, designers of monochrome retinal imagers often "colorize" the grayscale images in order to provide a more normal appearance for the display. Ultimately, the choice of grayscale vs. color imaging will be a matter of preference. Grayscale sensors may be more frugal in their use of pixels, but greater numbers of pixels are rapidly becoming easier to manage and cheaper to make and purchase.

Several parameters affect the appearance of digital color images. The color depth is one of the most important parameters that affects how well subtle differences in colors and shading are rendered. Images should be captured in a minimum of 24-bit color (16 million possible colors) and displayed as well with a minimum of 24-bit color. The hue, saturation, and brightness are other parameters that can be adjusted both on the acquisition side and on the display side; however, there is no standard guidelines as to how these should be set. Color matching products are available to insure that displays match the original image, however, these may not be so important since the human eye readily adapts to changes in surrounding colors. Moderate mismatching of colors among different computer monitors and display devices does not greatly influence the ability to detect lesions.

Stereopsis

Stereopsis (depth perception) allows observers to perceive variations in the thickness of the retina. Stereopsis is useful for evaluating edema, the accumulation of fluid in the retina. Edema comes from leaky blood vessels and damaged tissue, which in turn disrupts sensory cells. Detection of edema that is in and around the macula, the central most sensitive area of the retina, is particularly important since this is one of the main causes of blindness from diabetes. A stereoscopic image is actually composed of two images, one for the observer's right eye and one for the observer's left eye. The observer perceives stereopsis when the two images are combined in the observer's brain. To acquire a stereoscopic pair from an ordinary retinal camera, the photographer takes one picture of the retina, then rotates the camera slightly and takes another picture of the same field. Alternatively, with some cameras, stereoscopic images are rendered by combining overlapping areas of different fields. Some retinal cameras, such as the Nidek 3DX, Visual Pathways ARIS, and the Clarity Pathfinder, can acquire both right and left stereoscopic images simultaneously

There are a few different ways to view digital stereoscopic images once they are acquired. The simplest is to place the stereoscopic pair side by side on a computer screen (or screens), then cross the eyes or use prisms or mirrors to overlay the image in the observer's right eye onto the image in the observer's left eye. After some practice fusing images becomes easier and it often becomes unnecessary to use prisms or mirrors. This method requires no special software and can be viewed on any monitor. At UC Berkeley, the retinal reading stations have dual computer monitors where the stereoscopic pair is rendered over the span of the two monitors allowing a larger area to be viewed in stereo.

Another way to view images in stereo is to use special "shutter" eyeglasses that are connected to the computer's video card. Right and left stereoscopic images are alternately displayed at 60 times per second or faster while the eyeglasses are synchronized to alternately block the view of one eye. Disadvantages are that the images may be dimmer and it is necessary to use proprietary software and eyeglasses to create and view the images on the observer's work station. Still another option is to use recently released computer monitors that can render stereoscopic images without having to use special eyeglasses to view them. These monitors display the two images in alternating vertical strips which are then directed alternately to either the observer's right or left eye. The disadvantages of this strategy includes costly monitors for all viewing stations, special software to render the images, and only one observer can view stereoscopic images at a time.

UC Berkeley's DRS photography protocol uses three overlapping fields which contain images of the optic nerve and macula that can be combined for stereoscopic viewing.

Although stereoscopic viewing of the retina is the gold standard for diabetic retinopathy detection, many, if not most, screening programs do not use stereoscopic viewing. Retinal edema is a significant finding for assessing diabetic retinopathy; however, many clinicians feel that it does not affect their referrals to specialists unless the edema is in or around the macula. Bresnick et al[11] found that the presence of hard exudates (fatty protein leakage from damaged blood vessels) within about 1500 microns of the macula detected clinically significant macular edema (CSME) with a sensitivity of 94% and specificity of 54%. This means that almost all patients with CSME will be detected and about half of those patients who are found to have CSME will not actually have it. Many clinicians feel that the 2-to-1 over-referral rate caused by using this guideline is acceptable because the consequence of a false positive result is simply an eye examination.

Compression

Compression allows digital images to be stored in small computer files. Smaller files make it more efficient to store, retrieve, and transmit images. Without compression some retinal images would be too large to be practical for telemedicine. There are many ways to compress images. Some methods, such as JPEG and PNG, are standard compression formats and the programs necessary to display these images are already in any typical computer or Internet browser. Some compression methods are proprietary and users are required to install or download special programs in order to view images in these formats. Some compression methods are "lossless", which means that they are exactly like the original uncompressed image when they are displayed. Others are "lossy", meaning that they may look like the original image, but some fine detail and image information may be lost.

Some diabetic retinopathy screening programs use only uncompressed images due to concerns that misinterpretation of compressed retinal images may create legal liability. Some studies have compared graders viewing retinal images with lossless compression and "lossy" compression. Although they may not be definitive, the results generally indicate that compression up to about 15 to 1 level (i.e. the compressed image is roughly one fifteenth the size of the original) does not significantly affect the grading of retinal images.[12] Significant image degradation occurs, however, when images are enhanced or modified after they are compressed.

A system using a fiber optic network with no limitation on data storage would perform well with uncompressed retinal images. Many primary clinics, however, have far more modest bandwidth connectivity and must transmit images in the most efficient way possible. The UC Berkeley Retinal Reading Center allows transmission of uncompressed images, but encourages the use of compression no greater than 15 to 1. UC Berkeley uses the JPEG format for compressed images because it provides adequate image quality and is widely accessible through almost all imaging programs and web browsers.

Enhancement

Some developers of retinopathy screening programs recommend that images should be stored as "raw" images for medico-legal reasons in order to ensure that detected lesions are actually present and are not artifacts of the enhancement. A typical digital image, however, goes through several image processing steps before it is rendered on a display, so it becomes unclear at what stage is an image still "raw". In addition, a significant number of popular applications do not support direct display of .RAW image files. In practice, high quality JPEG images have proven more than adequate for the screening process.

Pupil Dilation

Many retinal cameras, such as the Canon DGi, and the Topcon NW-200, do not require pupillary dilation for retinal photography. Even with these cameras, however, images are often of better quality when they are taken through dilated pupils. Approximately 10% of images that are acquired without pupillary dilation with non-mydriatic retinal cameras can not be appropriately interpreted by clinicians due to poor image quality. Two factors that affect image quality are small pupil size and media opacities, such as cataracts. These limitations can be overcome by temporarily increasing the pupil size with pharmacological agents. Better images can be acquired more quickly when pupils are dilated, particularly in older patients, since they are more likely to have small pupils and media opacities. Pharmacological dilation, however, can have adverse effects. The most common adverse effects are photophobia (sensitivity to light) and cycloplegia (inability to change focus, usu-

ally causing near blur). Other adverse effects are much less common, and include hypersensitivity, which can cause conjunctival and corneal inflammation and ocular infection from contact with contaminated eye drops. Pupillary dilation has occasionally been reported to cause acute angle closure glaucoma, a painful sight-threatening condition. The use of two dilating agents used in combination for full pupillary dilation has been reported to potentially cause angle closure in approximately one out of five thousand individuals. There have been no reported cases of angle closure caused by using a single dilating agent. One drop per eye of 1% tropicamide can be used as a single agent to provide adequate dilation for retinal photography. Onset of pupillary dilation is approximately 15 minutes and photophobia and cycloplegia will typically last from two to four hours, although a few individuals may experience pupil dilation for up to three days.

A specific protocol for pupil dilation should be followed if eye care professionals are not available to instill eye drops. An example protocol is found in the Appendix.

Glossary of Teleophthalmology Terms

Diabetic Retinopathy (DR) - Diabetic retinopathy is a microvascular complication of diabetes where leakage and blockage of small vessels in the retina cause swelling of retinal tissue, abnormal blood vessel growth, cell death, and retinal detachments. Diabetic retinopathy (DR) is the leading cause of blindness among working age adults in the United States. Vision loss can be prevented in most cases by performing retinal laser photocoagulation in a timely manner.[14] A detailed discussion of prevention, early detection, evidence-based recommendations, clinical trials, and grading scales is presented in the American Academy of Ophthalmology's Diabetic Retinopathy Preferred Practice Pattern[15] Although early detection and treatment of sight-threatening DR can prevent blinding complications, less than half of all diabetics receive recommended yearly eye examinations.[16]

ADA Guidelines Terms:

Macular Edema – Fluid from leaky blood vessels accumulating around the macula (the center of vision in the retina). Clinically significant macular edema is defined by the ETDRS to include any of the following features:

- Thickening of the retina at or within 500 microns (about one third of the optic nerve head diameter) of the center of the macula.

- Hard exudates at or within 500 microns of the center of the macula, if associated with thickening of the adjacent retina (not residual hard exudates remaining after the disappearance of retinal thickening).

- A zone or zones of retinal thickening one disc area or larger, any part of which is within one disc diameter of the center of the macula.

Severe NPDR – Severe Non-Proliferative Diabetic Retinopathy: The cutoff of severe NPDR is derived from the "4-2-1 rule" where presence of the following would qualify for this level if no PDR is present:

- 4 quadrants of hemorrhages or microaneurysms greater than ETDRS standard photograph 2A (> 20 retinal hemorrhages); or

- 2 quadrants of venous beading; or

- 1 quadrant of IRMA equal or greater than ETDRS standard photograph 8A (prominent, easily visible abnormal blood vessels)

PDR – Proliferative Diabetic Retinopathy: Neovascularization (new blood vessel growth) and/or vitreous/preretinal hemorrhage (blood in front of the retina).

IRMA – Intra-Retinal Microvascular Abnormalities: dilated abnormal capillaries, which are often leaky, and lie in the plane of the retina. They usually occur in areas of widespread capillary occlusion, often associated with occlusion of larger vessels and cotton-wool spots.

Vitrectomy - The vitreous is a normally clear, gel-like substance that fills the center of the eye. Advanced diabetic retinopathy may require a vitrectomy, or surgical removal of the vitreous. After a vitrectomy, the vitreous is replaced as the eye secretes aqueous and nutritive fluids.

A vitrectomy may be performed to clear blood and debris from the eye, to remove scar tissue, or to alleviate traction on the retina. Blood, inflammatory cells, debris, and scar tissue obscure light as it passes through the eye to the retina, resulting in blurred vision. The vitreous is also removed if it is pulling or tugging the retina from its normal position.

ETDRS[17] (Early Treatment of Diabetic Retinopathy Study) - A large NIH sponsored study which measured the effectiveness of early diabetic retinopathy treatment with laser and created a widely accepted scale for staging diabetic retinopathy.

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Appendix

Sample Protocol 1: Diabetic Retinopathy Screening Services

University of California, Berkeley Retinal Reading Center

PROCEDURE FOR DIABETIC RETINOPATHY SCREENING SERVICES (DRS)			
Department	DIABETES CARE FACILITIES	**Effective Date**	June 28, 2005
Campus		**Date Revised**	
Unit		**Next Scheduled Review**	
Manual		**Author**	Jorge Cuadros
Replaces the following Policies:		**Responsible Person**	

Policy

1. All appropriate consents must be obtained for Diabetic Retinopathy Screening Services.

2. All patients must be referred by the primary care physician (PCP) for DRS services based on the following guidelines:

   a. Diagnosed diabetic patients who have not had a retinal exam within the last year.

   b. Completed pinhole test (visual acuity).

   c. Has recent lab results (within the last 6 months), including Cholesterol, Triglycerides, and Hemoglobin A1C.

3. All appropriate documentation must be sent with the referral prior to the DRS services appointment.

4. All photographers providing DRS services must complete Diabetic Retinopathy Screening Photography Training and complete 10 satisfactory sets of images prior to providing DRS patient services.

Background

According to the American Diabetes Association, up to 21% of people with type 2 diabetes have retinopathy when they are first diagnosed with diabetes, and most will eventually develop some degree of retinopathy. Diabetes is responsible for 8% of legal blindness, making it the leading cause of new cases of blindness in adults 20-74 years of age. Through the findings of the 2002 Behavioral Risk Factor Surveillance System, the CDC reports that each year, 12,000–24,000 people in this country become blind because of diabetic eye disease. Regular eye exams and timely treatment could prevent up to 90% of diabetes-related blindness. However, only 60% of people with diabetes receive annual dilated eye exams as recommended by the American Diabetes Association guidelines. Some studies have also indicated that preventive ophthalmic surveillance of high-risk diabetic individuals is even worse in urban underserved communities. (Flowers, et al.)

Seven out of every 100 people in California are estimated to have diabetes, a 2.3 per every 100 people increase from 1994. African American, Hispanic, American Indian, and Alaska Native adults are about 2–3 times more likely than white adults to have diabetes. It is estimated at 15% of adult America Indian/ Alaska Native have diabetes, 13% of African American, 10% of Latinos, and nearly 8% of Whites. The prevalence of diabetes has increased steadily over the past 20 years, most notably among African Americans. Recent increases have also occurred among Latinos. (CDC)

Dilated comprehensive eye examinations have been demonstrated to be of great potential benefit for diabetic retinopathy. However, with national studies indicating that only 60% of diabetics actually undergo annual dilated examinations and urban underserved communities exhibiting even worse numbers have driven diabetic retinopathy screening models via digital fundus photography into the forefront of diabetes management.

With the introduction of digital fundus cameras, high capacity computers, and the internet, the medical and financial implications of a telemedicine retinopathy screening model has been explored in the past decade. DRS, however, is not a substitute for regular comprehensive eye examinations.

Procedure

1. Patients may be appointed for DRS services for same day appointments or for future appointments when same day appointments are not available.

2. The photographer(s) will follow steps in image capture as outlined in EyePACS DRS Photography Manual.

3. Three standard fields and fundus reflex photographs will be captured.

    a. Field 1M – Disc

    b. Field M – Macula

    c. Field 3M – Temporal to Macula

4. Documentation of the service will be inserted in the patient chart by photographer.

5. All images are transmitted via Internet to the EyePACS image server at UC Berkeley.

6. All pictures are stored for transmission for review and consult by credentialed UC Berkeley reviewers. Reports of the retinal screening cases will be appended to digital case presentation usually within one hour, but not more than five days after image capture.

7. Patients needing further retinal services will be referred by photographer to appropriate eye care specialist as indicated in EyePACS report.

8. The photographer assures that all electronically transmitted information is printed and the hardcopy report is placed in patient's chart or sent to Medical Records for processing according to existing procedures for consult reports.

In the event that adequate images cannot be acquired:

1. If the photographer determines that clear images can't be acquired, then the patient will be encouraged to go to their general eye exam appointment.

References

ADA Guidelines on Diabetic Retinopathy Screening.

Basu A, Kamal AD, Illahi W, Khan M, Stavrou P, Ryder RE. Is digital image compression acceptable within diabetic retinopathy screening? Diabet Med. 2003 Sep;20(9):766-71.

Bursell SE, Cavallerano JD, Cavallerano AA, Clermont AC, Birkmire-Peters D, Aiello LP, Aiello LM; Joslin Vision Network Research Team. Stereo nonmydriatic digital-video color retinal imaging compared with Early Treatment Diabetic Retinopathy Study seven standard field 35-mm stereo color photos for determining level of diabetic retinopathy. Ophthalmology. 2001 Mar;108(3):572-85.

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Fong DS, Aiello L, Gardner TW, King GL, Blankenship G, Cavallerano JD, Ferris FL 3rd, Klein R; American Diabetes Association. Diabetic retinopathy. Diabetes Care. 2003 Jan;26(1):226-9.

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Wilkinson CP, Ferris FL 3rd, Klein RE, Lee PP, Agardh CD, Davis M, Dills D, Kampik A, Pararajasegaram R, Verdaguer JT; Global Diabetic Retinopathy Project Group. Proposed international clinical diabetic retinopathy and diabetic macular edema disease severity scales. Ophthalmology. 2003 Sep;110(9):1677-82. Review.

Approvals

(This area can be changed depending on approvals needed. Signatures are required on all new policies)

Departmental	Date:
Administrative Team	Date:
Board	Date:

Sample Protocol 2: Diabetic Retinopathy Photography Review

University of California, Berkeley Retinal Reading Program

PROCEDURE FOR DIABETIC RETINOPATHY PHOTOGRAPHY REVIEW			
Department	COMMUNITY CLINICS AND DIABETES CENTERS	**Effective Date**	July 28, 2005
Campus	UC Berkeley Optometric Eye Center	**Date Revised**	
Unit	EYE – TELEMEDICINE	**Next Scheduled Review**	
Manual		**Author**	Jorge Cuadros, OD, PhD
Replaces the following Policies:		**Responsible Person**	

Policy

1. Optometrists will review digital DRS cases at a web terminal and report to PCP and to tertiary care providers as needed. Optometrists will follow the ADA guidelines for referral.

Background

According to the American Diabetes Association, up to 21% of people with type 2 diabetes have retinopathy when they are first diagnosed with diabetes, and most will eventually develop some degree of retinopathy. Diabetes is responsible for 8% of legal blindness, making it the leading cause of new cases of blindness in adults 20-74 years of age. Through the findings of the 2002 Behavioral Risk Factor Surveillance System, the CDC reports that each year, 12,000–24,000 people in this country become blind because of diabetic eye disease. Regular eye exams and timely treatment could prevent up to 90% of diabetes-related blindness. However, only 60% of people with diabetes receive annual dilated eye exams as recommended by the American Diabetes Association guidelines. Some studies have also indicated that preventive ophthalmic surveillance of high-risk diabetic individuals is even worse in urban underserved communities. (Flowers, et al.)

Seven out of every 100 people in California are estimated to have diabetes, a 2.3 per every 100 people increase from 1994. African American, Hispanic, American Indian, and Alaska Native adults are about 2–3 times more likely than white adults to have diabetes. It is estimated at 15% of adult America Indian/ Alaska Native have diabetes, 13% of African American, 10% of Latinos, and nearly 8% of Whites. The prevalence of diabetes has increased steadily over the past 20 years, most notably among African Americans. Recent increases have also occurred among Latinos. (CDC)

Dilated comprehensive eye examinations have been demonstrated to be of great potential benefit for diabetic retinopathy. However, with national studies indicating that only 60% of diabetics actually undergo annual dilated examinations and urban underserved communities exhibiting even worse numbers have driven diabetic retinopathy screening models via digital fundus photography into the forefront of diabetes management.

With the introduction of digital fundus cameras, high capacity computers, and the internet, the medical and financial implications of a telemedicine retinopathy screening model has been explored in the past decade. Although the quality of fundus photography has not been proven to be a suitable substitute for a dilated comprehensive eye exam done by an ophthalmologist or optometrist, there have been some examples of beneficial outcomes.

Procedure

1. Attending optometrist receives notification of cases to review.

2. Attending optometrist reviews images and case information and follows the ADA guidelines for referral of sight-threatening retinopathy.

3. Attending optometrist generates a report in EyePACS usually within one hour, but not more than 14 days from date of e-mail notification. Report indicates findings, impressions, and advice.

4. Notification that report has been generated is sent to referring clinic.

In the event that adequate images cannot be reviewed:

1. If the images that are transmitted are not of sufficient quality to make an assessment, then e-mail notification will be sent back to referring clinic recommending that patient be encouraged to attend their general eye exam appointment.

In the event that patient needs referral for tertiary care:

1. If the reviewing optometrist determines that patient requires a referral to ophthalmology services, notification will be sent along with report indicating need for further study or treatment with appropriate specialist.

2. Primary care clinic staff will follow regular referral procedure to refer patient to ophthalmology clinic.

References

ADA Guidelines on Diabetic Retinopathy Screening.

Basu A, Kamal AD, Illahi W, Khan M, Stavrou P, Ryder RE. Is digital image compression acceptable within diabetic retinopathy screening? Diabet Med. 2003 Sep;20(9):766-71.

Bursell SE, Cavallerano JD, Cavallerano AA, Clermont AC, Birkmire-Peters D, Aiello LP, Aiello LM; Joslin Vision Network Research Team. Stereo nonmydriatic digital-video color retinal imaging compared with Early Treatment Diabetic Retinopathy Study seven standard field 35-mm stereo color photos for determining level of diabetic retinopathy. Ophthalmology. 2001 Mar;108(3):572-85.

Flowers, C.W.; Baker, R.S. The utility of Telemedicine for Diabetic Retinopathy Screening. NLM Telemedicine Symposium: National Library of Medicine. (March 2001).

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Lin DY, Blumenkranz MS, Brothers RJ, Grosvenor DM. The sensitivity and specificity of single-field nonmydriatic monochromatic digital fundus photography with remote image interpretation for diabetic retinopathy screening: a comparison with ophthalmoscopy and standardized mydriatic color photography. Am J Ophthalmol. 2002 Aug;134(2):204-13.

Wilkinson CP, Ferris FL 3rd, Klein RE, Lee PP, Agardh CD, Davis M, Dills D, Kampik A, Pararajasegaram R, Verdaguer JT; Global Diabetic Retinopathy Project Group. Proposed international clinical diabetic retinopathy and diabetic macular edema disease severity scales. Ophthalmology. 2003 Sep;110(9):1677-82. Review.

Approvals

(This area can be changed depending on approvals needed. Signatures are required on all new policies)

Departmental	Date:
Administrative Team	Date:
Board	Date:

Sample Protocol 3: Pupil Dilation Before Diabetic Retinopathy Photography

University of California, Berkeley Optometric Eye Center

PROCEDURE FOR PUPIL DILATION BEFORE DIABETIC RETINOPATHY PHOTOGRA- PHY			
Department	DIABETES CLINICS	Effective Date	November 16, 2005
Campus	UC Berkeley Optometric Eye Center	Date Revised	
Unit	EYE – TELEMEDICINE	Next Scheduled Review	
Manual		Author	Jorge Cuadros, OD, PhD
Replaces the following Policies:		Responsible Person	

Policy

Patients will undergo pharmacological pupillary dilation with one drop per eye of 1% tropicamide solution when retinal images are of insufficient quality for interpretation and no risk factors exist for complications from pupillary dilation.

Background

Approximately 10% of images that are acquired without pupillary dilation with non-mydriatic retinal cameras can not be appropriately interpreted by clinicians due to poor image quality. Two factors that affect image quality are small pupil size and media opacities, such as cataracts. These limitations can be overcome by temporarily increasing the pupil size with pharmacological agents. Better images can be acquired more quickly when pupils are dilated, particularly in older patients, since they are more likely to have small pupils and media opacities. Pharmacological dilation, however, can have adverse effects. The most common adverse effects are photophobia (sensitivity to light) and cycloplegia (inability to change focus, usually causing near blur). Other adverse effects are much less common, and include hypersensitivity, which can cause conjunctival and corneal inflammation and ocular infection from contact with contaminated eye drops. Pupillary dilation has occasionally been reported to cause acute angle closure glaucoma, a painful sight-threatening condition. The use of two dilating agents used in combination for full pupillary dilation have been reported to potentially cause angle closure in approximately one out of five thousand individuals. There have been no reported cases of angle closure caused by using a single dilating agent. One drop per eye of 1% tropicamide can be used as a single agent to provide adequate dilation for retinal photography. Onset of pupillary dilation is approximately 15 minutes and photophobia and cycloplegia will typically last from two to four hours, although rare individuals may experience pupil dilation for up to three days.

Procedure

In the event that adequate images cannot be acquired without pupillary:

1. Photographer or qualified health care personnel determines that patient does not:

    a. have a history of glaucoma

    b. have significant redness, irritation, or discharge from eyes

c. have previously had significant adverse reactions to pupillary dilation

d. is not pregnant

e. is not wearing contact lenses

f. has not had a previous adverse reaction to papillary dilation

2. Explain to patient that one drop will be instilled in each eye to increase pupil size. Blurred vision and light sensitivity may be experienced for two to four hours. Care should be taken when driving or performing other potentially dangerous activities until the effect of the drops goes away. In rare instances the effects may last for two days.

3. The bottle of drops should be discarded if the nozzle appears discolored or contaminated. Do not use expired eye drops.

4. Hold the bottle a half inch to one centimeter from the eye while instilling drop. If simultaneous contact occurs with the drops, the eye and the bottle, then the drops should be discarded due to contamination.

5. Patient can then pat eyes dry with a tissue without vigorously rubbing eyes.

6. Wait between 15 to 30 minutes for drops to take effect.

7. After photography, give the patient plastic sun shields before leaving the clinic in order to avoid light sensitivity.

References

ADA Guidelines on Diabetic Retinopathy Screening.

Murgatroyd H, Ellingford A, Cox A, Binnie M, Ellis J, MacEwen C, Leese G. Effect of mydriasis and different field strategies on digital image screening of diabetic eye disease. Br J Ophthalmol 2004;88:920–924.

Pandit R, Taylor R. Mydriasis and glaucoma: exploding the myth. A systematic review. Diabet Med 17, 693-699 (2000).

Approvals

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Departmental	Date:
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Board	Date:

Teledermatology

PROGRAM GUIDE

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Teledermatology
Program Guide

by:
Marc Goldyne, MD, PhD &
April Armstrong, MD

A Publication of:

California Telehealth Resource Center

Introduction

Teledermatology is the practice of clinical dermatology using the benefits of communication through public or private computer networks. Computer and videoconferencing technologies have the ability to store and rapidly forward both visual and textual data as well as conduct real-time videoconferencing. These technologies allow primary care providers timely access to dermatological expertise for their patients that was previously unavailable.

There are two primary modalities for providing dermatology teleconsultations: store-and-forward and live-interactive (or real-time) teledermatology.

Store and forward teledermatology is the most frequently used mode of computer-based communication between primary providers and dermatologists. A referring provider e-mails an encrypted electronic medical record containing digital images and relevant text data to a dermatologist at a distant site who, in turn, reviews the data and transmits back the requested diagnostic and therapeutic assistance.

Live interactive teledermatology allows the consulting dermatologist to interact and examine the patient at a distant site via videoconferencing equipment. Live interactive teledermatology enables real-time interaction between the dermatologist and the patient. If the primary care provideris present, this modality also allows for dialogues between the primary care provider and the dermatologist. Live interactive teledermatology examinations are generally performed using two cameras: a high-resolution flex-arm camera for overall diagnostic viewing; and a general patient exam video camera (with 50X lens magnification) for closer viewing. Some programs require patient information prior to the live interactive consult, but the dermatologist may also obtain the patient's history and current concerns during the session. Live interactive sessions are not routinely videotaped. The referral site can capture still shots using the general exam video camera for close viewing; in some instances, the consulting dermatologist may be able to remotely trigger a screen capture to obtain a digital image from the general video exam camera of any view deemed clinically significant.

Teledermatology, whether it be performed using store and forward or live interactive technologies, provides unique benefits for both the patient and the primary care provider by addressing the scarcity of access to dermatologists by rural populations and by delivering point of care education for the non-dermatologist physician, nurse practitioner, or physician's assistant.

This guide will address the three elements of a successful teledermatology network:
- Hardware
- Software
- Peopleware

The term "Peopleware" was coined by Nancy Lorenzi and Robert Riley in their text on Organizational Aspects of Health Informatics. This means that managers in institutional clinics or primary practitioners in private settings need to truly support the effort to incorporate telemedicine into their overall healthcare delivery efforts.

The information subsequently presented is to be understood as a guide. Various providers, as well as healthcare facilities, often develop their own style of practice. However, as long as all individuals involved in the telemedicine network follow some basic procedures unique to clinical dermatology, store and forward and/or live interactive teledermatology become powerful tools that allow dermatologists to assist primary care providers in delivering quality care for patients who would otherwise have no access to evaluation by a dermatologist

Store and Forward Teledermatology

The model to be described in this guide has been used to successfully conduct store and forward teledermatology consultations for over 7 years, representing more than two thousand consultations performed as part of the Anthem Blue Cross of California Telemedicine Program. When all of the practice elements are followed, this model offers a very economical approach to providing enhanced specialty access, thereby improving the quality of skin care for the patient. In fact, based on the frequency with which the dermatologist needs to change the provisional diagnosis and associated therapy (60 – 80% of cases), the quality of care is significantly enhanced, as would be expected by providing specialist participation.

The "Open Access Model" (OAM), as it will be referred to, allows multiple referral as well as special-ist sites to interact with each other. This model differs from the more traditional hub and spoke model that employs a central specialist (hub) site to which are connected multiple referral (spoke) sites. The basic OAM unit consists of a referral site, a consult site, and the linkage that allows the two sites to electronically communicate.

Referral Site

An effective store and forward teledermatology consult requires that the referral site provide enough information for the consulting dermatologist to offer effective diagnostic and therapeutic assistance. Because the dermatologist cannot directly interview and examine the patient, the challenge for the referral site is to provide: 1) the verbal information that dermatologists get from their patients before doing a visual assessment, and 2) the visual assessment of the actual skin lesions. The referral site supplies two data elements: 1) focused text, and 2) appropriate images.

1. Focused Text

A common misconception is that a dermatologist can diagnose any skin disease from a picture. In fact, the dermatologist often relies on verbal data (e.g. clinical history, previous therapies and their results, previous laboratory studies, concurrent illnesses, etc.) to provide critical guidance in interpreting visual information and in making therapeutic recommendations. When this selective verbal data (i.e., focused text) is combined with appropriate clinical images, a choice of possible diagnoses suggested by visual data alone can be narrowed to a specific diagnosis or the information may help identify what further testing or procedures may be needed.

The importance of focused text can be illustrated in the following example:

A referral was e-mailed to a dermatologist for evaluation and management suggestions. The referring provider stated the skin problem did not respond to topical anti fungal therapy. The dermatologist however, felt that the images were, in fact, most compatible with a fungal infection. However, he assumed that the reported failure of anti fungal therapy ruled out this diagnosis. The dermatologist provided a differential diagnosis (i.e., what other skin diseases needed to be considered that could look like a fungus infection). A biopsy was suggested by the dermatologist. Examination of the biopsy subsequently documented a fungal infection.

If this patient had a fungal infection to begin with, why was there no response to the anti fungal medication? What possible information could have prevented an unnecessary biopsy? The answer to both questions lay in the referring provider's documenting for how long the anti fungal medication was applied; he or she assumed, as did the dermatologist, that the medication was properly used.

Had the provider inquired, he would have found out that the patient stopped the medication after 1 week because he didn't notice much response. In fact, 4 – 6 weeks of therapy would be necessary to eradicate the fungal infection. This type of outcome underscores the importance of documenting patient compliance with previous therapy. Consequently, the dose and length of time a patient uses any medication for a skin condition should be part of the focused text in a teledermatology referral. Similar experiences have taught the dermatologist what information, in addition to images, is most important for evaluating the majority of skin diseases.

A "Skin Evaluation Form" (see section on a sample store and forward referral and consult) is designed to assist the non-dermatologist provider in regard to what questions to ask a patient who presents with a skin complaint. This 1-page form contains 11 questions related to the patient's skin problem that help dermatologists make a diagnosis and suggest appropriate therapy. It can be filled out by the patient or used as a guide by the referring provider. The completed form can also be scanned or digitally photographed and included in the e-mailed referral.

2. Appropriate Images

When a dermatologist examines a patient in person, he or she assesses three characteristics of any skin lesions: 1) their location, 2) their size, and 3) their surface features (e.g., are they flat (i.e. macular) or raised (i.e. papular of nodular), flesh-colored, pink, or pigmented, lighter or darker than the normal skin, etc.); in addition, the dermatologist may feel the lesion(s) for consistency. Therefore, the digital images captured for a skin problem should at least be able to convey the location of the lesions, their size, and their surface features. The consistency of a lesion (e.g., firm, soft, rough, greasy, not palpable, etc.) can be described in the referral note to the consultant.

It must be understood that an image that is out of focus is of no use to the dermatologist and could also be of medical-legal consequence. Therefore, no image should be incorporated into a teledermatology referral unless it has been previewed and the focus is sharp. This may appear as self-evident but the number one problem encountered in doing a teleconsult. The main cause of this is that the photographer does not review the images before placing them in the electronic referral. Telemedicine technicians using very good digital cameras assume an auto-focus camera will provide in-focus images and fail to review each image; this is an unacceptable approach because no camera is fail-safe, especially since autofocus actually can involve different settings that require different positioning of the site to be digitally captured.

In regard to close up images, these need to provide some idea of the size of the skin lesion, as well as the location especially if there are no recognizable anatomic markers within the picture field (e.g. the nose, ear, finger or eye). Referrals are often sent where the size and location of a lesion are not provided. For the dermatologist, the size and location of a lesion can be critical. Please refer to Appendix B at the end of this guide that addresses optimizing images for store and forward teledermatology.

Consultant Site

A teledermatologist should be expected to: 1) identify the skin problem or indicate what needs to be done (e.g., a biopsy or laboratory test) in order to provide a specific diagnosis, 2) offer therapeutic guidance in treating the skin problem, and 3) provide a follow-up framework to insure that the patient is appropriately responding to therapy. In addition, recommendation may be made for an in-person consultation in particularly complex skin problems.

Communication between Referring and Consultant Sites

How the referring and consulting sites communicate is critical to a functional store and forward tele-dermatology network. For sustainability, it should be economical, efficient, secure, and reliable so as to provide the participants at each end with an easily accessible electronic record of every patient encounter. To date, the most economical, efficient, and reliable way to communicate is the internet. HIPAA-level security can be provided by encryption of data before the information is sent over the internet. Each site in the store and forward teledermatology network in which this author participates uses the same commercially available software program to create their electronic consult referrals. For each patient, the software creates an electronic folder containing a demographics form, referral form, and image viewer. The referring group fills in these electronic forms, imports the accompanying clinical images, and then sends the patient's electronic record to the dermatologist as an e-mail attachment. The consulting dermatologist will find the referral in his or her e-mail box, download the attachment to their computer "desk top" or into a previously created "new patient" folder. Opening the attachment will automatically launch the software on the consultant's computer so the patient file can be viewed. The consultant then enters his or her diagnostic opinion and therapeutic recommendations in a consult form that is then e-mailed back to the referring site as an encrypted attachment.

When opened by the referring group, the consult is automatically transferred to the appropriate patient's referral file. Now both sites have copies of the complete patient file.

Each participating health care facility has a dedicated computer that is linked, ideally with a broadband connection for fast uploading and downloading, to the Internet. But if necessary, even a modem con-nection can work; uploading and downloading just require more time.

A major advantage of this system is that it is adaptable to each user, as well as portable. A laptop or desktop computer can be used. A network can consist of federal, state, and community-supported clinics and hospitals, as well as private group practices – each with their own specific operational needs. From the teledermatology consultant's point of view, none of these differences matter because the software presents the same user interface (i.e., visual format) for all electronic referrals while allowing each referring site to enter any unique information they require within this consistent format. In addition, a billing application is available that allows a standard 1500 form to be created and main-tained in each patient's folder so that reimbursement issues can be handled and maintained within each patient's electronic record, both at the referral and consultant sites.

Another platform available for store and forward teledermatology is the use of a secure website that hosts the electronic medical record. Rather than the referring and consulting providers having all the records on their own computers through the use of common software, they all connect to a secure website that hosts the record system. Gaining access through a specific user name and password, the referral text and image data is uploaded to the website record which can then be viewed by the consulting dermatologist who in turn enters his or her diagnoses and/or therapeutic recommendations. These websites may automatically notify the appropriate provider by email when a referral has been submitted or a consult completed. Which platform to use, computer-based software or secure website, will often depend on the needs of individual groups or institutions. For example, some institutions do not want any patient data stored outside their facility so they may want to use a software-based system

and keep all data on site. On the other hand, some practitioners may favor having a secure website that may free them from concerns about upgrades and maintenance of a software-based system. Ultimately, both platforms, if made user-friendly, can provide the appropriate connectivity to do effective teleconsultations where the referring and consulting providers have the freedom to integrate telemedicine into their own workflow in the most convenient way.

Helpful Tools

Although a wide variety of equipment and peripherals may be employed as part of a telemedicine program, the majority of store and forward teledermatology programs rely principally on the use of digital still cameras to produce images for clinical diagnosis and consultation, and various software designs or secure telemedicine websites to store, catalog, and/or transmit those images. The Telemedicine Information Exchange (TIE) is a National Library of Medicine-funded web site (http://tie.telemed.org/vendors/) which offers comprehensive information on telehealth vendors and can be used as a resource for identifying and comparing products related to store and forward telemedicine systems.

Cameras

Photography of skin problems has long been an established tool for diagnosis and record keeping among dermatologists. In recent years, the success of teledermatology has been greatly facilitated by the continuing reduction in cost and increase in quality of digital cameras. Currently, a wide variety of digital still cameras are available that may be suitable for Teledermatology use, depending on the specific needs of the program and its practice guidelines. Commercial digital cameras are available as fixed lens, autofocus point and shoot (PAS) or digital single lens reflex (DSLR) systems.

The minimal features that a digital camera should have in order to capture optimum images for teledermatology are: 1) at least a 1.3 megapixel image size, and 2) a macro setting for close-up images. Ideally, images should be acquired without flash using natural (window light). It is no longer necessary to have a $1000+ digital camera to capture adequate clinical photos. A more-than sufficient camera can now be purchased in the $300 - $500 range. A number of reputable manufacturers make cameras that are suitable for teledermatology.

In addition to these commercial digital still cameras, examination cameras have been developed specifically for telemedicine applications in that they are able to interface with a wide variety of peripherals and communications systems; accordingly these cameras are significantly more costly ($4000 - $6000 range).

Although it is essential to carefully select camera equipment suitable for clinical application, it is also important to keep in mind that the major problem this author has encountered with digital images sent for evaluation, whether the camera cost $300 or $5000, is a lack of focus; this problem is more a consequence of the know-how of the photographer. Any teledermatology referral site coordinator responsible for taking patient images should know the details of operating their digital camera just like a radiology technician knows the details of how to properly acquire an MRI or CT scan. It is essential to develop standardized policies and procedures to reproducibly provide sharp images where the photographer or referring provider can say "I can clearly see what I want the consultant to see".

Computer-based Software

Depending on the scope of the teledermatology program, software needs may vary from a simple means of file encryption coupled with an off-the-shelf e-mail system to a full suite of Picture Archiving

and Communication System (PACS) software. Somewhere in the middle of these extremes there exists a number of quality software solutions designed with teledermatology in mind, which easily facilitate image handling, cataloging, transmission, and even the appendage of associated notes for inclusion in an electronic health record system. Although this author and CTRC do not endorse specific vendors or products, they would like to offer sincere appreciation to Second Opinion Software (www.2opinion.com) for the use of screen captures from their product to illustrate examples within this guide. A number of image management solutions exist for teledermatology (refer to Vendors on TIE website). There is also the option, as previously cited, of commercial telemedicine websites that provide a secure on line electronic medical record that can be utilized by medical networks wanting to provide a platform for doing store and forward teledermatology; it this case, all that is needed is a computer with high speed (e.g. DSL) access to the internet.

Ultimately, as stated in the introduction, it is the "peopleware" that are the key to the success of a teledermatology network.

Checklist for Store and Forward Teledermatology

1. Site Coordinator:
   A telemedicine site coordinator at the referral site .These individuals can be either physicians, nurse practitioners, or physicians' assistants totally competent in computer based communication and digital camera operation. In the case of a private practice or group practice, it is possible for the consulting physician to function as the coordinator since computer programs for managing medical records, as well as claim generation, exist to minimize support staff and lower the cost of operation.

2. Connectivity:
   High speed DSL internet access for all sites participating in the telemedicine network.

3. Computer Hardware:
   Dedicated lap top or desk top computers that either share the same electronic medical record system (128 bit encryption to satisfy HIPAA rules about privacy) or can connect to an internet VPN server site that hosts the electronic medical record system. Both platforms can be simultaneously handled by the same computer.

4. Data Back-up Hardware:
   A convenient storage system for backing up all medical and claims records generated (e.g. external hard drive).

5. Digital Camera:
   Each referral site needs a 1.3 – 5 megapixel (MP) digital camera with macro imaging capability. Newer single lens reflex digital cameras (around $600) offer the benefit of being able to directly see through the lens system that the image is in focus before closing the shutter. This is an advantage over the point-and-shoot auto-focus systems where lack of focus at the point of interest is frequently a problem due to the properties of auto-focus systems.

6. Consent:
   Every telemedicine patient needs to be informed and verbally consent to participate in a store and forward service.

7. Operational Standards:
   Both the referral site and consulting site should have in place operational standards that meet the legal standards of the area as far as operating a medical clinic or office.

8. Maintenance of Telemedicine System:
   If there is a centralized IT unit responsible for operation and maintenance of the telemedicine system, both users and IT personnel need to know the parameters of operation of the system (e.g. file size range for firewall settings, back up and retrieval systems for relevant records etc.).

Sample Store and Forward Referral and Consult

Descriptions of processes like store and forward consults can sometimes be intimidating because of all the words needed to describe the process. Sometimes, the best way to convey the process in a less intimidating way is to provide an example. What follows is a sample case that will tie in all of the elements discussed above in an optimal store and forward teledermatology consult. What the reader will see is the user interface of the Second Opinion System, but the same data could be presented in another format as long as it includes the data elements that allow the consultant to 1) Provide a diagnosis or necessary diagnostic work up, 2) Recommend therapy, and 3) Have the data necessary to submit a claim for reimbursement.

The following sections include a sample demographics form, a referral form, and images that would make up a referral, as well as a consult form that would be returned to the referring provider. In addition, a sample of a CMS 1500 billing form with the sections highlighted that most third party payers require for reimbursement of services can be found in Appendix C. The reason for including this reimbursement form is that in a busy network, if the required billing data isn't provided with the initial consult, literally hours of time can be wasted trying to track down this information, especially when dealing with multiple sites and multiple insurance groups.

User Interface of an Electronic Referral

Access to the electronic medical record requires a registered user name and password entry. Clicking on the encrypted email attachment (patient file) opens the Document Manager and the selected patient record appears on the computer desktop. The data elements include: 1) Demographic information, 2) Referral form, 3) Optional Skin evaluation Form, and 4) Image Thumbnails.

* Images reproduced with permission from Second Opinion Software, LLC, Torrance, CA

Open Demographics Folder

Note the three tabs on the upper left of the form: Identification, Address, and Reference; clicking on each tab opens the required form (see below). This information is necessary for billing.

Address Information Page

Reference Information Page

This is used for identifying the primary provider and also for billing.

Open Referral Folder

Note again 3 tabs for 1) Clinical Information, 2) Referral Information, and 3) Specific Questions. Notice the field for entering hte Provisional Diagnosis.

Clinical Information Page

The Relevant History should provide the following information for each skin problem: 1) How long it has been present, 2) a list of symptoms if any, as well as noting a lack of symptoms, 3) previous skin medications including vehicles for topical agents (i.e. ointment, cream, lotion, gel), strength of topical agents (i.e. 0.1%, 2% etc.), and their names (e.g. triamcinolone), 4) outcomes of therapy (e.g. better, same, worse), 5) oral medication including type, strength, dose, length of time used and clinical outcomes.

Under relevant physical findings, remember pictures have been provided so that descriptions can be minimized except for describing the feel of a particular lesion (e.g. soft, firm, fluctuant etc.).

Referral Form - Doe, Jonathan P

Clinical Information | Referral Information | Specific Questions

Relevant History:

A 58 year old male with a 1 year history of itchy plaques arms and legs and anterior scalp.
Has tried 1% hydrocortisone cream twice a day for 6 months and tar shampoo without benefit.
Was given a two week course of oral Keflex 500 mg a day for 2 weeks in April without benefit.
He states the lesions continue to slowly spread. There is no pain, just periodic itching. There is no family history of skin cancer. A brother with a similar problem was told he had eczema. The patient doesn't know what medication his brother was given but doesn't think it helped that much.

Relevant Physical Findings:

Scaly plaques on his elbows and knees. Some scales in his scalp and forehead.

Relevant Laboratory and/or Diagnostic Test Results:

Allergic to penicillin and morphine

Print | Create Consult | View Consult(s)

Cancel

Specific Questions Page

This is where the referring provider or patient (in this case) may enter questions they would like answered.

Sample Skin Evaluation Form

This is where Skin Evaluation Form that the referring provider fills out and scans into the patient's electornic file or may use as a guide to fill in the relevant clincial history.

SKIN EVALUATION FORM

1. Name: _____ 2. Date: ___/___/_____
   Last   First   Middle

3. Age: _____   4. Male: ☐Female: ☐   5. Drug Allergies: _____

6. Skin problem has been present (Check one):

   Less than: 1 week: ☐   1 month: ☐   6 months: ☐   1 year: ☐

   More than: 1 year: ☐   5 years: ☐   10 years: ☐

7. How does skin problem bother you? (Check all that apply):

   Appearance: ☐   Itching: ☐   Bleeding: ☐   Burning: ☐   Aching: ☐   Throbbing: ☐
   Growing bigger:☐   Getting darker: ☐   Getting lighter ☐

8. Skin Medications (please list name, concentration, type (cream, ointment, etc) and how long used:

   1. _____ 2. _____

   3._____ *(use back of sheet if necessary)*

9. Oral Medications (please list name, dose, how often taken and for how long):

   1. _____ 2. _____ 3. _____

(use back of sheet if necessary).

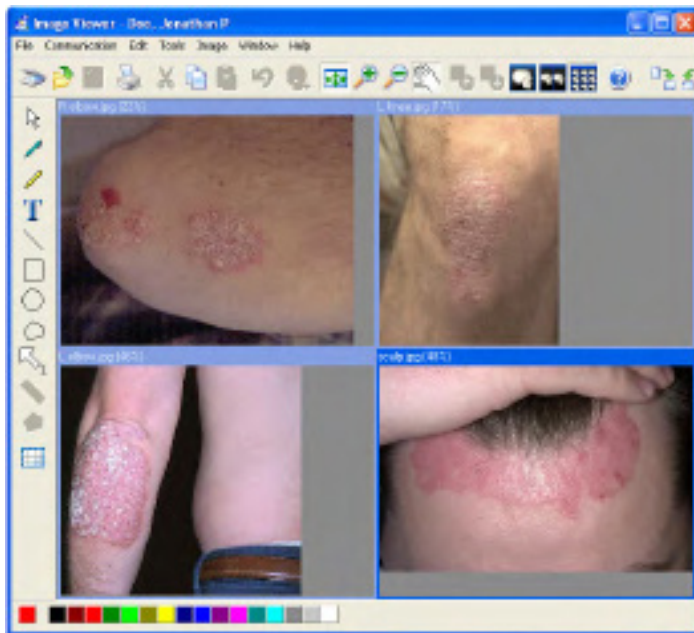10. Do you or your parents have a history of skin cancer or melanoma?: Yes ☐ No ☐

11. Please indicate on the body maps below the location (s) of skin problems (s)

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Image Viewer

Clicking on a thumbnail image will open the image viewer and show an enlarged image of the selected thumbnail. It can be further enlarged, tiled with another image or images for comparison, and or annotated with arrows or circles to indicate points of interest or sites to biopsy.

Consult Folder

In the Consultation field is where the teledermatologist enters the diagnosis and any explanatory text he or she feels is appropriate. This may include suggestions for a confirmatory biopsy or other laboratory tests to help clarify an equivocal diagnosis. The recommended treatment plan and follow up recommendations are also entered. This particular software program contains a function for converting this text into a letter-style format if a printed version is requested. The consult folder can then be sent, via an automatically encrypted email attachment, to the referral site.

Best Practice Model: Live Interactive Teledermatology

The live-interactive (LI) teledermatology model described in this guide has been employed for over 12 years at the University of California Davis (UCD). Since 1997, dermatologists from UCD have completed over 7,700 live interactive teledermatology visits to Californians. This live interactive telemedicine model has also been adapted for use in other specialties, including psychiatry, infectious disease, pediatrics, endocrinology, and gastroenterology. Since 1992, the telemedicine program as a whole at UCD has provided over 15,000 video-based clinical consultations to 80 clinic and hospital sites in California in 30 medical specialties and subspecialties.

The live interactive model is based on the "Hub and Spoke Model", where a specialist can be connected with multiple referral (Spoke) sites. For example, for any given live interactive teledermatology clinic, the dermatologist may be connected with up to 5 different sites. While this model requires scheduling effort, it allows referral sites with low patient volume to have immediate access to teledermatologists through real-time teledermatology.

Referral Site

The requirement for an effective referral site for live interactive teledermatology is different from that of store and forward teledermatology. This is based to the fact that the dermatologist is able to communicate with the patient, the teledermatology coordinator, and/or the primary care provider in real- time to obtain information that may not be present on the referral form. While referral forms are still necessary to obtain basic clinical information, such as reasons for referral, allergies, and medications, the emphasis for live interactive teledermatology is ensuring an efficient operational flow of conducting real-time visits that maximizes patient and provider satisfaction and clinical outcome. In the following sections, we will discuss important operational considerations from the referral site during live interactive teledermatology consultations as well as how to capture appropriate images useful for diagnosis and providing treatment recommendations.

Operational Considerations

Similar to face-to-face visits, patients must be scheduled to see the teledermatology coordinator and the dermatologist for live interactive teledermatology consultations. Therefore, live interactive teledermatology is sometimes referred to as "synchronized teledermatology." live interactive teledermatology is conducted over videoconferencing, with at least a teledermatology coordinator at the originating site to present the patient. The presence of the patient's primary care provider during the consultation is optional depending on the preference of the referral sites, and frequently a well-trained teledermatology coordinator alone is adequate to conduct the live interactive visits.

From the perspective of the referral sites, four aspects of the operation are important to complete a successful live interactive teledermatology encounter: (1) communication with patients, (2) time management, (3) camera operation, and (4) patient positioning. Referral sites' communication with the dermatologist is discussed separately in another section below.

For patients new to live interactive teledermatology consultations, the coordinator needs to introduce the dermatologist to the patient, the equipment setup, and the interactive nature of the encounter. This introduction helps orient the patient to the live interactive teledermatology environment at the beginning of the visit. Most patients become quite comfortable with this model of care-delivery after the first few minutes.

Because patients are scheduled sequentially for live interactive teledermatology visits, to ensure that each patient is seen in a timely manner, time management is central for successful live interactive teledermatology visits. Good time management requires concerted efforts from the teledermatology coordinator as well as the dermatologist. An experienced coordinator begins each session by turning on and testing the videoconferencing equipment before patients arrive. The coordinator can also quickly review the patient's referral form to identify body areas that will need to be uncovered for examination. The coordinator will need to actively communicate with the patient to help the patient focus on the dermatologic problem of interest, relevant review of systems, and addressing the patient's concerns.

The teledermatology coordinator at the originating sites must be well-trained on operating the dermatology camera. The training sessions need to occur before the new coordinator is involved in actual patient care to avoid unnecessary delays during the live sessions, and the coordinator needs to demonstrate competency with camera operation before their first clinic. The coordinator should always wear gloves to maintain cleanliness of the camera during the live interactive sessions and change gloves in between patients. If the camera has a probe, it is important to place a thermometer condom on the probe during patient examination and change the thermometer condom in between patients. The coordinator needs to be intimately familiar with the main operational buttons on the camera, and he or she needs to be facile at switching between scanning and capturing freeze frames.

Correct patient positioning allows the teledermatology coordinator to capture quality images and makes teledermatology visits more efficient. If the dermatology camera does not contain an image viewer on the camera itself, it is important to position the patient in between the dermatology camera and the videoconference monitor in one line of sight such that the coordinator can easily see whether an image is captured correctly on the video monitor. It is important to explain to the patient that, while the providers will take every measure to respect the patient's modesty, it is also important to obtain adequate exposure of the body areas to be examined. Therefore, it may be necessary to alter the patient's body positioning several times, such as changing from a sitting to a laying down position, in order to adequately examine areas such as skin folds. When the dermatologists requests examination of hand or feet, the coordinator will have the patient spread out their fingers and toes so that the dermatologist can examine the web spaces adequately.

Appropriate Images

Live interactive teledermatology differs from store and forward teledermatology in that real-time communication between the consultant and the teledermatology coordinator allows adjustment of image quality and retaking of images if necessary during the visit. However, the basic characteristics of skin lesions that a consultant must be able to assess are the same as those in store and forward teledermatology: location, size, and surface features.

The image quality can vary significantly depending on the connection speed, operational experience of the teledermatology coordinator, camera resolution, and whether freeze frame is used. In this section, we offer several general tips on how to capture the best-quality images regardless of the type of videoconference system or connection speed used. In the "Helpful Tools" section, we will discuss specific videoconference equipment and connection considerations.

First, the exam room where live interactive teledermatology sessions take place must have adequate lighting. This is because the illumination device that accompanies most skin exam cameras does not usually provide sufficient illumination by itself. Second, it is preferable that the teledermatology coordinator wears blue, sometimes called "telemedicine blue". It is not recommended that the coordinator wear bright colors or wild prints because these colors are not only distracting but also may alter the skin color.

As the coordinator moves the skin examination camera, he or she needs to continuously verbalize the part of the body that is being captured. This helps to orient the dermatologist to the location of the lesions. When the dermatologist encounters a lesion of particular interest, the dermatologist can ask for a ruler to be placed next to the lesion in order to measure the size of the lesion. The dermatologist should also ask for a freeze frame of the skin lesion. Freeze frames are critical to visualizing the skin lesions, especially in the setting of slow connection speeds. Freeze frames allow the dermatologist to appreciate fine surface features of the skin lesions and minimize much of the image degradation that occurs with scanning with the camera.

Having an experienced telemedicine coordinator is critical to capturing high-quality images during live interactive teledermatology sessions. Inexperienced coordinators may move the skin exam camera wildly in different directions, scan the body areas with inappropriate speed that compromises image quality, or worse, fail to show the dermatologist relevant skin lesions. In some instances, if an inexperienced coordinator at the referring site scans body regions aimlessly and fast, the coordinator may even cause the consultant dermatologist to feel motion sickness. Therefore, proper training and demonstration of competency for all live interactive teledermatology coordinators are important before initiation with actual patient care.

Consultant Site

What is expected of a dermatologist during a live interactive teledermatology consult is quite different from that of Store and Forward consults. Because real-time interaction occurs among the dermatologist, patient, teledermatology coordinator, and sometimes the primary care provider, the dermatologist is expected to (1) communicate with all the parties involved throughout the encounter, (2) make diagnosis, (3) provide treatment recommendations, (4) explain the diagnosis and recommendations in understandable terms to the patient and/or primary care provider, and (5) keeping up the clinic schedule. This can be especially challenging if the encounter time is limited or the images are suboptimal.

Communication and Connection between Referring and Consultant Sites

Due to the interactive nature of real-time teledermatology, communication between the referring and consultation sites is critical to a successful encounter. While it is preferred that one person speaks at a time during a visit, in practice, it is not uncommon that two or more individuals speak simultaneously. This is because, in addition to the usual challenges of human conversation, communication in live interactive teledermatology is further complicated by potential, slight delay in sound transmission with the videoconference technology. Therefore, it is important that the coordinator and the consultant understand one another's communication style and strive to adjust their communication for optimal patient care and clinic efficiency.

Improved communication between the referring and consultation sites can lead to greater diagnostic accuracy. The teledermatology coordinators help the consultant achieve greater diagnostic accuracy not only by identifying lesions of interest and capture them with high image quality; they also function as the dermatologist's hands and report tactile information to the dermatologist. That is, because the dermatologist is unable to appreciate the tactile qualities of a lesion, such as firmness, softness, and mobility, the dermatologist depends entirely on the coordinator to relay that information.

From a technology perspective, communication through the videoconference units between the referring and consultant sites occurs via secure, dedicated connections. While videoconferencing equipment information is presented in the "Helpful Tools" section, the discussion here will focus on the connection types between the referring and consultant sites.

Because live interactive teledermatology is usually performed among sites that are geographically distant, communication occurs through Wide Area Network (WAN). Many WAN technologies are available today, and the most common ones include Plain Old Telephone Service (POTS), Digital Subscriber Line (DSL), Cable, Integrated Services Digital Network (ISDN), and T1 connections. In telemedicine, video and audio information are most commonly transmitted via one of the following two protocols: ISDN protocol or Internet Protocol (IP).

Although ISDN did not achieve ubiquity, ISDN was introduced in the mid-1980s to update the existing telephone system to digital telephone. Because ISDN was a pioneer in broadband Internet access and afforded the necessary security, it became ideal for live interactive telemedicine applications. Although ISDN may now be considered outdated by some, the majority of live interactive telemedicine activities are still performed over ISDN today.

There are two types of ISDN: Basic Rate Interface (BRI) and Primary Rate Interface (PRI). The BRI is commonly used for site-to-site connections, and it requires 3 BRI lines (at 128 kbps per BRI line) to achieve a 384 kbps connection—the minimum bandwidth necessary for live interactive teledermatology videoconferencing. In comparison, PRI has a maximum bandwidth of 1.5 mbps, which is nearly equivalent to 12 BRIs and capable of connecting multiple videoconference calls at once. PRI can also be used to deliver high definition video that require high bandwidth signals. Because ISDN is essentially a digital telephone line, the ISDN number appears as a telephone number, such as (123) 456-7890.

In contrast to ISDN, Internet Protocol (IP) uses the internet to transmit video and audio information in telemedicine instead of a digital telephone connection. IP has several advantages compared to ISDN. These advantages include the ability to leverage infrastructure, improved reliability, enhanced

manageability, installation simplicity, expanded scalability, predictable usage fees, call speed flexibility, and enhanced security.

The majority of live interactive teledermatology programs that changed from ISDN to IP in the recent years use T1 connection to transmit IP information. One T1 line provides high-speed connection at 1.5 mbps. A T1 line affords dedicated service where only two ends of a connection can communicate with each other; therefore, additional T1 lines must be purchased for additional sites. Because most site-to-site connections will not require the use of a full T1 line, sites can arrange to purchase a fraction of a line for at lower cost. Although IP information can be transmitted over other broadband services such as DSL, Cable, or fiber optics, these connections typically occur through shared and non-secure networks and therefore are not suitable for telemedicine activities without additional configurations to achieve HIPAA compliance.

Policies and Procedures

Policies governing store and forward and Live Interactive teledermatology involve two federally mandated principles applied to clinical practice in general: 1) safeguarding patient privacy (based on HIPAA regulations) and 2) obtaining patient consent prior to a teleconsultation.

Each of these policies translates into procedures that insure mandated policies are upheld.

1) Ensuring Patient Privacy: Since computer and videoconference units are the vehicles through which store and forward and live interactive teledermatology is conducted, HIPAA rules require appropriate protection of such communications over the internet. In store and forward teledermatology, the most straightforward approach to achieving this is through the use of a software application that automatically encrypts the data to be shared (HIPAA currently requires 128 bit encryption) so that only those network participants who have the ability to decode the information can view it. In live interactive teledermatology, secure connections between the referring and consultants sites are established via dedicated internet protocol or ISDN lines that safeguard the privacy of the connection.

Helpful Tools

The information below purports to serve as a resource for the readers to become familiar the range of videoconference products available for live interactive teledermatology. The authors do not endorse particular products for live interactive teledermatology.

The American Telemedicine Association provides an unbiased Buyer's Guide that serves as a useful resource for product comparison.

The Teledermatology Special Interest Group of the American Telemedicine Association has also published practice guidelines for standards and recommendations for best practices for live interactive and store and forward teledermatology. These practice guidelines can be found at http://media. americantelemed. org/ICOT/Standards/Telederm_guidelines_v10final.pdf.

Video Conferencing Equipment

In North America, Tandberg, Polycom, or Life Size are the three major vendors of video conferencing equipment. To conduct live interactive teledermatology, the requirements for video conferencing equipment should include the following:

- H.264 video compression standard or better
- H.323 compliant
- H.261 video compression standard compatibility
- G.711 audio compression standard or better
- Live Video resolution 4CIF (704x480) or higher
- Content resolution XGA (1024x768) or higher
- Capable of connecting at 384kbps running 4CIF @ 30fps

It would be prudent to avoid purchasing proprietary components such as power, audio inputs and outputs that can only be used for a specific make and/or model.

The cost of video conferencing equipment can vary widely depending on the model and added features. For live interactive teledermatology consults, one unit of video conferencing equipment can range from $10,000 to $15,000.

Video-Format General Examination Cameras

Video-format general examination cameras are peripherals attached to the videoconferencing units that allow for close-up examination of skin lesions. These cameras typically have the ability to scan, zoom, auto focus, and freeze-frame capture the skin lesions; some cameras are also equipped with electronic image polarization. It is important that these cameras have an internal lighting source to help illuminate the skin lesions if the ambient lighting is suboptimal.

Currently, the two major types of video-format general examination cameras used in live interactive teledermatology are consumer-grade camcorders (either standard definition or high-definition) and the AMD-2500 general examination camera. The newer models of consumer-grade camcorders available in the U.S. market deliver high-quality video images with as much versatility as video cameras designed for telemedicine practice. The only drawback of the consumer grade camcorders is that most of them lack image polarization feature, which could be helpful in certain instances.

Checklist for Live interactive Teledermatology

1. Referral-Site Telemedicine Coordinator:

   A telemedicine site coordinator is necessary at the referral site. This individual can be a physician, nurse practitioner, physician's assistant, or medical assistant. It is important that the coordinator is trained in operating the videoconferencing and general exam camera equipment. Because any motion in the hands can severely degrade the quality of the video images, the coordinator needs to be able to hold the camera steady to capture good quality images.

2. Connectivity:

   A T1 line affords dedicated service where only two ends of a connection can communicate with each other. One T1 line provides high-speed connection at 1.5 mbps. If the teledermatologist performs consultations with more than one referral site, additional T1 lines will need to be purchased for additional sites. However, because most site-to-site connection will not require the use of a full T1 line, sites can arrange to purchase a fraction of a line for at lower cost.

3. Videoconference Hardware:

   As stated above, to conduct live interactive teledermatology, it is important to check the

videoconference equipment specifications to ensure that they meet the requirements for conducting telemedicine consultations (specifications are listed in the above section). Videoconference units that meet the specifications for telemedicine cost on average $10,000 to $15,000 per unit. Each site must be equipped with a videoconference unit.

4. Video-Format General Examination Camera

As discussed above, video-format general examination cameras have the ability to scan, zoom, auto focus, and freeze-frame capture the skin lesions. The referral site can purchase either telemedicine-specific video-format general examination camera or consumer-grade camcorders. The cost of consumer-grade camcorders sufficient for live interactive teledermatology consultations ranges between $600 to $1,800, whereas the cost of telemedicine-specific video-cameras typically ranges between $5,000 to $6,000.

5. Consent:

Every telemedicine patient needs to be informed and provide verbal consent acknowledging their understanding of, and willingness to participate in, a live interaction teledermatology consult.

6. Operational Standards:

Both the referral site and consulting site need to have in place operational standards that meet the legal standards of the area as far as operating a medical clinic or office.

7. Technical Support:

The purchase of the videoconference equipment is often accompanied by bundled technical support packages from the manufacturer. Having the technical support service from the manufacturer is generally highly recommended for a real-time teledermatology operation because interruptions in the system can lead to frustrating encounters and patient rescheduling. It is more desirable if the healthcare organization is able to provide additional Information Technology support

Summary

Store-and-Forward Teledermatology

With off-the-shelf computer equipment, a commercially available 1.3 to 3 megapixel digital still camera, either software that provides a 128-bit encrypted electronic medical record, high-speed Internet access, or access to a secure website hosting a telemedicine communications program, and most importantly, trained individuals (Telemedicine Site Coordinators) comfortable with this technology, a store and forward teledermatology referral site can be created. The consultant (ideally board certified in his or her given specialty) only needs a desk or laptop computer, high-speed Internet access, the same software or secure web site as has the referral site, and he or she is ready to provide consultation services to the referral site.

The elements constituting an appropriate teledermatology store and forward referral include

• A signed patient consent form in the patient's referral site record;

• Focused text on the patient that addresses both the clinical skin problem (based on a Skin Evaluation Form), as well as billing information required for reimbursement of services; and

• Digital images of the patient's skin problem that convey: 1) location of the skin problem(s), 2) size of skin lesions, and 3) surface features (details of characteristic lesions).

This electronic record is then automatically encrypted by the software and can be sent as an e-mail attachment to the consultant or the data can be entered online at a secure website which notifies the consultant by e-mail of a pending referral.

The elements that make up an appropriate teledermatology store and forward consult include:

- A clinical diagnosis for each of the referred skin problem(s) if possible

- A differential diagnosis if a single diagnosis is not possible with the data provided, and what tests or procedures may be required to arrive at a specific diagnosis;

- Therapeutic recommendations for each diagnosis provided;

- A recommendation for follow-up to assess therapeutic efficacy and clinical response; and

- A contact number for the consultant that will allow the referring providers or patients to contact the specialist if any questions arise.

This electronic consult is then returned to the referral site as an e-mail attachment or after the consult is entered into a secure website system, the referral site is notified by e-mail of the finished consult.

Live Interactive Teledermatology

Using videoconferencing equipment, live interactive teledermatology increases patient access to dermatologic care while preserving consultant-patient interactions. The main advantage of live interactive teledermatology is that this model of healthcare delivery closely mimics office-based interactions and allows dialogue exchange between the specialist, the patient, and sometimes the referring provider. The set-up and maintenance cost for live interactive teledermatology is considerably higher than that of store and forward teledermatology due to the higher cost of videoconferencing equipment, video-format general examination cameras, and connection charges.

Because the interaction between the referral and consultant sites is synchronized and real-time dialogue takes place during the encounters, the elements that make up a successful live interactive teledermatology encounter include the following:

- Orientation of the patient to the live interactive teledermatology environment

- An experienced teledermatology coordinator familiar with operating the videoconferencing and general examination camera.

- Connection speed of at least 384 kbps between the referral and consultant sites (The connection speed has profound impact on the quality of transmitted images.)

- Focused dermatologic problems. (In the author's opinion, total body skin examinations are time-consuming and often yield poor scanning images; thus, they are not necessarily suitable for live interactive teledermatology encounters.)

- Dermatologist able to communicate effectively and efficiently with the patient, the teledermatology coordinator, and the referring provider.

Live interactive teledermatology can be a very rewarding process for the patient, the teledermatology coordinator, the referring physician, and the dermatologist. The involved parties often feel that they are working in concert and have engaging dialogues regarding the patient's skin disease. The dermatologist can often use this opportunity to educate the patient as well as the referring physician on the skin disease

Optimizing Images

Images sent to a dermatology teleconsultant must provide the following visual information for skin problems: 1) location(s), 2) size, and 3) surface features.

1. LOCATION: A picture must allow the consultant to identify the anatomic part(s) where the skin problem exists (Figs. A & B). If the whole body is involved, capture front, side and back views.
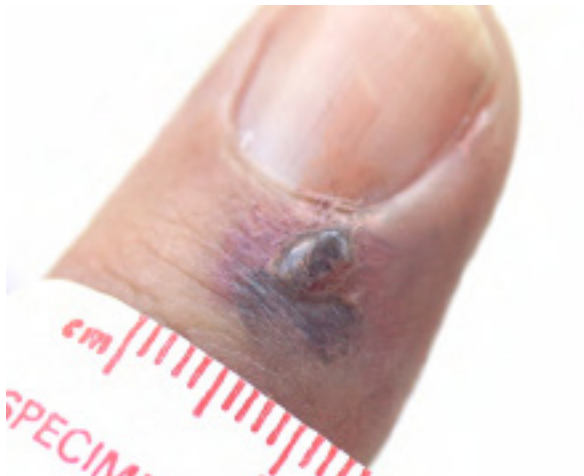
A.

B.

2. SIZE: If there is a single skin lesion, use an adhesive millimeter tape or ruler placed near the lesion that will give the consultant an idea of the size of a given lesion (Figs C & D).
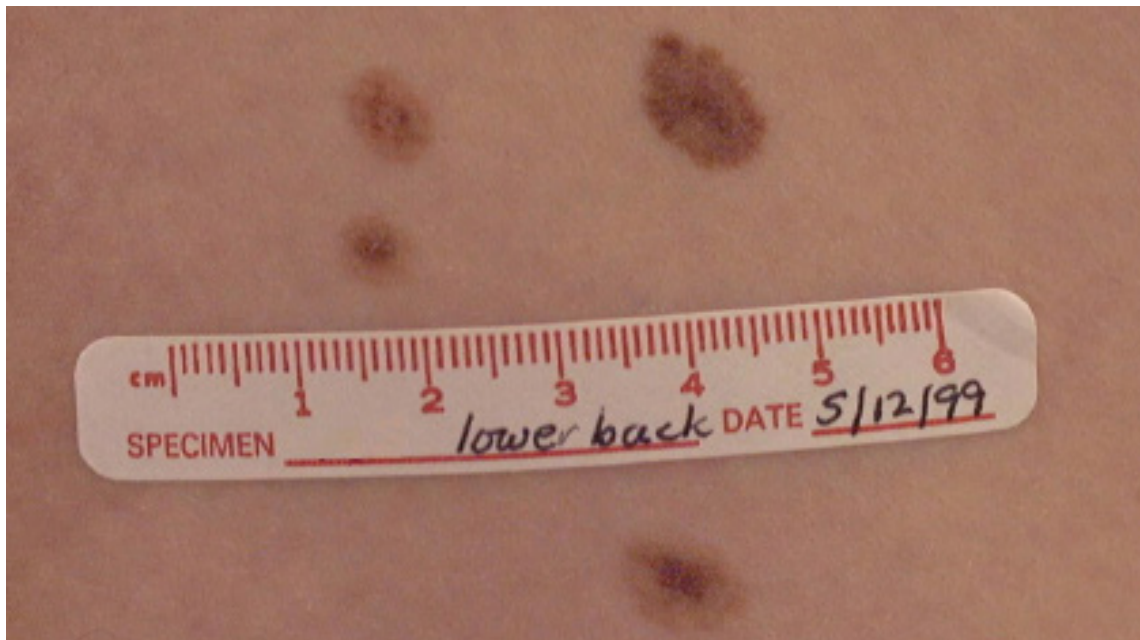
C.

D.

If multiple lesions exist, place an adhesive rule within the picture field as a guide to lesion sizes (Fig. E).

E. Digital photo of several moles with a millimeter tape to provide a reference for size.
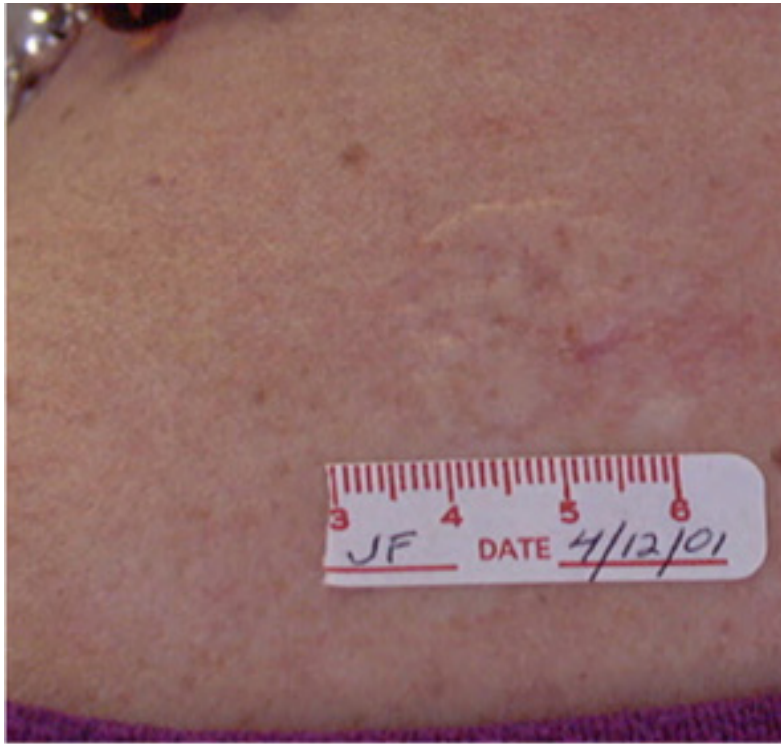

3. SURFACE FEATURES: Use your cameras macro capability to take a picture as close up as possible while keeping the whole lesion within the picture field (Fig. F).
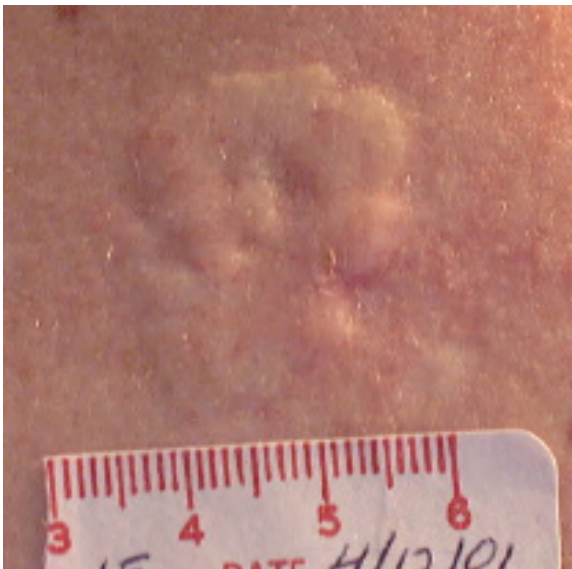
F.

Use a raking light or window light from the side that will, by casting slight shadow, reveal elevation or texture of a skin lesion. (Figs. G & H).

G. A skin cancer with poorly defined borders captured under overhead light

H. Same lesion stands out more when raking light is used (light source coming from right side.

SAMPLE LIVE-INTERACTIVE CONSULT

RE: Jane Smith	PCP: Elizabeth Johnson, MD
MR#: 12345678	Address: Medical Clinic #1
DOB: 1/1/1960	P.O. Box 1111
Date of Service: 9/1/2009	Chowchilla, CA 93610

Dear. Dr. Johnson,

I had the pleasure of seeing Ms. Smith in our Telemedicine Clinic at UC Davis in consultation at your request for evaluation and management of a lesion on the forehead. Ms. Smith reports having had this lesion on the left upper aspect of her forehead for approximately 5 years, and it is slowly enlarging. She reports that this bleeds spontaneously at times, and it is tender to touch. She has not received any treatment to this lesion. Ms. Smith had moderate sun exposure as a child and 3 blistering sunburns that she can recall. She does not use sunscreen regularly.

Past Medical History: Gastroesophageal reflux disease
Family History: No family history of melanoma. Father had basal cell carcinoma.
Social History: office worker, does not smoke.
Allergies: no known drug allergies.
Medications: Cimetidine

Review of systems: Positive findings on review of systems include occasional abdominal pain relieved by cimetidine and seasonal allergies. All other review of systems are negative.

Physical Exam, Assessment, and Plan

Via teledermatology camera, on examination, the patient is well-appearing, in no acute distress, and alert and oriented. Mood and affect are normal. An examination of the scalp, face, neck, eyelids, bilateral arms, digits, chest including breasts, abdomen, back, and bilateral lower extremities was within normal limits except for the findings noted below:
(1) 6x6 mm pearly papule with central erosion on the left aspect of the forehead
(2) multiple verrucous, stuck-on papules on the back and lower extremities
(3) two erythematous, gritty patches on the right cheek

Based on the images transmitted via the teledermatology camera and the clinical history available to me, my clinical impressions and recommendations are as follows:

1. Basal cell carcinoma on the left aspect of the forehead: I recommend a shave biopsy of this lesion for pathologic examination. If pathology confirms the diagnosis of basal cell carcinoma, the patient will most likely need Mohs surgery for treatment.
2. Seborrheic Keratosis on the back and lower extremities: Benign nature of these lesions were explained to the patient.
3. Actinic Keratoses x2 on the right cheek: I recommend cryotherapy treatment to these two lesions. If the lesions persist or recur after the treatment, I would like to see the patient again via teledermatology sessions.

Sun protection education was reviewed with the patient, including using a sunscreen with broadspectrum protection with SPF of at least 30 and above, with frequent re-application.

If you have any questions, please feel free to contact me at 916-XXX-XXXX.

Sincerely,

April Armstrong, MD
Attending Physician
Department of Dermatology
UC Davis Health System

About the Authors

Marc Goldyne, MD, PhD

Currently, Dr. Goldyne is a Clinical Professor of Dermatology at UCSF. He also is in private practice in San Francisco and served as the 2003-2004 President of the San Francisco Dermatological Society. Since 1999, he has practiced both live interactive and store and forward teledermatology interacting with the Anthem Blue Cross of California Telemedicine Program and has, to date, performed over 2500 teleconsultations. He is a member of the American Telemedicine Association and currently serves as the vice chair of the Teledermatology Special Interest Group. He is a Life Member of the American Academy of Dermatology and serves on its Telemedicine Task Force.

April W. Armstrong, MD

Currently, Dr. Armstrong is the Director of Teledermatology at University of California Davis. She provides real-time, videoconference-based teledermatology consultations to 31 rural sites in California. To date, she has performed over 1200 real-time teledermatology consultations to patients in Massachusetts and California. She is a member of the Teledermatology Special Interest Group of the American Telemedicine Association and Telemedicine Task Force of the American Academy of Dermatology.

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Policy

State Telehealth Laws
and Reimbursement Policies

A Comprehensive Scan of the 50 States and the District of Columbia

Center for
Connected
Health Policy

The National Telehealth Policy Resource Center

November 2013

State Telehealth Laws and Medicaid Program

Introduction

This report offers policymakers, health advocates, health care professionals and others with an interest in telehealth a summary guide of the most recent information available about how each of the 50 states (and the District of Columbia) defines, governs, and regulates the use of "telehealth" or "telemedicine" technologies in the delivery of health care services. Most remarkable about this report is that every state has its own unique set of telehealth policies. Some states have incorporated policies into law, while others have addressed issues such as definition, reimbursement policies, licensure requirements, etc. in their Medicaid Program Guidelines. In some cases we even discovered inconsistencies with policies within the same state. If we were unable to find information in a particular area, it has been so noted. Every effort was made to capture the most recent policy language in each state as of Nov. 2013. Recently passed information has also been included in this version of the document, though their effective date is noted in the report. All of this information is available on our website www.telehealthpolicy.us. It is our intent to keep this information continually updated, as laws, regulations and administrative policies are constantly changing.

How to Use this Report

Telehealth policies have been organized into eleven categories that address the distinct issues of definition, Medicaid reimbursement by type of service, licensing, and other related requirements. The first column indicates whether policy has been codified into law and/or state regulation. The second column indicates whether the policy is defined administratively within the state's Medicaid Program. As you will notice, in many instances the specific policy is found in both law/regulations and administrative policy, but that's not always the case. This report primarily addresses the individual state's policies that govern the use of telehealth when seeking Medicaid coverage for service. However, we have also included a specific category that describes whether a state has established any specific policies that require private insurers to pay for telehealth services.

We hope you find the Report useful and welcome your feedback and questions. You can direct your inquiries to Mei Kwong, Program Director of the CCHP National Telehealth Resource Center for Policy at meik@cchpca.org. We would also like to thank our colleagues, each of the twelve HRSA-funded Regional Telehealth Resource Centers who contributed to ensuring the accuracy of the information in this document. (For further information go to http://www.telehealthresourcecenter.org/).

Please keep in mind that this report is for informational purposes only, and is not intended as a comprehensive statement of the law on this topic, nor to be relied upon as authoritative. Always consult with counsel or appropriate program administrators.

Mario Gutierrez
Executive Director
November 2013

A Comprehensive Scan of the 50 States and the District of Columbia:
Findings and Highlights

The Center for Connected Health Policy (CCHP) has conducted an analysis of state telehealth laws and Medicaid reimbursement policies. The District of Columbia was also included in this scan. The report is also posted electronically on CCHP's national policy website, www.telehealthpolicy.us. With the expected on-going annual changes to laws, policies, and regulations, CCHP will periodically update this information to ensure its continued relevance. It should be noted that even if a state has enacted telehealth policies in statute and/or regulation, these policies may not have been incorporated into its Medicaid program. (Please note: As of Nov. 1, 2013, many of the newly passed/approved legislation and regulations have not gone into effect. Therefore the numbers reflected in the following summary do not contain these recent changes.)

Methodology

CCHP examined state law, state administrative codes and Medicaid provider manuals as the primary resources for the survey. Additionally, where there were indications of other potential sources, such as releases from a State's Executive Office, they were also examined. Most of the information contained in this report specifically focuses on fee-for-service. If information on managed care plans was available from the utilized sources, that information has also been included.

The survey focused on eleven specific policy areas related to telehealth. These specific areas were chosen based upon the frequency they have appeared in discussions and questions around telehealth reimbursement and laws. It is by no means a comprehensive list of issues surrounding telehealth but they were deemed the most critical. These areas are:

- Definition of the term telemedicine/telehealth
- Reimbursement for Live Video
- Reimbursement for Store and Forward
- Reimbursement for Remote Patient Monitoring (RPM)
- Reimbursement for Email/Phone/FAX
- Consent issues
- Location of service provided
- Reimbursement for transmission/facility fees
- Online Prescribing
- Private payer laws
- Licensure

Key Findings

Remarkably, no two states are alike in how telehealth is defined and regulated. While there are some similarities in language, (perhaps indicating states may have utilized existing

verbiage from other states), noticeable differences exist. While this is to be expected given that each state defines its Medicaid policy parameters, it also creates a confusing environment for telehealth participants, particularly when a health system provides health care services in multiple states. In some cases, states have duplicated the policies governing telehealth in Medicare, while others have developed their own policies for their Medicaid program.

Some general observations:

Definitions:

States alternate between using the term "telemedicine" or "telehealth". In some states both terms are explicitly defined in law and/or policy/regulations. In some states "telehealth" is used to reflect a broader definition while "telemedicine" is used mainly to define delivery of medical services. Additionally, some states put specific restrictions within the definition.

Reimbursement:

Forty-five states have some form of reimbursement for telehealth in their public program. The five states that we have not found definitive reimbursement information on are:

- Iowa
- Massachusetts
- New Hampshire
- New Jersey
- Rhode Island

The District of Columbia's Medicaid manual currently does not indicate they will reimburse for telehealth, however a law that recently went into effect requires DC Medicaid to cover services delivered via live video.

Again, the sources used were state laws and provider manuals. Some of these states employ managed care plans in their Medicaid program like New Jersey and Massachusetts. We did not look into whether those plans may offer some sort of telehealth reimbursement.

Other Key Findings:

- 45 states' Medicaid programs reimburse for some form of Live Video. DC's Medicaid program is also required to reimburse for live video, due to a newly passed law.
- 7 states' Medicaid programs offer some reimbursement for Store and Forward (states that only reimbursed for tele-radiology as store and forward were not included in this count).
- 13 states' Medicaid programs offer reimbursement for Remote Patient Monitoring.
- 3 states' Medicaid programs reimburse for all three.

However, we have heard anecdotally that while reimbursement may be authorized by law or a program exists, it might not actually be utilized. For example, the RPM program in Utah is a Medicaid skilled nursing facility pilot that appears no one is utilizing. In this Utah pilot there are very specific qualifications that both the patient and home health agency must meet. The lack of activity may be due to the requirements to be eligible for the pilot.

Additionally, for RPM, some of the states reimburse through their Department of Aging Services programs.

Reimbursement

Live Video

The most predominant form of delivery that is reimbursed is live video. As noted, 45 states reimburse for live video in some way or another. However, what and how it is reimbursed varies widely. While 45 states have some form of live video reimbursement, there are restrictions on what can be reimbursed, who can be reimbursed, when they can be reimbursed and what program is reimbursed.

Store and Forward

These services are only defined and reimbursed by a handful of state Medicaid Programs, while in some states the definition of telehealth/telemedicine excludes these services from the term itself. Of those states that do reimburse for Store and Forward services, some have limitations on what will be reimbursed. For example, California only reimburses for teledermatology and teleopthamalogy.

Email, telephone and fax are rarely acceptable forms of delivery unless they are in conjunction with some other type of system. States either are silent or explicitly exclude these forms, sometimes even within the definition of telehealth/telemedicine.

Remote Patient Monitoring

Only ten states have some form of reimbursement for RPM in their Medicaid Health programs. These states are:

- Alabama
- Alaska
- Colorado
- Kansas
- Louisiana
- Minnesota
- New York
- Texas
- Utah
- Washington

While three states reimburse through programs in their Department of Aging Services:

- Pennsylvania
- South Carolina
- South Dakota

Note, the states listed are only for RPM in the home where some specific information could be found. Some states reimburse for home health services but no further details of what was reimbursed could be found. Additionally, some states may already be reimbursing for RPM in such areas as Tele-ICU. Those cases were not considered. Other states, such as Louisiana, may be reimbursing for RPM under a specific waiver program.

Each program appears to have some unique nuances that make it difficult to generalize, such as the Utah SNF pilot referenced earlier. Another similar example is Colorado, where the patient needs to be receiving services for at least one of the following: congestive heart failure, chronic obstructive pulmonary disease, asthma or diabetes and meet other

conditions. In Minnesota, RPM is only available for skilled nursing visits and in the Elderly Waiver and Alternative Care programs.

Transmission/Facility Fee

Eighteen states will reimburse either a transmission or facility fee or both. Medicare also reimburses for a facility fee for the originating site provider. In Georgia, Rural Health Clinics and FQHCs are eligible for a facility fee

Location of Service

A few states have adopted the Medicare policy in which reimbursable services are restricted to those provided in rural/underserved areas or there are unusual requirements in order to ensure there is some distance between the patient and distant site provider. For example, in Texas, the Medicaid patient must be located in a rural or underserved area. However, there are some states that do not have these geographical restrictions like Kansas and California.

Others limit the type of facility that may be an originating or distant site, often excluding the home as a reimbursable site and impacting RPM.

Consent

Ten states require some sort of informed consent in their statutes (but not in their Medicaid policies), 7 states require informed consent only in their Medicaid policies (but it is not required by law) and 4 states (KY, NE, OK & TN) require it in both state law and Medicaid policy. Thirty states do not mention informed consent in their Medicaid Manual and statutes. Due to recently passed legislation, in January 2014 state law in Missouri will also begin requiring informed consent.

Licensure

Nine states' medical boards issue special licenses or certificates related in some way to telehealth. The licenses could allow an out of state provider to render services via telemedicine in a state they are not located in, or it allows a clinician to provide services via telehealth into a state if certain conditions are met (such as agreeing that they will not open an office in that state.) States with such licenses are:

- Alabama
- Louisiana
- Montana
- Nevada
- New Mexico
- Ohio
- Oregon
- Tennessee (both the medical and osteopathic boards issue such licenses)
- Texas

Other states have laws that don't specifically address telehealth/telemedicine licensing but make allowances for contiguous states or for certain situations where a temporary license might be issued, provided the specific state's licensing conditions are met.

As of November 1, 2013 Oklahoma's Osteopathic Board has the authority to issue a telemedicine license, however there is no indication that they are currently doing so.

Online Prescribing

There are a number of nuances and differences across the states. However, most consider using only an Internet/online questionnaire to establish a patient-provider relationship (needed to write a prescription in most states) is inadequate, though not all states require an in-person examination.

Private Payers

Currently eighteen states and DC have active laws that impact reimbursement policies of private payers. Three states passed laws impacting private payer reimbursement on telehealth which have not yet taken effect. They include:

- Arizona (effective Jan. 2015)
- Missouri (effective (Jan. 2014)
- Montana (effective Jan. 2014).

Current Legislation

As of Nov. 2013, thirty-seven states and the District of Columbia introduced some legislation related to telehealth in the 2013 legislative session. Bills in thirteen states are related to private payers in some way (some bills make changes to existing private payer laws). As noted above, some have already passed while others continue to go through their respective legislative process. **Where appropriate, newly passed and/or approved legislation and regulations have been noted for each state. However, many of these changes may not currently be in effect.**

Please keep in mind that this report is for informational purposes only, and is not intended as a comprehensive statement of the law on this topic, nor to be relied upon as authoritative. Always consult with counsel or appropriate program administrators.

California

Medicaid Program: Medi-Cal

Program Administrator: California Dept. of Health Care Services (DHCS)

Regional Telehealth Resource Center:
California Telehealth Resource Center (CTRC)
2001 P Street, Suite 100
Sacramento, CA 95811
(916) 341-3378 / (877) 590-8144
www.caltrc.org

STATE LAW/REGULATIONS	MEDICAID PROGRAM
Definition of telemedicine/telehealth	
"Telehealth means the mode of delivering health care services and public health via information and communication technologies to facilitate the diagnosis, consultation, treatment, education, care management, and self-management of a patient's health care while the patient is at the originating site and the health care provider is at a distant site. Telehealth facilitates patient self-management and caregiver support for patients and includes synchronous interactions and asynchronous store and forward transfers." *Source: CA Business & Professions Code Sec. 2290.5 (2012).* Telemedicine is "the ability of physicians and patients to connect via technology other than through virtual interactive physician/patient capabilities, especially enabling rural and out-of-area patients to be seen by specialists remotely." *Source: CA Code of Reg. Title 10 Sec. 6410.*	Telehealth [according to the Telehealth Advancement Act of 2011] "is the mode of delivering health care services and public health utilizing information and communication technologies to facilitate the diagnosis, consultation, treatment, education, care management and self-management of a patient's health care while the patient is at the originating site and the health care provider is at the distant site." "Telemedicine [according to CMS] is the use of medical information exchanged from one site to another using interactive telecommunications equipment that includes, at a minimum, audio and video equipment permitting two-way, real-time, interactive communication between the patient and physician or practitioner at the distant site to improve a patient's health. Medi-Cal uses the term telemedicine when it makes a distinction from telehealth." *Source: CA Department of Health Care Services. Medi-Cal Part 2 General Medicine Manual. Telehealth. Pg. 1. (Sept. 2013).*
Live Video Reimbursement	
Private payers may reimburse for live video. *(See "Private Payers" section).* *Source: CA Health & Safety Code Sec. 1374.13 (2012).* *(also see Medicaid column)*	Medi-Cal will reimbursement for services provided via live video. *Source: CA Department of Health Care Services. Medi-Cal Part 2 General Medicine Manual. Telehealth. Pg. 1. (Sept. 2013).*
Store and Forward Reimbursement	
Private payers may reimburse for store and forward. *Source: CA Business & Professions Code Sec. 2290.5 (2012).* *(also see Medicaid column)*	Medi-Cal will reimbursement for store and forward services for tele-dermatology and tele-ophthalmology. *Source: CA Department of Health Care Services. Medi-Cal Part 2 General Medicine Manual. Telehealth. Pg. 5. (Sept. 2013).*
Remote Patient Monitoring Reimbursement	
No reference found.	No reference found.

STATE LAW/REGULATIONS	MEDICAID PROGRAM
Email/Phone/FAX	
No reference found.	Medi-Cal does not reimburse for telephone calls, electronic mail messages or facsimile transmissions. *Source: CA Department of Health Care Services. Medi-Cal Part 2 General Medicine Manual. Telehealth. Pg. 5. (Sept. 2013).*
Online Prescribing	
Providers are prohibited from prescribing or dispensing dangerous drugs or dangerous devices on the Internet without an appropriate prior examination and medical indication. *Source: CA Business & Professions Code Sec. 2242.1(a).*	No reference found.
Consent	
The originating site provider must obtain and document oral patient consent prior to service delivery. *CA Health & Safety Code Sec. 1374.13 (2012).*	Provider must obtain oral consent from the patient and document it in the patient record. *Source: CA Department of Health Care Services. Medi-Cal Part 2 General Medicine Manual. Telehealth. Pg. 2. (Sept. 2013).*
Location	
Health plans cannot limit the settings where services are provided. Settings are still subject to contract terms and conditions. *Source: CA Health & Safety Code Sec. 1374.13 (2012).*	The type of setting where services are provided is not limited. *Source: CA Department of Health Care Services. Medi-Cal Part 2 General Medicine Manual. Telehealth. Pg. 1. (Sept. 2013).*
Cross-State Licensing	
No reference found.	No reference found.
Private Payers	
Private payers cannot require that in-person contact occur before payment is made for covered telehealth services, subject to contract terms and conditions. *Source: CA Health & Safety Code Sec. 1374.13 (2012).*	No reference found.
Site/Transmission Fee	
No reference found.	Medi-Cal will reimburse the originating site a facility fees, and originating and distant site for live video transmission costs. *Source: CA Department of Health Care Services. Medi-Cal Part 2 General Medicine Manual. Telehealth. Pg. 2. (Sept. 2013).*
Miscellaneous	

Comments: The CA Board of Occupational Therapy proposed regulations in August 2012 that would require occupational therapists providing telehealth services to have a California license, exercise the same standard of care as with in-person services, obtain oral patient consent, and determine whether an in-person evaluation or intervention is necessary.

Center for Connected Health Policy

The Center for Connected Health Policy (CCHP) is a nonprofit, nonpartisan organization that develops and advances telehealth policy solutions that promote improvements in health and health care systems.

Telehealth is poised to improve access and outcomes, particularly among medically underserved communities, and to improve the U.S. health care system's efficiency and cost effectiveness. With these benefits in mind, CCHP:

• Advocates for policies that expand telehealth program adoption;

• Conducts objective research and policy analysis;

• Develops nonpartisan policy recommendations;

• Operates telehealth demonstration projects.

In its work as the federally designated National Telehealth Policy Resource Center (NTRC-P), CCHP provides technical assistance to twelve Regional Telehealth Resource Centers (TRCs) nationwide, and serves as a national resource on telehealth policy issues.

CCHP was created in 2008 by the California Health Care Foundation, who remains its lead funder. CCHP is a program of the Public Health Institute.

www.cchpca.org

Center for Connected Health Policy

The National Telehealth Policy Resource Center

The Telehealth Advancement Act of 2011
Opportunities for Innovation in California

On Oct. 7, 2011, Gov. Edmund G. Brown, Jr., signed into law the Telehealth Advancement Act of 2011 (AB 415). The Act was authored by Assemblyman Dan Logue (R, Lake Wildwood) and sponsored by the California State Rural Health Association (CSRHA). AB 415 enjoyed impressive bi-partisan support, with four Democratic co-authors: Wesley Chesbro (D-North Coast), Cathleen Galgiani (D-Livingston), Richard Pan (D-Natomas), and V. Manuel Pérez (D-Coachella).

The Act, which went into effect Jan. 1, 2012, makes significant changes to California telehealth laws. It creates better parity between health care services delivered via telehealth and delivered in person, and further distinguishes telehealth as a mode of delivering services.

A joint issue brief from the Center for Connected Health Policy and the California Telemedicine and eHealth Center.

AB 415 removes barriers, real or perceived, that have hampered implementation of telehealth. AB 415 creates opportunities to further the use of telehealth, with the goal of providing better care, access and efficiencies.

AB 415 ***does not mandate*** the use or reimbursement of any telehealth services by public or private payers. Covered services, and the locations of their delivery, are still negotiated in contracts between health plans and providers, and in public insurance programs such as Medi-Cal, the state's Medicaid program. Nor does AB 415 change the scope of practice of any licensed health professional, or change interstate licensure laws.

The following is an assessment by the California Telemedicine and eHealth Center (CTEC) and the Center for Connected Health Policy (CCHP) on the impacts of AB 415.

What AB 415 Does

AB 415 replaces the terminology of "telemedicine" with "telehealth" in California law.

Under the old law's terminology, telemedicine was defined as the practice of medicine via live video connections between patients and providers in separate locations, or via "data communications." Telephone and email were explicitly excluded. As technological advances resulted in new telehealth treatment options, this legal definition over time created unintentional obstacles to the expansion of telehealth, and became a barrier to implementation.

In addition, while the old law referenced data communications, it did not explicitly reference in its definitions the use of store & forward technologies, a prominent type of delivery means, as a part of telehealth. Store & forward connects primary care providers (PCPs) and medical specialists via sophisticated high speed, high definition communications systems without the patient being present. While store & forward was allowed in a separate section of the old law, the lack of a clear and explicit presence in the definitions section created difficulties for providers seeking reimbursement for them.

Telehealth, the new legal terminology, refers to the technology-enabled delivery of services, rather than a specific medical practice. This allows for a far broader range of telehealth than the old law, and does not limit future telehealth technologies, because of its encompassing, forward-looking definitions.

AB 415 removes limits on the physical locations where telehealth delivered services may be provided.

Under the old state law, there was no explicit restriction to the location where telemedicine could be delivered, other than that the facility had to be licensed. However, Medi-Cal restricted delivery and receipt of telemedicine services to four specific licensed facilities: Critical Access Hospitals, rural health clinics, physician or practitioner offices, and Federally Qualified Health Centers. This small list of facilities was perceived as the only locations in which telemedicine could be provided.

AB 415 clears up the confusion on location by explicitly removing limits on the settings for telehealth. This will **allow** for services delivered via telehealth to be covered, regardless of where it takes place. For example, this can include services such as patient care management programs that employ home monitoring devices, in-home patient medical appointments, and provider reviews, in any location, of store & forward patient cases. However, locations for telehealth are still subject to policies and contracts enacted by Medi-Cal and private payers.

AB 415 eliminates the ban on services provided via email or telephone being included as "telehealth."

AB 415 removes the restriction on telephone and email as a part of the definition of telehealth, but AB 415 did not mandate that services be provided in either manner, or reimbursement made for it. Only the restriction in current law is removed.

AB 415 expands the definition of health care provider, to include all health care professionals licensed by the State of California.

Under the old law, only these health professionals could provide services via telehealth:

- Physicians
- Surgeons
- Podiatrists
- Clinical psychologists
- Marriage and family therapists
- Dentists
- Optometrists (in limited scope)
- Professional clinical counselors
- Clinical social workers

AB 415 expands this list to include all professionals licensed under the state's healing arts statute, which also include:

- Pharmacists
- Nurse practitioners
- Physician assistants
- Registered nurses
- Dental hygienists
- Physical therapists
- Occupational therapists
- Speech and language pathologists
- Audiologists
- Licensed vocational nurses
- Psychologists
- Osteopaths
- Naturopaths

The expanded definition of provider allows for a substantial expansion of licensed providers and the corresponding service types they are able to provide via telehealth. However, reimbursement for telehealth is still subject to policies and contracts enacted by Medi-Cal and private payers.

AB 415 allows California hospitals to use new federal rules to more easily establish medical credentials of telehealth providers.

An amendment added to AB 415 during its legislative approval process helped clear up confusion among California regulators over a new federal rule to streamline the process for establishing medical credentials of telehealth providers.

The federal Centers for Medicare and Medicaid Services (CMS) issued new regulations in July 2011 that speed the approval process of medical credentials for telehealth practitioners.

The new federal regulations allow hospitals engaged in telehealth to accept the credentialing paperwork from the telehealth provider's original facility to use in determining whether the hospital would extend privileges to that specific provider. These new regulations make for quicker approvals of practitioners, and eliminate duplicative, expensive, and often cumbersome credentialing processes.

The new CMS rules also allow sites other than hospitals, such as physician offices and ambulatory centers, to use the same privileging by proxy approvals for telehealth services at a hospital, as long as those services meet the hospital's conditions of practice.

AB 415 aligns California law with the new CMS regulations. The confusion among California regulators centered on whether existing state regulations were in conflict with the new federal rules, and hospitals still would have to go through full state credentialing processes for all telehealth practitioners. Hospitals may use the credentialing process outlined in CMS regulations, but it is not mandatory. Should a hospital wish to undertake the full credentialing vetting process of a telehealth provider, it may still do so.

AB 415 removes two Medi-Cal regulations viewed as restrictive to services provided via telehealth.

AB 415 eliminated a Medi-Cal rule requiring providers to document a barrier to an in-person visit before a beneficiary could receive services via telehealth, which was widely viewed as a disincentive by providers to utilize telehealth.

Additionally, AB 415 eliminated the sunset date on the Medi-Cal reimbursed store & forward specialties of teledermatology, teleopothalmology and a small set of services for teleoptometry. Reimbursement for these services would have ended in 2013.

AB 415 changes the requirement of an additional written patient consent specifically for telehealth delivered services to a verbal consent.

The old law required that patients sign a separate, telehealth-specific consent form prior to receiving any type of services via telehealth. This stigmatized the field, and created an unnecessary barrier to care. In the medical field, written consents are often viewed as the equivalent of flagging a procedure as risky or experimental.

AB 415's removal of a written consent establishes parity between services provided in person and services provided via telehealth.

This provision is not a blanket removal of all written consent. It simply puts telehealth more in alignment with services delivered in person, by eliminating the ***additional*** written informed consent that existed in law. The new law requires that a verbal consent will still need to be obtained at the originating site, prior to services provided via telehealth and the consent be documented in the patient's medical record.

About This Issue Brief

This issue brief on the impacts of the Telehealth Advancement Act of 2011 was a joint project of the California Telemedicine and eHealth Center (CTEC), and the Center for Connected Health Policy (CCHP).

About CCHP

Established in 2008 by the California HealthCare Foundation, the Center for Connected Health Policy (CCHP) is a non-profit planning and strategy organization working to remove policy barriers that prevent the integration of telehealth technologies into California's health care system. CCHP conducts objective policy analysis and research, develops non-partisan policy recommendations, and manages innovative telehealth demonstration projects.
www.connectedhealthca.org

About CTEC

With more than 15 years' telehealth experience, CTEC is one of the country's leading resources for telehealth education, expertise, and implementation guidance. A federally designated Telehealth Resource Center, CTEC is the go-to source for unbiased information, serving healthcare providers, health systems, clinics and government agencies. Working to make telehealth services widely available, CTEC creates systems that make people healthier, increase access to care, improve patient outcomes, drive down healthcare costs, and sustain a reduced-carbon economy. For more information on CTEC, please visit www.cteconline.org.

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