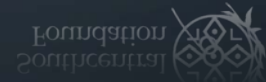


Optimizing Data Tools & Technology for Population Health Management

Cree Board of Health & Social Services of James Bay

Mike Hirst, Director of Data Services

65,000 voices



Objectives

- Apply Baldrige learning to data and population health
- Define the 4 layers of data interoperability
- Examine key factors that contribute to a successful population health data platform
- Evaluate and assess your organizations current capabilities and discuss you challenges

Popular Population Health Tools

- HealthIntent Registries and EDW
 - Tableau
 - Business Objects
- Health Catalyst
 - Qlik
- I2i Tracks
 - Application Reports
- Azara DRVS
 - Application Reports

No solution will be successful without a sound approach to data strategy, planning and data governance.

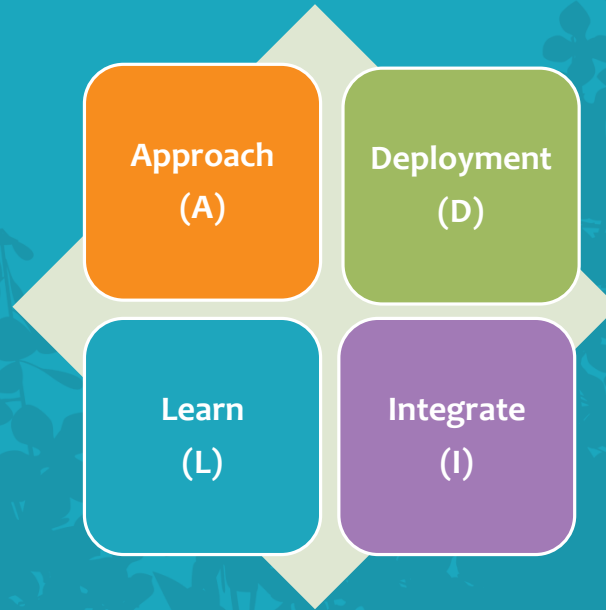
Water, Water Everywhere, not a drop to drink!

“The Rime of the Ancient Mariner” Samuel Taylor
Coleridge (1772-1834) English Poet

Data, Data Everywhere, not a thought to think!

Where do I begin?

Baldrige A-D-L-I



Data Management (ADLI)

- Approach
 - What is your organizations approach to data collection and reporting?
- Deployment
 - How do you deploy that approach to ensure it happens?
- Learning
 - How is your information structured and displayed to facilitate learning?
- Integration
 - How is information you are collecting integrated into the healthcare system?

Population Health Approach:

Transforming Research into Action

Hypothesis ? ► Research & Publication ► Professional Organization ► Recommendations & Guidelines ► NCQA, AHRQ, GPRA, NQF ► CMS

Organizational
Objectives & Initiatives

Organizational Score

Clinic Score

Team Score

Individual Score

Empanelment

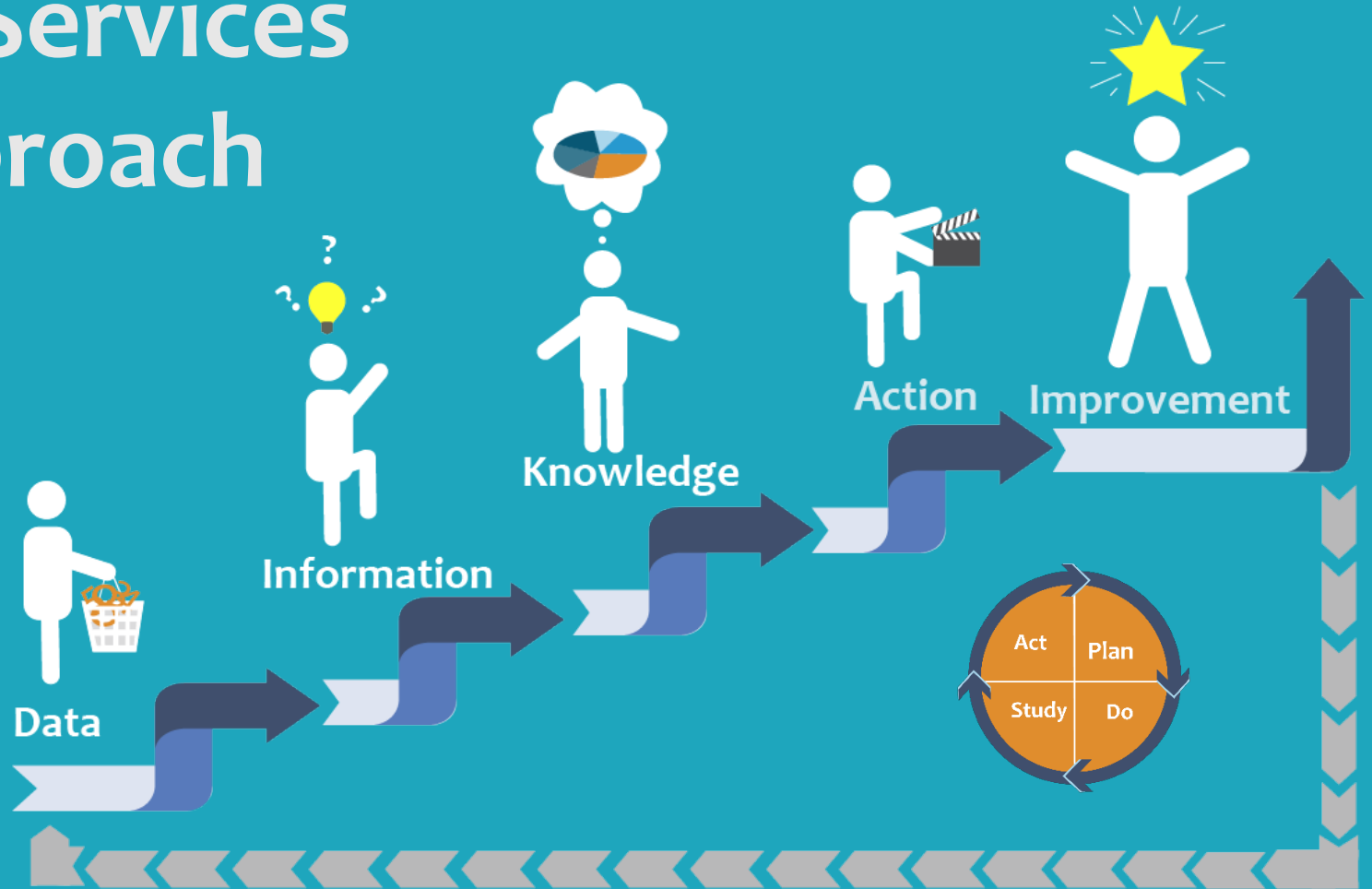
Action Lists

Work Plans

Evaluations

Compensation

Data Services Approach



Deploying Interoperability



Technology Layer



User Layer



Data Layer



Organization
Layer

Technology Layer

(Goal: Send/Receive/Store Data)



- Exchanging data & Maintaining Interfaces
 - APIs, HL7, Data On-boarding
- No SQL Databases
 - Key Value Pair (Hadoop), Document (Mongo Db), Graphing (Neo4J), Columnar (HP Vertica)
- Changes to EHR
 - Change Management, Version Control
- External Technology, Equipment, Telehealth
 - Security, Commonwell Health Alliance HIE, transmission standards
- Master Data Management
 - Multiple Person IDs

Data Layer

(Goal: Data Standardization)



- Standard Nomenclature
 - ICD-10, SNOMED, CPT, LOINC
 - Selection, curation, maintenance, updates
- Data Standardization
 - Mapping non-standard data to standard data
 - ETL processes
- Tags
 - Used for quick reference, approved standardized list
- Naming Conventions
 - Approved naming formats for data warehousing schema

User Layer

(Goal: Data Models/ Visualizations)



- Data Warehousing, Data Modeling, Data Marts, Applications
 - Clinical, Operational, Financial, Customer-Focus
- Templates
 - All possible Diabetes codes across all nomenclatures (ICD-10, CPT, RxNorm)
- Concepts
 - Type 1 Diabetes, Type 2 Diabetes
- Context
 - HEDIS, UDS, Local
- Machine Learning & Discovery
- Reporting Tools / Data Modeling
 - Tableau, Business Objects, R, SAS, SPSS

Organization Layer

(Goal: Integration/Sustainability)



- Workflows
 - Support Data Entry
 - Model Implementation back into source system
- Data Governance (Policies & Procedures)
- Security (HIPPA)
- Regulations (Medicare, Medicaid)
- Staff Education & Training
- Leadership Support and Funding

Key Factors for Success



Build Relationships

- Understand who you're key stakeholders are and build working relationships with them
 - Value the differences and strengths each of your voices bring
- Who are the “Data Stewards” in your organization?
 - How do you communicate with them and build relationships?
- Integrated Information Teams
 - Information support is aligned with and an extension of the product line
 - Medical services, Behavioral health, Finance, Human Resources

Understand Stakeholder Needs

■ Executive staff

- How well are we doing with corporate objectives?
- Are we meeting our targets?

■ Managers

- Are there variations occurring in our processes and how can I identify it?

■ Front line staff

- Do I have the information tools I need to proactively do my work?
- Do the information tools?
 - Save me time?

■ Customers

- I want to take a more active role in my health and wellness
- I'm in control of my healthcare
 - Shared decision making is between me and my healthcare team
- I want tools that give me access to my information

Get Leadership Buy-In

- Have an approach and be able to communicate that to leadership
- Demonstrate and communicate efficiency and value
 - Automate and standardize processes that required individual effort
 - Project Management 101 (Scope, Resources, Time)
 - Keep scope limited to what you have resources and time for
- Align with your corporate goals and objectives

Data Governance

- Establish a Data Governance Committee
 - Organization wide representation
- Version Control
- Change Management
- Enterprise Naming Methods
 - Standard Tags
- Tool and Report Platform Selection
- Metadata
 - Business – user friendly methods
 - Technical – data dictionaries and models
 - Process – volume metrics, logs, process times
- Data Lifecycle
- Historical Data Decisions
- Standardization (concepts/context)
- Access and Security (active directory)
- Large Project Planning and Timelines
- Priority Setting / Request Tool & Process
- Resource Allocation (tools vs people)
- Alignment with Corporate Goals and Objectives
- Benchmarking
 - HEDIS, MGMA, Local, Smiliar Facilities
- Policies and Procedures

Determining Data Collection Cost

- “**Where**” does the data reside?
- “**Who**” is going to collect it?
- “**How**” are they going to collect it?
- “**How frequently**” should it be collected?
- “**How much**” is needed to answer questions?
- “**How should it be stored**”? Sensitivity (PHI)?
- “**Who has access**” and how?
- What is the “**lifecycle**” of the data?
- “**Cost**” of Collection (human/other resources)?

Workforce Development

Checklist Categories

- General Skills
- Metadata knowledge
- Querying Tools
- Data Sources and Databases
- Reporting Tools
- Coding Vocabularies and Nomenclatures
- Regulatory measurement requirements
- Information Security
- Querying Skills
- Chart/graphing Skills related to improvement
- Statistical Skills
- Population Health and Patient Centered Medical Home
- ETL Tools

List skills in each category then score skills accordingly:

1= Little to No Experience
2= Theoretical Knowledge
3= Perform with Assistance
4= Perform Independently
5= Expert, can teach

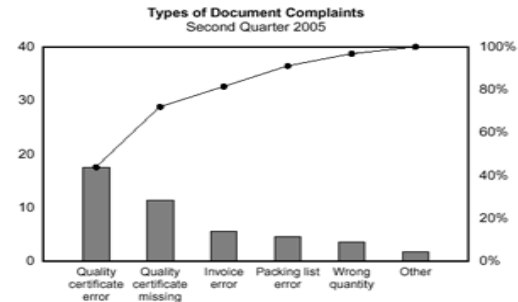
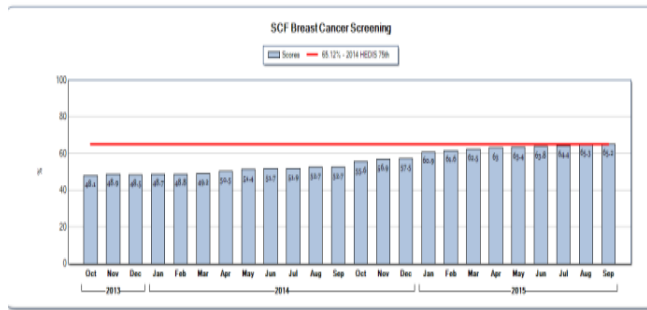
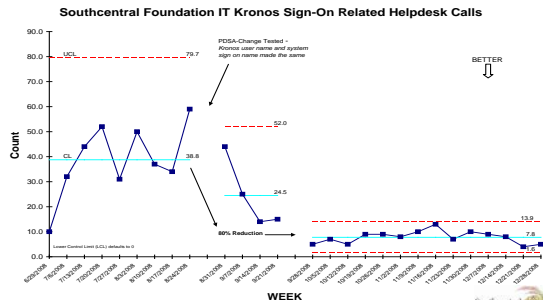
Workforce Progression

| | A | B | C | D | E | F | G | H | I | J | K | L | M |
|----|--|-------------|---------------|-------------|-------------|-------------|-------------|-------------|------------------------------|---------------------------------|--|----------------------------------|------------|
| 1 | Name: | | | | | | | | | | | | |
| 2 | Hire Date: | | | | | | | | | | | | |
| 3 | Last Promotion Date: N/A | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | |
| 5 | Data Analyst | | | | | | | | | | | | |
| 6 | 0= Not applicable | | | | | | | | | | | | |
| 7 | 1= Little or No Experience | | | | | | | | | | | | |
| 8 | 2= Theroetical Knowledge | | | | | | | | | | | | |
| 9 | 3= Perform with Assistance | | | | | | | | | | | | |
| 10 | 4= Perform Independently | | | | | | | | | | | | |
| 11 | 5= Expert can teach | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | | |
| 15 | Skills & Knowledge Career Progression Checklist | Eval | Date | Eval | Date | Eval | Date | Eval | Report Writer Level 1 | Business Analyst Level 2 | Senior Business Analyst Level 3 | Data Arch & ETL Prog. | DBA |
| 16 | Coding Vocabularies | | | | | | | | | | | | |
| 17 | ICD-9 Codes | 1 | | | | | | | X | X | X | | |
| 18 | ICD-10 Codes | 1 | | | | | | | X | X | X | | |
| 19 | CPT Codes | 1 | | | | | | | X | X | X | | |
| 20 | HCPCS Codes | 1 | | | | | | | | X | X | | |
| 21 | LOINC Codes | 1 | | | | | | | | X | X | | |
| 22 | DRG Codes | 1 | | | | | | | | X | X | | |
| 23 | Dental CDT Codes | 1 | | | | | | | | X | X | | |
| 24 | SNOMED | 1 | | | | | | | | X | X | | |
| 25 | Cerner Code Values | 1 | | | | | | | X | X | X | | |
| 26 | Rx Norm | 1 | | | | | | | | | X | | |
| 27 | RPMS Codes | 1 | | | | | | | X | X | X | | |
| 28 | RVUs | 1 | | | | | | | | | X | | |
| 29 | Principle Types/ Cerner Code Sets related to Vocab. Ref. (Code Sets 400, 401, 12100) | 1 | | | | | | | | | X | | |
| 30 | Code Set Hierarchies | 1 | | | | | | | | | X | | |
| 31 | Works with Cerner Core Personnel to Define User Defined Code Sets | 1 | | | | | | | | | X | | |
| 32 | SUBTOTAL: | 15 | Apr-15 | 0 | | 0 | | 0 | | | | | |
| 33 | | | | | | | | | | | | | |
| 34 | Healthcare Performance Measurement Methods | | | | | | | | | | | | |
| 35 | HEDIS | 1 | | | | | | | | X | X | | |
| 36 | GPRA/CRS | 1 | | | | | | | | X | X | | |
| 37 | UDS | 1 | | | | | | | | X | X | | |
| 38 | Meaningful Use Functional Measures | 1 | | | | | | | | X | X | | |
| 39 | Meaningful Use Clinical Quality Measures | 1 | | | | | | | | X | X | | |
| 40 | Accountable Care Organization Measures (ACO) | 1 | | | | | | | | X | X | | |
| 41 | TCHIC | 1 | | | | | | | | X | X | | |
| 42 | PQRS (GPRO Submission) | 1 | | | | | | | | X | X | | |
| 43 | Balanced Scorecard | 1 | | | | | | | X | X | X | | |
| 44 | SUBTOTAL: | 9 | Apr-15 | 0 | | 0 | | 0 | | | | | |
| 45 | | | | | | | | | | | | | |
| 46 | Information Security | | | | | | | | | | | | |
| 47 | Annual HIPPA Training | 1 | | | | | | | X | X | X | X | X |

Visual Learning

| Team | Provider | Numerator | Denominator | % Screened |
|--------|---------------------|-----------|-------------|------------|
| | | 696 | 1194 | 58.3 % |
| | | 660 | 1104 | 59.8 % |
| 1 East | | 79 | 157 | 50.3 % |
| 1 West | | 89 | 160 | 55.6 % |
| 2 East | | 123 | 210 | 58.6 % |
| 2 West | | 111 | 176 | 63.1 % |
| 3 East | | 134 | 207 | 64.7 % |
| 3 West | | 124 | 194 | 63.9 % |
| | JAMES, DAVID M | 38 | 51 | 74.5 % |
| | KANTOR, LINDA L ANP | 29 | 36 | 80.6 % |
| | LINFIELD, JANA L | 16 | 19 | 84.2 % |
| | NORRIS, KENNETH J | 15 | 43 | 34.9 % |
| | WRIGHT, TAMRA J | 26 | 45 | 57.8 % |

Diabetes Eye Exam (20 or More Diabetic Patients)



Segmentation



HEDIS Breast Cancer Screening Scores

Breast Cancer Screening Rates as of: 5/16/2015

2014 HEDIS Medicaid Benchmark 75th Percentile = 65.12%

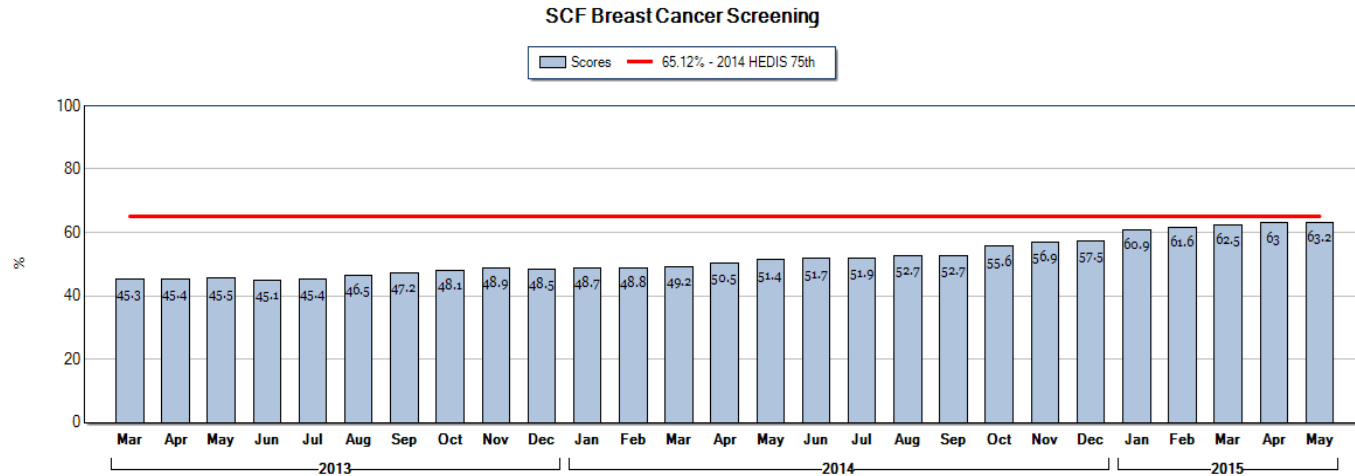
Methodology

| Organization | Clinic | Provider | Numerator | Denominator | % Screened |
|--------------|--------------------------|-------------------------|-----------|-------------|------------|
| SCF | | | 2738 | 4332 | 63.2 |
| | ☐ 1 East | | 398 | 625 | 63.7 |
| | | Carrick, Erin P, PA-C | 44 | 78 | 56.4 |
| | | Heggen, Leslie N, PA | 60 | 117 | 51.3 |
| | | Leoncio, Ferritha A, MD | 81 | 111 | 73.0 |
| | | McWilliams, Ryan T, MD | 70 | 114 | 61.4 |
| | | Ott, Laurie A, PA-C | 76 | 118 | 64.4 |
| | | Zimmer, Laurie E, MD | 67 | 87 | 77.0 |
| | ☐ 1 West | | 412 | 683 | 60.3 |
| | ☐ 2 East | | 372 | 574 | 64.8 |
| | ☐ 2 West | | 329 | 572 | 57.5 |
| | ☐ 3 East | | 388 | 598 | 64.9 |
| | ☐ 3 West | | 347 | 540 | 64.3 |
| | ☐ Life House Rural CHC | | 2 | 7 | 28.6 |
| | ☐ Nilavena | | 52 | 71 | 73.2 |
| | ☐ Pediatrics | | | | |
| | ☐ Qu yana Clubhouse | | 3 | 5 | 60.0 |
| | ☐ St. Paul Health Center | | 11 | 14 | 78.6 |
| | ☐ Upper Kuskokwim | | 38 | 61 | 62.3 |
| | ☐ VNPCC East | | 171 | 285 | 60.0 |
| | ☐ VNPCC West | | 215 | 297 | 72.4 |

Assessment Over Time



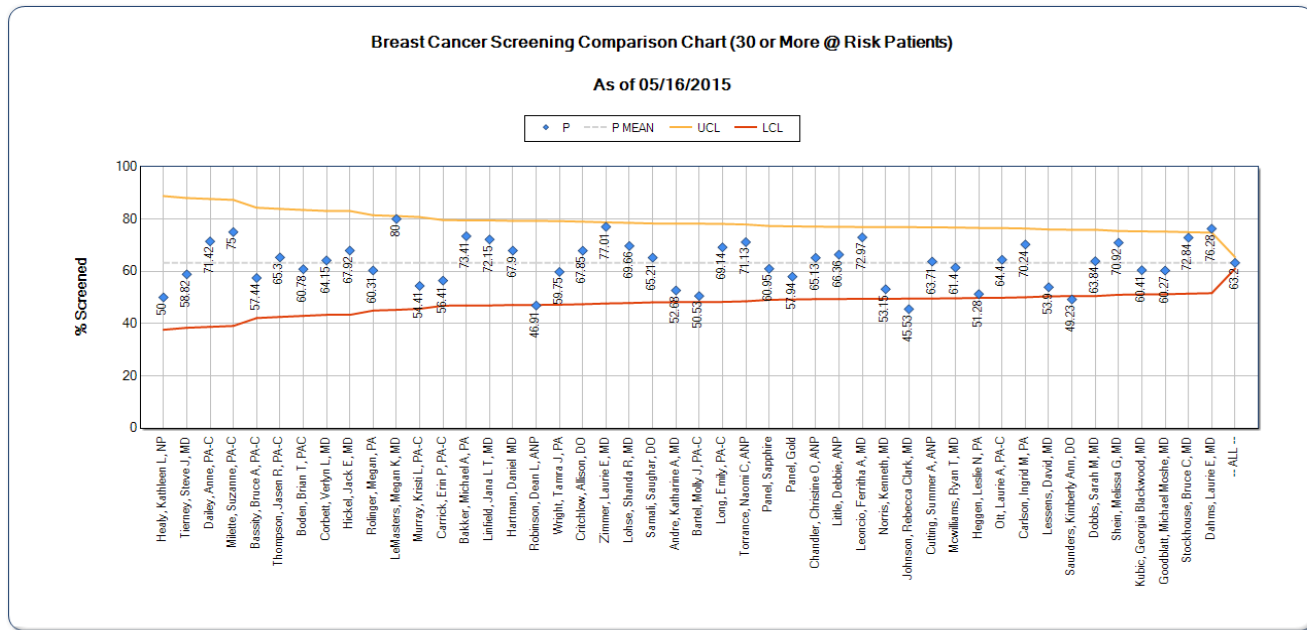
HEDIS Breast Cancer Screening Scores



Comparison Chart (Variation)



HEDIS Breast Cancer Screening Scores



Customer Focus

| | | | | | | |
|---|-----|-----|---------------------|--|-------|-----|
| 5 The provider listened carefully to me. | SCF | MSD | | | 97.0 | |
| | | | | | 96.9 | |
| | | | Primary Care 1 East | | 98.3 | 122 |
| | | | Primary Care 1 West | | 93.6 | 110 |
| | | | Primary Care 2 East | | 90.6 | 121 |
| | | | Primary Care 2 West | | 100.0 | 105 |
| | | | Primary Care 3 East | | 93.5 | 92 |
| | | | Primary Care 3 West | | 97.6 | 176 |
| | | | | | | |
| 6 I was provided with enough information to make decisions. | SCF | MSD | | | 95.9 | |
| | | | | | 95.8 | |
| | | | Primary Care 1 East | | 95.7 | 122 |
| | | | Primary Care 1 West | | 95.4 | 110 |
| | | | Primary Care 2 East | | 89.8 | 121 |
| | | | Primary Care 2 West | | 98.0 | 105 |
| | | | Primary Care 3 East | | 93.5 | 92 |
| | | | Primary Care 3 West | | 94.6 | 176 |
| | | | | | | |

Access

Past and Future Appointment Availability as of 8:00 am

Clinic in Report: VNP PC East

Open = Unbooked Appointments

Booked = Booked Appointments

Blocked = Blocked Schedule for Meetings, Desk Time etc.

Methodology

| Location - Click plus to expand providers | Provider - Click name for details | Unbooked (Min) | Appts (Min) | Blocked (Min) | Total (Min) | Blocked % | Unbooked % | Appts % |
|---|-----------------------------------|----------------|-------------|---------------|-------------|-----------|------------|---------|
| VNP PC East | | 6495 | 1950 | 1995 | 10440 | 19.11% | 62.21% | 18.68% |
| 5/20/2015 | | 1680 | 1005 | 495 | 3180 | 15.57% | 52.83% | 31.6% |
| | Bassity, Bruce PA | 180 | 240 | 30 | 450 | 6.67% | 40% | 53.33% |
| | Boden, Brian PAC | 150 | 225 | 75 | 450 | 16.67% | 33.33% | 50% |
| | Goff, Kylea Pharm.D. | 420 | 0 | 60 | 480 | 12.5% | 87.5% | 0% |
| | Lohse, Shanda R MD | 240 | 120 | 90 | 450 | 20% | 53.33% | 26.67% |
| | Nardini, Neil PA-C | 300 | 150 | 0 | 450 | 0% | 66.67% | 33.33% |
| | Thompson, Jasen PA | 225 | 45 | 180 | 450 | 40% | 50% | 10% |
| | Wright, Tamra PA | 165 | 225 | 60 | 450 | 13.33% | 36.67% | 50% |
| 5/21/2015 | | 1230 | 615 | 435 | 2280 | 19.08% | 53.95% | 26.97% |
| 5/22/2015 | | 705 | 135 | 510 | 1350 | 37.78% | 52.22% | 10% |
| 5/25/2015 | | 0 | 0 | 0 | 0 | 0% | 0% | 0% |
| 5/26/2015 | | 1170 | 165 | 465 | 1800 | 25.83% | 65% | 9.17% |
| 5/27/2015 | | 1710 | 30 | 90 | 1830 | 4.92% | 93.44% | 1.64% |

Registries (Action Lists)

Fictitious customer-owner information

Diabetes Action List

Links to Documentation: [Report Methodology](#)

[Data Resolution/Error Correction Process](#)

Diabetic Patient Status as of Week Ending: 3/13/2009

| HRCN | Patient | New Diabetic (< 90 Days) *Click Link to see Diagnosis Details* | Sex | Age | HBA1C Result | HBA1C Date | Most Recent LDL Result | LDL Date |
|----------------|---------------------|---|-----|-----|--------------|------------|------------------------|------------|
| Ko, Patricia A | | Total Diabetic Patients: 47 | | | | | | |
| 72048 | Abbasi, Darren | No | M | 71 | 5.8 | 2009/01/13 | 67 | 2009/01/13 |
| 42457 | Abell, Frederick | No | M | 67 | 6.3 | 2009/03/06 | 86 | 2009/03/06 |
| 12916 | Allen, Marcus | No | M | 82 | 6.4 | 2008/06/03 | 129 | 2008/06/03 |
| 72098 | Armston, George | No | M | 81 | 5.3 | 2008/12/01 | 90 | 2008/12/01 |
| 1192 | Bark, Samuel | No | M | 85 | 6.9 | 2009/01/22 | 110 | 2009/01/22 |
| 45979 | Bevis, Michael | No | M | 76 | 5.7 | 2009/03/09 | 79 | 2009/03/09 |
| 32158 | Black, Lewis | No | M | 36 | 6.3 | 2009/03/03 | 116 | 2008/11/15 |
| 19202 | Caldwell, Charlotte | No | F | 80 | 5.8 | 2009/02/23 | 93 | 2009/02/23 |
| 84893 | Evarza, Wallace | No | M | 40 | 5.7 | 2008/06/24 | 113 | 2008/06/24 |
| 61328 | Ferris, Adam | No | M | 40 | 6.8 | 2009/02/12 | 86 | 2009/02/12 |
| 19492 | Gafford, Joseph | No | M | 41 | 6.3 | 2008/03/31 | 64 | 2008/03/31 |

Beyond Reporting

- Machine Learning
- Data Modeling
- Workflow Modeling/Testing/Integration
- Proactive/Integrated Population Health

Why Is All This Important?



Self Assessment Exercise



| Level | 1 | 2 | 3 | 4 | 5 |
|-----------------|---|---|---|--|---|
| | Surviving | Understanding | Applying | Analyzing | Integrating |
| Characteristics | <p>Capability: Canned Reports/ Extracts/ Excel Spreadsheets</p> <p>Workforce: Department Staff Run Reports.</p> <p>Governance: No clear data ownership, no proactive data planning</p> <p>Infrastructure: Data primarily in transactional systems. Query options are limited.</p> | <p>Capability: Metrics/ Reports (Not Standardized/ Not Centralized).</p> <p>Workforce: IT support through ticket system.</p> <p>Governance: Limited to specific projects, informal, siloed.</p> <p>Infrastructure: Query tools for specialized staff from transactional system.</p> | <p>Capability: Dashboards/Registries (Standardized); Align with Corporate Goals and Objectives.</p> <p>Workforce: Centralized Data Services Department (report writers and data analysts)</p> <p>Governance: Data Governance Committee mostly IT and EHR focused (security, change management)</p> <p>Infrastructure: Data Warehousing with multiple data sources. Data available for querying, but data not standardized</p> | <p>Capability: Statistical Data Models/ Machine Learning.</p> <p>Workforce: Data Scientists, Data Architects join Data Services</p> <p>Governance: Data Stewardship & Information Focused (standardization, mapping, priority setting, data lifecycles)</p> <p>Infrastructure: Data warehouse data with cleansed, standardized, and modeled data. Reference tables, report tools integrated.</p> | <p>Capability: Models integrated into Workflows.</p> <p>Workforce: Data Scientists, Application Developers and Data Services aligned</p> <p>Governance: Organizational Planning and Funding align with Data Steward and Data Governance objectives</p> <p>Infrastructure: Certified metrics in the warehouse, APIs, multiple database and applications integrated</p> |

Capability, Workforce, Governance, Infrastructure

Discussion



Thank You!

Qa̕gaasakung

Aleut

Quyanaa

Alutiiq

Quyanaq

Inupiaq

Awa'ahdah

Eyak

Mahsi'

Gwich'in Athabascan

Igamsiqanaghalek

Siberian Yupik

Háw'aa

Haida

Quyana

Yup'ik

T'oyaxsm

Tsimshian

Gunalchéesh

Tlingit

Tsin'aen

Ahtna Athabascan

Chin'an

Dena'ina Athabascan

Upcoming Nuka Events

| Event Name | Date |
|--|------------------|
| Core Concepts Training | May 23-25, 2018 |
| Nuka System of Care Conference | June 18-22, 2018 |
| Motivational Interviewing | June 25-26, 2018 |
| Coaching and Mentoring Program | June 25-29, 2018 |
| Quality Management Training | June 25-29, 2018 |
| Integrated Primary Care Team Training | June 27-29, 2018 |
| Behavioral Health Integration Training | June 27-29, 2018 |

907-729-6852 | www.scfnuka.com | SCFEvent@scf.cc | [@SCFNuka](https://twitter.com/SCFNuka)



Questions?