Kaiser Permanente Northern California Cardiovascular Risk Factor Treatment Algorithm

PHASE — Preventing Heart Attacks & Strokes Every Day

PHASE on a Page Rev. 24 (02/17)

BP Goals[1]

≤ 139/89: < 60 yrs and/or DM, and/or CKD[2]:
≤ 149/89: ≥ 60 yrs, no DM, CKD/nephropathy

If BP above goal

Start ACEI+Diuretic
Lisinopril - HCTZ
20 - 25mg
½ → 1 → 2 tabs daily
See CAUTION/INFO: **verify contraception** & eGFR.
Titrate to BP goal.

Optional: Replace ACEI w/ ARB if ACEI intolerant
Losartan
25mg daily → 25mg twice daily → 50mg twice daily
Titrate to BP goal.

Add Calcium Channel Blocker
Amlodipine
2.5 → 5 → 10mg daily
Titrate to BP goal.

Replace HCTZ w/ Chlorthalidone
Chlorthalidone
25mg daily
Titrate to BP goal.

Add Spironolactone*
Spironolactone
12.5 → 25mg daily
*If on thiazide AND eGFR≥60 AND K<4.5

If Spironolactone eligibility criteria not met:
Atenolol[3]
25 → 50mg daily
Titrate to BP goal. **Maintain pulse of 55 or greater**

[1] BP algorithm applies if eGFR ≥ 30 and if LVEF ≥ 40%.
[2] CKD: Microalbuminuria or [(age/2) + eGFR] < 85
[3] Beta Blockers, independent of their mild anti-hypertensive effect, are sometimes indicated for secondary cardio-protection

Statin Goals

Atorvastatin 40-80 mg:
- Clinical ASCVD[4] Age < 75 + any LDL

Atorvastatin 10-20 mg:
- Clinical ASCVD Age ≥ 75 + any LDL
- DM: Age ≥ 40 + LDL 70-189

Clinical ASCVD[4]
- Age <75 Any LDL → **Start Statin** **Atorvastatin** 80mg daily. See CAUTION/INFO **Verify contraception**
- Age ≥75 Any LDL → **Start Statin** **Atorvastatin** 20 mg daily. See CAUTION/INFO **Verify contraception**

DM
- Age ≥ 40 LDL 70-189 → **Start Statin** **Atorvastatin** 20 mg daily. See CAUTION/INFO **Verify contraception**

Optional: 10 yr CV risk ≥ 7.5%

If recommended dose of statin not tolerated, reduce to highest tolerated dose or switch to other statin (such as simvastatin or rosuvastatin)

Optional: LDL monitoring to assist with adherence assessment; consider lower statin dose if LDL < 40 x 2

[4] Clinical Atherosclerotic Cardiovascular Disease (ASCVD), defined as: CAD, TIA/CVA, Symptomatic PAD.

Adapted from Kaiser Permanente Northern California Clinical Practice Guidelines for Coronary Artery Disease, Diabetes, Cholesterol, and Hypertension.

A1c Goals

≤ 7.9%: ≥ 65 yrs or clinical factors[5]
≤ 6.9%: < 65 yrs w/o clinical factors

Type 2 DM A1C ≥2% above goal

- Yes → **Add Metformin + NPH insulin**
- No → **Add Metformin[6]**

Start Metformin
500mg: ½ tablet bid → 1 tablet bid → 2 tablets bid
Contraindicated: eGFR <30 or HF NY class 3–4 or LFTs >3 x ULN
Start not recommended: If baseline eGFR < 45
Assess risk/ benefits: If eGFR falls < 45
If GFR 30–45, 1000mg = max.
Titrate every 1-2 weeks aiming for AM SMBG target (≤ 6.9: 70–130; ≤ 7.9: 100–160)

Start / Add NPH Insulin
10 units SQ at hs
↑ 2 units every 2 days until at target.

At goal
- No → **Risk of Severe Hypoglycemia[7]**
- Yes → **Monitor**

Risk of Severe Hypoglycemia[7]
- Yes → **Add Alternate agent[8]**
- No → **Add Glipizide**

Add Glipizide
5mg: ½ tablet bid → 1 tablet bid → 2 tablets bid
Contraindicated: severe sulfa allergy
Titrate every two weeks until at target.

A1C ≥ 1% of goal?
- Yes → **Add NPH Insulin**
- No → **Add NPH Insulin or Alternate agent[8]**

Thiazoladinedione
- Oral
- Wt: Avg 1-3 kg gain
- Risk: CHF , Fx
- generic available

DPP-4 Inhibitor
- Oral
- Wt: Neutral
- No generic available

GLP-1 R Agonist
- SQ Injection
- Wt: Avg 1-3 kg loss
- Risk: Nausea / vomiting
- No generic available

SGLT2 Inhibitor
- Oral
- Wt: Avg 1-3 kg loss
- Risk: Genital yeast infections, DKA
- No generic available

[5] Individualize A1c goal based on risk of hypoglycemia, duration of DM, life expectancy, co-morbidities, vascular complications, member resources and support system.
[6] If intolerant to immediate release metformin, ***strongly*** consider sustained release metformin.
[7] **Severe Hypoglycemia** = Hypoglycemia resulting or likely to result in seizures, loss of consciousness, or needing help from others. **Mild to moderate hypoglycemia** = recognized signs and symptoms of neuro-glycopenia such as hunger or sweating that the patient can effectively self-treat.
[8] A1C above goal after 3 months despite non-insulin agents, ***strongly*** consider discontinuing ineffective medications and initiating insulin + metformin.