

Cardiovascular Risk Management Medication Algorithm†

Rev. 18A (9/11)

POPULATIONS

AAA

CAD

CVA/TIA Ischemic, Embolic

PAD

DM ASA w/RF M ≥ 50 yrs, F ≥ 60 yrs, ACEI ≥ 55 yrs; Statin ≥ 40 yrs

MEDICATIONS & CAUTIONS

INDEPENDENT OF BP/LDL CONTROL

ASA

ASA	81mg daily
CAUTION/INFO	If intolerant to ASA, consider Clopidogrel in CAD, PAD. If embolic CVA/TIA, warfarin preferred.

ACEI

Lisinopril	10mg daily
CAUTION/INFO	Verify effective contraception in women of childbearing potential: use Chlorthalidone or HCTZ. Use caution with ACEI if eGFR <30 or K>5.5. Use ARBs if ACEI intolerant & HTN not controlled on thiazide alone.

ACEI+HCTZ – FOR HX ISCHEMIC & EMBOLIC CVA (& FOR INTRACRANIAL HEMORRHAGE)

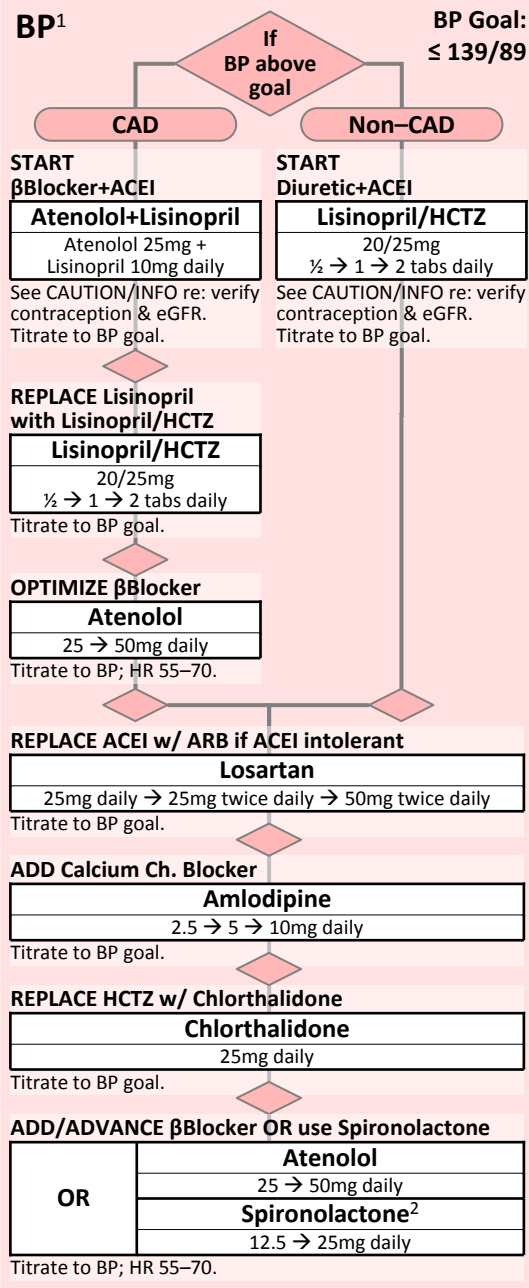
Lisinopril/HCTZ	10–12.5mg daily
No special caution or info statement.	

STATIN

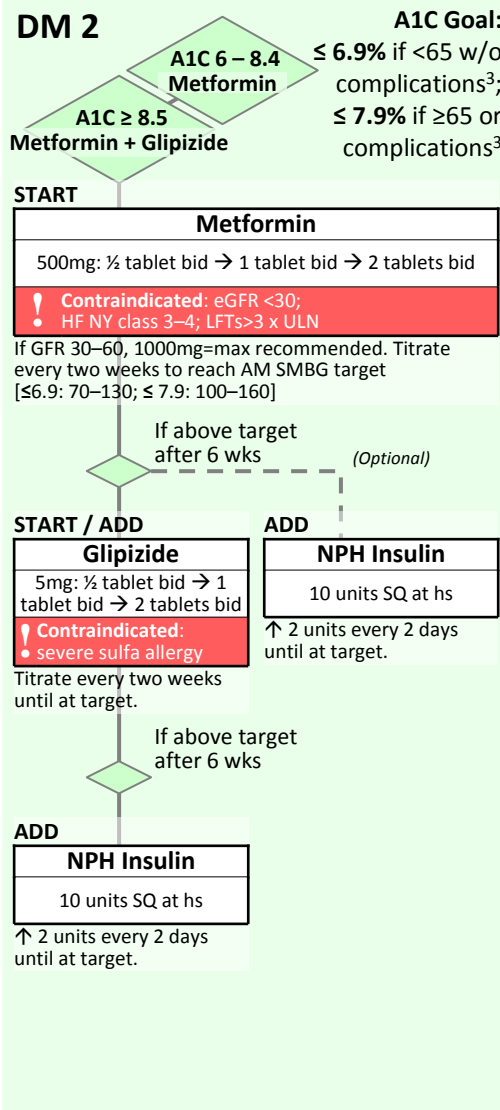
Simvastatin	40mg daily
CAUTION/INFO	Verify effective contraception in women of childbearing potential. If eGFR <30, reduce initial dose. Max Simvastatin dose 40mg daily. Use Atorvastatin if higher dose statin needed. Follow Simvastatin Conversion & DDI Table.

BETA BLOCKER – FOR CAD/PAD/AAA

Atenolol	25mg daily
CAUTION/INFO	Use caution in bradycardia <55, severe asthma, hypotension. Alternative if HF or LVEF <40%, use Carvedilol or Bisoprolol. If eGFR <30, use Metoprolol.

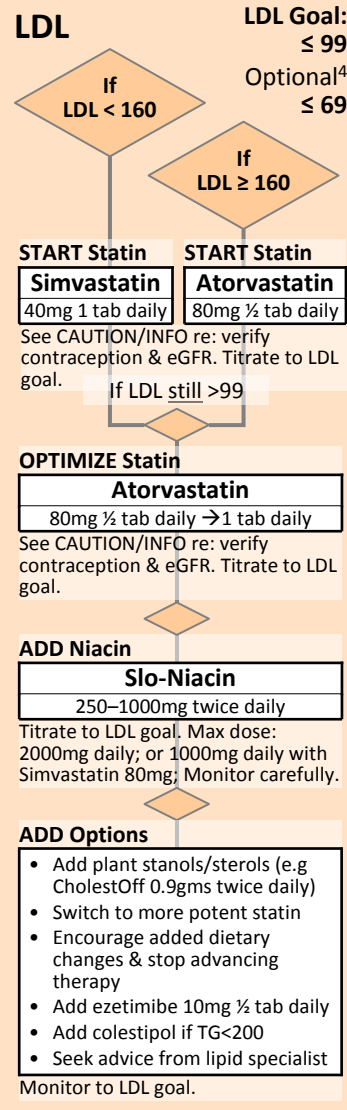


¹ BP algorithm applies to eGFR ≥ 30 and LVEF ≥ 40%.
² IF on thiazide AND eGFR ≥ 60 AND K < 4.5



³ Complications: CAD, CVA, TIA, PAD, CHF, CKD/ESRD, Dementia, Blindness, or Amputation.

Adapted from KPNC Clinical Practice Guidelines for: CAD, DM, Cholesterol, HTN, HF and Stroke
[†] Refer to the complete condition-specific guidelines for individual protocols for medication use, contraindications, possible side effects and lab monitoring. This document describes the drug intervention portion of the clinician education presentation.



⁴ Optional goal of ≤69 in ACS or CAD+DM, Tobacco or Met Synd.

Cardiovascular Risk Management Medications and Lab Chart

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BP	Dosage forms	Initial Dosage	Titration	Max. Rec. Dose	Full Effect	Baseline Labs	Titration	Lab Monitoring
	ACE Inhibitor Lisinopril (Prinivil®)	Tab 5, 10, 20, 40mg	5-10mg daily	Increase by 50-100% every 2-4 wks	40mg daily	2-4 wks	K+ and SCr within last 6 months	K+ and SCr 1 wk after initiation. K+ 2 wks after dosage change
ACE Inhibitor/ Diuretic Lisinopril / HCTZ (Prinzide®)	Tab 10/12.5, 20/12.5, 20/25mg	10/12.5mg daily	Double the dose every 2-4 wks	40/50mg daily	2-4 wks	Na+, K+ and SCr within last 6 months	Na+, K+ and SCr 1 wk after initiation or dosage change	Na+, K+ and SCr every 6 mo
ARB Losartan (Cozaar®)	Tab 25, 50, 100mg	25mg daily	Double the dose every 2-4 wks	100mg daily or 50mg twice daily	1-6 wks	K+ and SCr within last 6 months	K+ and SCr 1 wk after initiation. K+ 2 wks after dosage change	K+ and SCr every 6 mo
Thiazide Diuretics HCTZ (Hydrodiuril®, Esidrix®, Hygroton®)	Tab 25, 50, 100mg	12.5mg daily	Double the dose	HCTZ 50mg daily	4-6 wks	Na+, K+ and SCr within last 6 months	Na+, K+ and SCr 1 wk after initiation or dosage change	Na+, K+ and SCr every 6 mo
Chlorthalidone	Tab 25, 50, 100mg	12.5mg daily	Double the dose	Chlorthalidone 25mg daily	4-6 wks	Na+, K+ and SCr within last 6 months	Na+, K+, SCr 1 wk after initiation or dosage change	Na+, K+ and SCr every 6 mo
Potassium Sparing Diuretic Spironolactone (Aldactone®)	Tab 25, 50, 100mg	12.5 - 25mg daily or every other day	Double the dose	25mg daily	2-4 wks	Na+, K+, SCr within last mo	Na+, K+ and SCr 1 wk after initiation & 2 wks after dosage change	Na+, K+, SCr, 1wk after initiation & 2wks after dosage change.
B1 blockade Atenolol (Tenormin®)	Tab 25, 50, 100mg	25mg daily	Increase by 50-100% every 1-2wks	100mg daily or	1-2 wks	None	Titrate to pulse 55-70	None
Metoprolol (Lopressor®)	Tab 25, 50, 100mg	50mg twice daily	Increase by 50-100% every 1-2wks	100mg twice daily	1-2 wks	None	Titrate to pulse 55-70	None
Calcium Channel Blocker Amlodipine (Norvasc®)	Tab 2.5, 5, 10mg	2.5-5mg daily	Increase by 5mg every 2wks	10mg daily	2-4 wks	None	None	None
DM 2	Dosage forms	Initial Dosage	Titration	Max. Rec. Dose	Full Effect	Baseline Labs	Titration	Lab Monitoring
	Oral agents for DM 2 Metformin (GlucoPhage®)	Tab 500, 850, 1000mg	250mg twice daily	Increase by 50-100% every 2 wks	850mg 3xdaily or 1000mg twice daily	2-4 wks	Creat, CBC ALT	Do not use if eGFR<30. Not recommended in HF.
Glipizide (Glucoترول®)	Tab 2.5, 5, 10mg	5mg daily	Double the dose every 2-4 wks	20mg twice daily	1-2 wks	None	None	
LDL	Dosage forms	Initial Dosage	Titration	Max. Rec. Dose	Full Effect	Baseline Labs	Titration	Lab Monitoring
	Antilipemics Simvastatin (Zocor®)	Tab 40, 80mg	40mg daily at bedtime		40mg daily at bedtime	4 wks	ALT, CK, SCr	ALT 4-8 wks after initiation or dosage change
Atorvastatin (Lipitor®)	Tab 40, 80mg	80mg ½ tab daily	Double the dose	80mg daily	4 wks	ALT, CK, SCr	ALT 4-8 wks after initiation or dosage change	ALT Periodically
Controlled-Release Niacin (Slo-Niacin®)	Tab 250, 500, 750mg	250mg daily with food at bedtime	Increase dose by 250mg every four wks. Divided twice daily dosing	2000mg daily or 1000mg with Simva 80mg daily	4 wks	ALT, CK, Uric Acid, FBS	ALT, FBS 4-8 wks after initiation or dosage change	ALT Periodically

Simvastatin Conversion and Drug Interaction Table (Northern California) Rev. 18A (9/11)

Treatment Initiation	
Patient Population	Recommended Initial Therapy
Acute Coronary Syndrome	Atorvastatin 80mg, HALF tablet (40mg) daily
Acute Ischemic Stroke	Atorvastatin 80mg, HALF tablet (40mg) daily

No Drug Interactions			
This Total Daily Dose...		...is equivalent to this Total Daily Dose	
Simvastatin	80mg/day and GFR < 30 OR 80mg/day taken for < 12 months	▶ Atorvastatin	80mg, take a HALF tablet (40mg) orally daily
Vytorin	10/80mg daily and GFR < 30 OR 10/80mg daily taken for < 12 months	▶ Atorvastatin	80mg, take ONE tablet orally daily

Amlodipine or Ranolazine with...			
This Total Daily Dose...		...is equivalent to this Total Daily Dose	
Simvastatin	40mg/day with GFR ≥ 30	▶ Pravastatin	80mg, take ONE tablet orally daily
Simvastatin	40mg/day with GFR < 30	▶ Atorvastatin	40mg, take a HALF tablet (20mg) orally daily
Simvastatin	60-80mg/day	▶ Atorvastatin	80mg, take a HALF tablet (40mg) orally daily
Vytorin	5/40, 10/40 or 10/80mg daily	▶ Atorvastatin	80mg, take ONE tablet orally daily

Amiodarone, Diltiazem, or Verapamil with...			
This Total Daily Dose...		...is equivalent to this Total Daily Dose	
Simvastatin	20mg/day	▶ Pravastatin	40mg, take ONE tablet orally daily
Simvastatin	40mg/day + Amiodarone or Diltiazem with GFR ≥ 30	▶ Pravastatin	80mg, Take ONE tablet orally daily
Simvastatin	40mg/day + Verapamil with GFR ≥ 30	▶ Atorvastatin	40mg, take a HALF tablet (20mg) orally daily
Simvastatin	40mg/day with GFR < 30	▶ Atorvastatin	40mg, take a HALF tablet (20mg) orally daily
Simvastatin	60-80mg/day	▶ Rosuvastatin	20mg, take a HALF tablet (10mg) orally daily
Vytorin	5/20mg or 10/20mg daily	▶ Rosuvastatin	20mg, take a HALF tablet (10mg) orally daily
Vytorin	5/40, 10/40 or 10/80mg daily with GFR ≥ 30	▶ Rosuvastatin	40mg, take a HALF tablet (20mg) orally daily
Vytorin	5/40, 10/40 or 10/80mg daily with GFR < 30	▶ Rosuvastatin	20mg, take a HALF tablet (10mg) orally daily

Cyclosporine with...			
This Total Daily Dose...		...is equivalent to this Total Daily Dose	
Simvastatin	10mg/day or below	▶ Pravastatin	20mg, take ONE tablet orally daily
Simvastatin	20mg/day	▶ Atorvastatin	20mg, take HALF tablet (10mg) orally daily
Simvastatin	40-80mg/day	▶ Rosuvastatin	20mg, take HALF tablet (10mg) orally every other day
Vytorin	5/40, 10/40, or 10/80mg daily	▶ Rosuvastatin	20mg, take HALF tablet (10mg) orally every other day

Danazol, Itraconazole, Ketoconazole, Nefazodone, Posaconazole, or Voriconazole with...			
This Total Daily Dose...		...is equivalent to this Daily Dose	
Simvastatin	20mg/day or below	▶ Pravastatin	40mg, take ONE tablet orally daily
Simvastatin	40mg/day	▶ Atorvastatin	40mg, take HALF tablet (20mg) orally daily
Simvastatin	60-80mg/day	▶ Rosuvastatin	20mg, take HALF tablet (10mg) orally daily
Vytorin	5/40, 10/40, or 10/80mg daily with GFR ≥ 30	▶ Rosuvastatin	40mg, take HALF tablet (20mg) orally daily
Vytorin	5/40, 10/40, or 10/80mg daily with GFR < 30	▶ Rosuvastatin	20mg, take HALF tablet (10mg) orally daily

HIV Protease Inhibitors with...			
This Total Daily Dose...		...is equivalent to this Daily Dose	
Simvastatin	20mg/day	▶ Pravastatin	40mg, take ONE tablet orally daily
Simvastatin	40mg/day	▶ Atorvastatin	40mg, take HALF tablet (20mg) orally daily
Simvastatin	60-80mg/day	▶ Rosuvastatin	20mg, take HALF tablet (10mg) orally daily
Vytorin	5/40, 10/40, or 10/80mg daily	▶ Rosuvastatin	20mg, take HALF tablet (10mg) orally daily

Gemfibrozil with...			
Simvastatin	Any dose	▶ Fenofibrate	Stop Gemfibrozil, substitute Fenofibrate if history of pancreatitis or very high triglycerides (>500-1000). Use of fibrate to decrease CVD in pts on statin is not evidence-based at this time. If fibrate is used, Fenofibrate may be a reasonable choice.

Clarithromycin, Telithromycin, or Erythromycin with...			
Simvastatin	Any dose	▶ Azithromycin	For short-term course, statin should be interrupted. Consider Azithromycin as alternative when long-term therapy is indicated.

Note: When a DDI is present, clinicians may resolve the interaction by changing to an alternative statin, changing the other agent, discontinuing the other agent if no longer clinically necessary, or temporarily suspending Simvastatin if the other agent is prescribed only for a short course (days or weeks).