Management of Modifiable Risk Factors in Adults at High Risk for Cardiovascular Events

Summary of the Alberta Clinical Practice Guideline, March 2002

2005 Update

Identify patients at high risk

- Adult patients with atherosclerotic vascular disease:
  - Clinical or angiographic evidence of coronary artery disease; peripheral arterial disease; cerebrovascular disease
- All patients with diabetes >30 years of age
- Patients with an estimated 10 year risk of coronary artery disease ≥ 20% (see below)
- All patients with chronic kidney disease (GFR <60 mL/min)
- All patients undergoing long term hemodialysis

Risk factor Age group, yr	Risk points: Men	Risk points: Women
20-34	-9	-7
35-39	-4	-3
40-44	0	0
45-49	3	3
50-54	6	6
55-59	8	8
60-64	10	10
65-69	11	12
70-74	12	14
75-79	13	16

Total cholesterol level, mmol/L	Men: Age Group, Yr					Women: Age Group, Yr				
	20-39	40-49	50-59	60-69	70-79	20-39	40-49	50-59	60-69	70-79
<4.14	0	0	0	0	0	0	0	0	0	0
4.14-5.19	4	3	2	1	0	4	3	2	1	1
5.20-6.19	7	5	3	1	0	8	6	4	2	1
6.20-7.20	9	6	4	2	1	11	8	5	3	2
≥7.21	11	8	5	3	1	13	10	7	4	2
Smoker (Yes)	8	5	3	1	1	9	7	4	2	1

HDL-C level, mmol/L	Men	Women
≥1.55	-1	-1
1.30-1.54	0	0
1.04-1.29	1	1
<1.04	2	2

Systolic BP mmHg	Men: Untreated	Men: Treated	Women: Untreated	Women: Treated
<120	0	0	0	0
120-129	0	1	1	3
130-139	1	2	2	4
140-159	1	2	3	5
≥160	2	3	4	6

Risk Category	Men: Total Risk Points	Men: 10 yr Risk %	Women: Total Risk Points	Women: 10 yr Risk %
Low Risk	< 0	< 1	< 9	< 1
	0-4	1	9-12	1
	5-6	2	13-14	2
	7	3	15	3
	8	4	16	4
	9	5	17	5
	10	6	18	6
	11	8	19	8
	12	10		
Moderate Risk			20	11
	13	12	21	14
	14	16	22	17
High Risk	15	20	23	22
	16	25	24	27
	≥17	≥30	≥25	≥30

Identify and Manage Modifiable Risk Factors

- Smoking: Target complete cessation
- Excess weight: Target healthy body weight (prescribe low fat, heart healthy diet. Refer to dietician)
- Sedentary lifestyle: Target at least 30 minutes physical activity per day
- Hypertension: Target systolic <140 and diastolic <90mmHg (in diabetics without nepropathy, systolic <130 and diastolic,< 80 mmHg). In addition to diet plus exercise, diuretics, beta blockers, ACE inhibitors or calcium channel blockers are often necessary
- Dyslipidemias: Targets and thresholds for treatment depend upon risk level
  - Initiate drug therapy concomitant with lifestyle modification immediately in high risk patients. Drug therapy may be initiated in moderate and low risk patients after a 3 or 6 month trial respectively of lifestyle changes.
  - Consider: ASA (80-325 mg daily or every other day) if estimated risk of coronary artery disease is >10%. ACE inhibitors such as ramipril (10mg daily),enalapril (10mg BID), lisinopril (20mg daily), or quinapril (40mg daily) in moderate to high risk patients.

Target Lipid Levels

Risk Level	Definition	Target LDL-C (mmol/L)	Target TC/HDL
HIGH	Established CVD, diabetes, or CKD, or 10y risk ≥ 20%	<2.5	<4
MODERATE	10y risk of 11 to 19%	<3.5	<5
LOW	10y risk of ≤ 10%	<4.5	<6

Dosing of Lipid-Lowering Agents

Drug	Initial Dose	Maintenance Dose	Max Dose
Resins			
Cholestyramine	4 g qd-bid	4-8 g qd-bid	24 g/d
Colestipol			
granules	5 g qd-bid	5-15g qd-bid	30g/d
tablets	2g qd-bid	2-8g qd-bid	16g/d
Fibrates			
Gemfibrozil	300mg bid	600mg bid	1500mg/d
Bezafibrate	400mg qd	400mg qd	400mg/d
Fenofibrate			
regular	100 mg tid		400 mg/d
micronized	200 mg/d	200 mg/d	200 mg/d
macrocoated	160 mg/d	160 mg/d	160 mg/d
Niacin	125mg bid	500 mg tid-qd	2 g tid
NTR	500 mg qd	1500 tid-qd	2000 mg tid
Statins			
Atorvastatin	10mg	10-60mg qd	80mg qd
Fluvastatin	20mg	20-60mg qd-bid	40mg bid
Lovastatin	20mg	20-60mg qd	40mg bid
Pravastatin	10-20mg	20-40mg qd	60mg qd
Simvastatin	5-40mg	10-40mg qd	40mg qd
Rosuvastatin	10mg	10-40 mg qd	40 mg qd
Ezetimibe	10 mg qd	10 mg qd	10 mg qd

Potential Drug Interactions and Laboratory Monitoring

Drug	Potential Interactions	Required Lab Monitoring
Resins	↓ absorption of digoxin, warfarin, thyroid, oral hypoglycemics, statins, folic acid, gemfibrozil, thiazides, tetracycline, vitamins A,D,K	None
Fibrates	Displacement of warfarin or oral hypoglycemics. ↑ risk of myopathies with statins, niacin, or cyclosporin	LFTs at baseline, 6 mths, and 6 mths to 1 yr thereafter. CK at first sign of muscle pain (d/c drug if CKs 10x upper limit of normal)
Niacin	↓ effects of insulin or oral hypoglycemics. ↑ risk of myopathies with statins or fibrates	LFTs at baseline, every 6 to 12 weeks for 1st yr, every 6 mths thereafter. Uric acid & glucose at baseline & as necessary thereafter
Statins	↑ risk of myopathies with with niacin, erythromycin, clarithromycin, gemfibrozil, ketoconazole,itraconazole, or cyclosporine. ↑ digoxin with atorvastatin or fluvastatin ↑ warfarin levels with fluvastatin	LFTs at baseline, 6 mths, and 6 mths to 1 yr thereafter. Uric acid and glucose at baseline & as necessary there-after
Ezetimibe	↓ ezetimibe in combination with cholestyramine. Ezetimbe ↑ by concomitant cyclosporin and fibrate administration	None

Management: Drugs of Choice Based on Lipid Profile

Lipid Profile	1st Choice	2nd Choice
↑↑ LDL	Statin	Resin or ezetimibe
↑↑ LDL, ↑ TG	Statin	Fibrate or niacin
↑ LDL, ↓HDL	Fibrate or statin	Combination therapy
↑ LDL, ↑↑ TG	Fibrate or niacin	Combination therapy
↓ HDL, ↑ TG	Fibrate or niacin	Combination therapy

Comments on Lipid Lowering Agents

Drug	Side effects	Comments
Resins	GI upset Esophageal spasms or respiratory distress (if ingested in dry form)	Space administration of other agents 1 hr before or 2 hrs after resin. Increase fluid and fiber intake to help relieve side-effects.
Fibrates	GI upset, hepatoxicity, rash, pruritis, headaches, insomnia, myopathies	Take with food (except gemfibrozil which should be taken 30 min. prior to meals)
Niacin	Headache, flushing, pruritis, GI upset, hyperuricemia, and gout, hyperglycemia, hepatoxicity	Tolerance often develops to flushing. 325mg ASA 30 mins prior to niacin may help alleviate flushing. Avoid hot beverages. Take with food. No clinical endpoint data available at present
Statins	GI upset, myopathies, hepatoxicity	Taking with food helps to alleviate side-effects (lovastatin should always be taken with evening meals)
Ezetimibe	Similar to placebo	May be used as monotherapy or in combination with low dose statin. No clinical endpoint data available at present

Monitor and Follow-up

- Regular follow-up visits are necessary to:
  - Titrate/change of medications to ensure patients reach their targets for cholesterol and blood pressure
  - Reinforce adherence to lifestyle modifications (smoking cessation, diet and exercise) and medications
  - Recheck lipid panel and blood pressure at 6 to 12 weeks if not at target values, after medication changes, and yearly once targets achieved.

For complete guideline refer to the Alberta Medical Association Website: www.topalbertadoctors.org

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