

Stroke Prevention

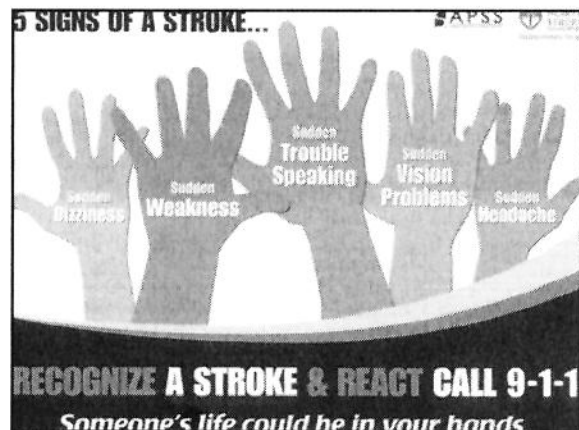
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Vascular Risk Reduction Program

Canadian Stroke Network

- 50,000 Canadians have a stroke per year =
1 every 10 mins
- 50% could be eliminated by controlling risk factors
- HTN single most important risk factor

Health Promotion/Disease Prevention

- Creating Awareness
- Providing Education
- Encouraging Responsibility



The Focus of Stroke Prevention

- Keeping Risk Factors in Target
- Smoke Free Environment
- Stress Management
- Weight Management
- Daily ASA 81 mg (or other antiplatelet/anticoagulation)

Unchangeable Risk Factors

- Age - can't stop the hands of time
- Gender - Males > 55, Females after menopause
- Family History - 1st degree relatives < age 65
- Ethnicity - First Nations, Africans, South Asian
- Previous TIA or Stroke

Controllable Risk Factors

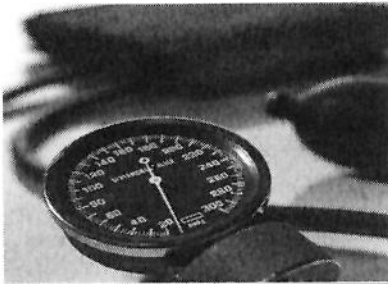
- 1) Hypertension
- 2) Dyslipidemia
- 3) Diabetes
- 4) Obesity
- 5) Smoking
- 6) Stress
- 7) Heart Disease - Atrial Fibrillation, Severe Cardiomyopathy, Heart Valve Replacement, IV drug use - endocarditis
- 8) Cocaine, excess Alcohol consumption

Risk Factors for Women

Estrogen

- Replacement during menopause
- Birth Control Pills
- Pregnancy - increased clotting, Pre-eclampsia, gestational diabetes, amniotic fluid emboli, 6 weeks post partum

1) Blood Pressure



Blood Pressure Target Values

(2008 Canadian Hypertension Guidelines)

Isolated Systolic Hypertension	< 140
Systolic/Diastolic Hypertension	
Systolic	< 140
Diastolic	< 90
Diabetes	
Systolic	< 130
Diastolic	< 80
Chronic Kidney Disease	
Systolic	< 130
Diastolic	< 80

Lifestyle Recommendations

- Smoke Free
- Weight Control – BMI 18.5 – 24.9
- Waist Circumference

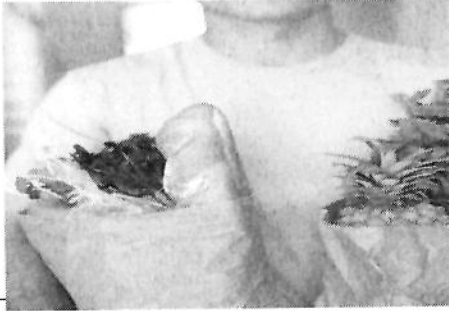
	<u>Men</u>	<u>Women</u>
Europid	< 94 cm	< 80 cm
South Asian/Chinese	< 90 cm	< 80 cm
Japanese	< 85 cm	< 90 cm

Video on waist measurement at:
www.heartandstroke.ca

Impact of Lifestyle Therapies

<u>Intervention</u>	<u>Amount</u>	<u>SBP/DBP</u>
Reduce foods with added sodium	1.8g or 78 mmol/d	-5.0 / -2.7
Weight loss	per kg lost	-1.1 / -0.9
Alcohol intake	- 3.6 drinks/day	-3.9 / -2.4
Aerobic exercise	120-150 min/week	-4.9 / -3.7
Dietary patterns	DASH diet	
	Hypertensive	-11.4 / -5.5
	Normotensive	-3.6 / -1.8

Diet



DASH Diet

Dietary Approaches to Stop Hypertension

- Reduced BP without sodium restriction or weight loss
- Rich in vegetables, fruit, low fat dairy, reduced saturated fats
- Reduced systolic BP 11.4 mmHg and diastolic 5.5 mmHg

Sodium



- The average Canadian diet contains 3500 mg of sodium per day
- One teaspoon of salt contains 2300 mg of sodium

Institute of Medicine – reduce sodium by 1840 mg/day would reduce BP 5.1/2.7

*decrease of 5 mm HG systolic prevent 1/7 strokes and 1/11 coronary events

Sodium Recommendations

<u>Age</u>	<u>Sodium per day</u>
4 - 8 yrs	1200 mg
9 - 50 yrs	1500 mg
50 - 70 yrs	1300 mg
> 70 yrs	1200 mg

■ Sources of sodium:

- 11% occurs naturally
- 12% added at table/cooking
- 77% Restaurant/Processed Foods

Websites with good info:

www.sodium101.ca
www.hypertension.ca

Label Reading

■ Mg per serving

0 – 200 mg: Go Ahead

200 – 400 mg: Caution

> 400 mg: Too Much



**www.sodium101.ca



Alcohol Recommendations For Hypertension

0-2 standard drinks/day

Men: maximum of 14 standard drinks/week

Women: maximum of 9 standard drinks/week

* A standard drink is about 43 mL or 1.5 oz of spirits (40% alcohol), 341 mL or 12 oz of beer (5% alcohol) or 142 mL or 5 oz of wine (12% alcohol).

Exercise

Frequency 4 – 7 per week

Intensity Moderate

Time 30-60 mins

Type Dynamic – walking, jogging, cycling, and swimming

Individualize Medication Therapy

Initial Therapy

- CVA/TIA : ACE-I and diuretic
- DM: ACE-I/ARB
- Angina: Beta-blockers and ACE-I
- CHF: ACE-I/ARB, Beta-blockers and spironolactone
- Isolated Systolic HTN: Thiazide diuretics, ARB's, long acting diphhydropyridine CCB's

2) Cholesterol

- The liver produces 80% of the cholesterol in our body
- 20% comes from the food we eat
- Functions: keep cell membranes intact, aids digestion, boost mental performance, building muscles and bones, regulates blood sugars, plays a part in libido and fertility

- LDL - lousy cholesterol, a cause of atherosclerosis
- HDL - healthy cholesterol, carries excess cholesterol to the liver to be eliminated.
- Triglycerides - liver changes excess calories into trigs.

Causes of Dyslipidemia

- **Being over weight:** ↑ triglycerides, ↓ HDL, ↑ LDL
- **Lack of Physical activity:** may ↑ LDL, ↓ HDL
- **Age and chol levels:** Males levels off after age 50, Women increases with menopause

- **Liver Disease** - biliary cirrhosis-
↑chol.
- **Nephrotic Syndrome** - ↑ LDL
- **Chronic Kidney Disease** - ↑ trigs
- **Hypothyroidism** - ↑ LDL and trigs
- **Cigarette Smoking** - ↑ LDL, ↓ HDL

Global Risk Assessment

- all men > 40 yrs
- all women > 50yrs or who are post menopausal
- waist circumference Male > 102 cm, Female > 88 cm
- current smokers (within last year)
- those with exertional chest discomfort & dyspnea
- those with diabetes, hypertension, erectile dysfunction, chronic kidney disease, claudication.
- family history of premature CAD

Framingham Risk Assessment

- Originated from the Framingham Heart Study started in 1948.
- Recruited in the town of Framingham, Massachusetts. (original, offspring, third generation)
- This study has lead to the identification of several major CVD risk factors.

Framingham Score Sheet

- One for men and one for females
- Scores the following risk factors:
 - age
 - Total cholesterol
 - HDL
 - current smoker (within past month)
 - systolic blood pressure

10 year Risk of CVD disease

- Low Risk < 10%
 - Moderate Risk 10 – 19%
 - High Risk > 20%
- Anyone with CAD, CVA, PAD or DM is automatically high risk.

Risk Category Lab Targets

Low Risk: TC/HDL Ratio < 6.0 mmol/L
LDL < 5.0 mmol/L

Moderate Risk: TC/HDL Ratio < 5.0 mmol/L
LDL < 3.5 mmol/L

High Risk: 1st LDL < 2.0 mmol/L
2nd TC/HDL Ratio < 4.0 mmol/L

Lifestyle Interventions

- Diet
- Exercise
- Smoking Cessation
- Excess alcohol
- Glycemic Control

Diet

- Increase HDL with monounsaturated fats, exercise, smoking cessation, weight loss
- Decrease Triglycerides with reduced sweets and starches, blood sugar control
- Decrease LDL by limiting saturated fat, hydrogenated/partially hydrogenated fats and tropical oils, increase soluble fibre

Exercise

Frequency 4 – 7 per week
Intensity Moderate
Time 30-60 mins
Type Dynamic – walking, jogging, cycling, and swimming

Alcohol

- Studies have linked moderate alcohol with increased HDL levels
- Moderate intake = 1-2 drink per day for men, 1 per day for women
- Red wines and dark beers have additional antioxidants

- Controversial: alcohol is the most abused substance
- Try green tea or grape juice

Triglyceride Glycemic Control

❖ Target blood sugars

AC: 4.0 – 7.0 mmol/L
2 hr PC: 5.0 – 8.0 mmol/L

❖ Hbg A1C: ≤ 7.0 mmol/L

Drugs

- **Statin:** (lovastatin, pravastatin, simvastatin, fluvastatin, atorvastatin, rosuvastatin) reduces the amount of chol. produced by the liver, most effect on lowering LDL.
- **Fibrates:** (gemfibrozil, fenofibrate, bezafibrate) blocks the livers production of triglycerides and cholesterol. They help ↓ trigs and ↑ HDL

- **Niacin** (vitamin B3): (Niaspan) ↑ HDL, ↓ LDL (minimially), and ↓ triglycerides.

- **Cholesterol Absorption Inhibitors:** Ezetrol (ezetimibe) decreases the colon's reabsorption of cholesterol.

- **Bile Acid Sequestrants:**

(cholestamine, colestipol)

Bile acids are the breakdown prod. of chol., they are reabsorbed in the intestine and used to remanufacture chol. in the liver.

This process is blocked.

3) Glycemic Control

❖ Fasting Blood Sugar < 6.1
(5.6-6.9 should have a 75 gm GTT)

❖ Diabetes: Target blood sugars

AC: 4.0 – 7.0 mmol/L

2 hr PC: 5.0 – 8.0 mmol/L

❖ Hbg A1C: ≤ 7.0 mmol/L

4) Obesity



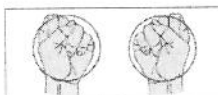
Visceral Fat - Waist Circumference

Food - Drug of Choice

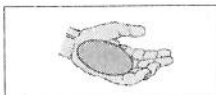
Proper Portion Sizes

Increase Exercise

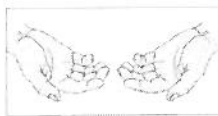
Zimbabwe Hand Jive



1) Wash hands with soap and water for at least 20 seconds.



2) Wash hands with soap and water for at least 20 seconds.



3) Wash hands with soap and water for at least 20 seconds.



4) Wash hands with soap and water for at least 20 seconds.

5) Dry hands with a clean towel or paper towel.

5) Smoking Cessation



- Largest preventable cause of artery disease

- Smokers Help Line
1-866-332-2322

6) Stress



Stress

↑ LDL, ↓ HDL
↑ Blood Pressure
↑ Blood Sugars
↑ Clotting Enzymes

Ensure INR's in Target

- Any conditions that require anticoagulation:
 - Ensure INR's are in target- many strokes occur due to sub therapeutic INR's
 - INR should be monitored at least monthly, more frequently when put on anitbiotics

Questions?

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Framingham Risk Assessment

Adapted from Canadian Journal of Cardiology, Vol 22, No 11, Sept 2006

Women

Estimation of 10-year risk of nonfatal myocardial infarction or coronary death (Framingham Heart Study) in women

Age in years	Points
20-34	-7
35-39	-3
40-44	0
45-49	3
50-54	6
55-59	8
60-64	10
65-69	12
70-74	14
75-79	16

Cholesterol level (mmol/L)	Age in years (points)				
	20-39	40-49	50-59	60-69	70-79
≤4.14	0	0	0	0	0
4.15-5.19	4	3	2	1	1
5.2-6.19	8	6	4	2	1
6.2-7.2	11	8	5	3	2
>7.21	13	10	7	4	2

Smoking status	Age in years (points)				
	20-39	40-49	50-59	60-69	70-79
Nonsmoker	0	0	0	0	0
Smoker	9	7	4	2	1

High-density lipoprotein cholesterol level (mmol/L)	Points
≥1.55	-1
1.30-1.54	0
1.04-1.29	1
<1.04	2

Systolic blood pressure (mmHg)	Points	
	Untreated (points)	Treated (points)
<120	0	0
120-129	1	3
130-139	2	4
140-159	3	5
≥160	4	6

Points total	10-year risk (%)
<9	1
9	1
10	1
11	1
12	1
13	2
14	2
15	3
16	4
17	5
18	6
19	8
20	11
21	14
22	17
23	22
24	27
≥25	>30

Men

Estimation of 10-year risk of nonfatal myocardial infarction or coronary death (Framingham Heart Study) in men

Age in years	Points
20-34	-9
35-39	-4
40-44	0
45-49	3
50-54	6
55-59	8
60-64	10
65-69	11
70-74	12
75-79	13

Cholesterol level (mmol/L)	Age in years (points)				
	20-39	40-49	50-59	60-69	70-79
≤4.14	0	0	0	0	0
4.15-5.19	4	3	2	1	0
5.2-6.19	7	5	3	1	0
6.2-7.2	9	6	4	2	1
>7.21	11	8	5	3	1

Smoking status	Age in years (points)				
	20-39	40-49	50-59	60-69	70-79
Nonsmoker	0	0	0	0	0
Smoker	8	5	3	1	1

High-density lipoprotein cholesterol level (mmol/L)	Points
≥1.55	-1
1.30-1.54	0
1.04-1.29	1
<1.04	2

Systolic blood pressure (mmHg)	Points	
	Untreated (points)	Treated (points)
<120	0	0
120-129	0	1
130-139	1	2
140-159	1	2
≥160	2	3

Points total	10-year risk (%)
0	1
1	1
2	1
3	1
4	1
5	2
6	2
7	3
8	4
9	5
10	6
11	8
12	10
13	12
14	16
15	20
16	25
17	>30