THE CHRONIC DISEASE PREVENTION AND MANAGEMENT TACKLE BOX

DIABETES MANAGEMENT

CHRONIC DISEASE NETWORK AND ACCESS PROGRAM (CD NAP)

PREVENTION
RISK ASSESSMENT
NUTRITION MANAGEMENT
ALGORITHMS OF CARE
MEDICATION MANAGEMENT
FNIH DRUG COVERAGE

If you have any of these risk factors please talk with your health care provider.

Risk Factors	Diabetes	High Blood Pressure	Heart Disease (CVD)	High Cholesterol	Lung Disease (COPD)
Age: Male: more than 45 Female: more than 50	✓	✓	✓	✓	✓
Aboriginal (high risk population)	✓				
Mother, father, brother, sister with diabetes or heart problems	✓	✓	✓	✓	
Diabetes in pregnancy	✓	✓	✓		
Had a baby weighing more than 9 lbs.	✓				
Schizophrenia (mental illness)	✓	✓	✓	✓	
Polycystic Ovary Disease	✓				
Acanthosis Nigricans (darkening of skin on neck or in skin folds)	✓				
*Smoking		✓	✓	✓	✓
*Exposed to second-hand smoke		✓	✓	✓	✓
*Low level of exercise	✓	✓	✓	✓	✓
*Overweight	✓	✓	✓	✓	
*Waist size: Male: more than 102 cm or 40 inches Female: more than 88 cm or 35 inches	✓	✓	✓	✓	✓
*Bottle fed baby instead of breast fed	✓				
*Alcohol use	✓	✓	✓	✓	
*Drug use	✓	✓	✓	✓	
*Diet high in junk food, frozen boxed meals, fast food and sugar drinks	✓	✓	✓	✓	
*Diet low in vegetables, fruit, whole grains, low fat dairy and lean meats	✓	✓	✓	✓	
*Stress	✓	✓	✓	✓	

*** The risk factors in red are the ones you can control by making lifestyle changes.**

WHAT IS YOUR RISK OF DEVELOPING A CHRONIC DISEASE?

Age - there is a greater risk of getting any of these chronic diseases for men older than 45 years of age and women older than 50 years of age. If you have a family member with diabetes, you should ask for diabetes screening at age 40.

Aboriginal people - are 3 times more likely to get diabetes.

High blood pressure - is linked to getting diabetes. An increase of 10 pounds in body weight or more will increase your blood pressure.

Heart risks - such as damage to large and small blood vessels, high cholesterol and heart disease are found 2 - 3 times higher in people with diabetes. People with diabetes have a greater than 75% chance of dying from heart problems or strokes.

Diabetes in pregnancy - 6 out of 10 women will go on to develop diabetes later in life.

Bottle-fed babies - are at a higher risk of getting diabetes compared to breast-fed babies.

Lifestyle behaviors - are the areas you can change to improve your health and lower the risk of getting chronic diseases.

Below are the areas you can control:

Stress - having stress in your life puts you at a higher risk of getting a chronic disease. It is important to keep your Spiritual, Mental, Physical and Emotional well-being in balance.

Smoking - Smoking harms nearly every organ of the body and worsens your overall health. Smoking causes cancer, heart disease, high blood pressure, stroke and lung disease. If you are a smoker and have a chronic cough, it is not a "smoker's cough" it is lung disease. Exposure to second-hand smoke increases your risk of lung disease.

Weight - being overweight and carrying the weight around the waist puts you at higher risk of getting diabetes and high blood pressure. Weight loss or keeping a healthy body weight will delay the onset of diabetes and lowers your blood pressure. For every 2 pounds overweight it raises your risk for diabetes by 4.5%.

Alcohol - Drinking alcohol can hurt your body organs and it can cause heart, brain and liver problems. Alcohol use can lead to injuries, car accidents, violence, and can destroy the family bond. Men should have no more than 2 drinks a day, and women should have no more than 1 drink a day. You cannot drink your weekly limit all in one day.

Drugs - misuse of prescription or non-prescription drugs and use of illegal drugs can increase your risk of getting a chronic disease.

Diet - eating healthy foods can help prevent chronic diseases. eating form all 4 food groups and having smaller portions can help to lower your weight. Try to pick vegetables, fruit, whole grains, low fat dairy products and lean meats. Limit junk food, frozen boxed meals, fast foods and sugary drinks.

Exercise - will lower your risk or delay onset of diabetes. Exercise helps to lower your weight and improve your heart function. People with low level of exercise are at a higher risk of having high blood pressure.

2009. These materials were developed by the Clinical Subcommittee of the Chronic Disease Network and Access Program of the Prince Albert Grand Council and its partners and funded by Aboriginal Health Transition Fund.
Material reference: 2008 Clinical Practice Guidelines for the Prevention and Management of Diabetes in Canada. Epocrates Online July 2009

Talk to your healthcare provider about LOWERING your risk of getting chronic diseases.

Help Reduce your Risks... Make Healthy Lifestyle Choices

Get 150 minutes (2 1/2 hours) of exercise a week

Eat a well balanced diet high in vegetables, fruit, whole grains, low fat dairy and lean meats.

2009. These materials were developed by the Clinical Subcommittee of the Chronic Disease Network and Access Program of the Prince Albert Grand Council and its partners and funded by Aboriginal Health Transition Fund.

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Risk Factors Checklist

For Chronic Diseases

Name: _____

Date: _____

Lifestyle Behaviors

*** These are the areas you can change to improve your health and lower your risk of getting chronic diseases.**

- ❑ Age: Male over 45
- ❑ Age: Female over 50
- ❑ Aboriginal (high risk population)
- ❑ Diabetes or health problems in mother, father, brother, or sister
- ❑ Diabetes in pregnancy
- ❑ You gave birth to a baby with a weight more than 9 pounds
- ❑ *Bottle fed baby instead of breast fed
- ❑ Schizophrenia (mental illness)
- ❑ Polycystic Ovary Disease
- ❑ Acanthosis Nigricans (darkening of skin on neck or in skin folds)

- ❑ *Stress
- ❑ *Smoking
- ❑ *Exposure to second-hand smoke
- ❑ *Over weight

*Waist size
(largest part of belly)
- ❑ Male
  - more than 102 cm or 40 in.
- ❑ Female
  - more than 88 cm or 35 in.

*Alcohol use
- ❑ Men
  - more than 2 drinks a day
- ❑ Women
  - more than 1 drink a day

*Drug use
- ❑ Any use of illegal drugs
- ❑ Misuse of non prescription drugs (over the counter medications)
- ❑ Misuse of prescription drugs

- ❑ *Diet high in junk food, frozen boxed meals, fast food and sugar drinks.
- ❑ *Diet low in vegetables, fruit, whole grains, low fat dairy and lean meats.
- ❑ *Low level of exercise

If you have checked off any areas above, you are at risk for disease(s).

Show this list to your health care provider.

Please talk to your healthcare provider to LOWER your risk of getting chronic diseases.

KEEP FIT

Being active plays a large role in being healthy and keeping a normal weight. Being active helps to prevent heart disease, weight gain (obesity) and lowers the risk of colon cancer and Type 2 Diabetes. Being active also builds stronger bones and muscles and lowers your risk for fractures. Being active reduces constipation, feelings of depression and anxiety and improves your health for later years. You should be active for 150 minutes (2 1/2 hours) a week. You do not have to do it all at once, but break it up into 10 or 20 minute workouts over the week. Try to have 3 workouts of 30 minutes per week of activities that raise your heart rate and breathing. Also, remember to include 2 workouts of 30 minutes of muscle building activities (involve legs, hips, back, chest, stomach, shoulders and arms). Always check with your health care provider before starting an activity program.

Just a few SIMPLE CHANGES will make a healthier YOU!

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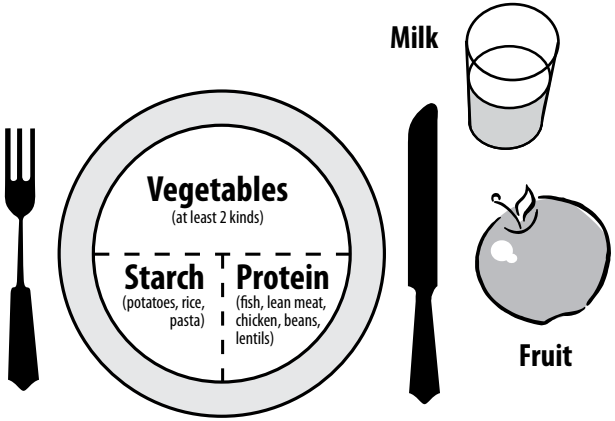
What Can You Do To IMPROVE Your Health?

Here are a few SIMPLE CHANGES that will help

DIET

Eating healthy can help prevent chronic disease. This means picking foods from all 4 food groups from Canada's Food Guide. Try to pick vegetables, fruit, low fat milk, cheese, yogurt and lean meats, beans and fish. Eating healthy foods and having smaller amounts can help to stop weight gain. Look at the picture below to help you plan a meal. If you need help picking foods ask if a dietitian comes to your clinic.



SMOKING

Smoking harms nearly every organ in your body and lowers your overall health. Smoking causes cancer, heart disease, stroke and lung disease(s). Smoking during pregnancy can lead to early birth and can cause your baby to have a low birth weight. Smoking in pregnancy puts your baby at risk of SIDS (Sudden Infant Death Syndrome). When you stop smoking, your blood pressure and heart rate will begin to return to normal within a few hours. Other known health advantages are better blood flow, less coughing and mucous, and you can lower your cancer risk by up to 50%. Talk to your health care providers to help you stop smoking.

ALCOHOL

Drinking alcohol can hurt many body organs and it plays a large role in causing heart, brain and liver problems. Alcohol use can lead to injuries, car accidents, violence, and can destroy the family bond. Men should have no more than 2 drinks a day and women should have no more than 1 drink a day. You cannot drink your weekly limit all in one day. If you think you have a drinking problem please talk to your health care provider(s).

DIABETES (+/- coronary artery disease)
COLLABORATIVE FLOW SHEET/ ENCOUNTER FORM

Saskatchewan Chronic Disease Management Collaborative — HEALTH QUALITY COUNCIL

PAST HISTORY

☐ ALCOHOL OVERUSE ☐ ARRHYTHMIA: ATRIAL FIB ☐ ARRHYTHMIA: OTHER
☐ ARTHRITIS ☐ CANCER ☐ CARDIOMYOPATHY
☐ CHF ☐ CHRONIC LUNG DIS. ☐ DEPRESSION
☐ HYPERTENSION ☐ LIPID ABNORMALITY ☐ LIVER DYSFUNCTION
☐ OBESITY ☐ PERIPH. VASC. DIS. ☐ RENAL DYSFUNCTION
☐ STROKE/TIA ☐ SUBSTANCE ABUSE ☐ VALVULAR HD

♦ **DIABETES** YEAR OF DX: ☐ TYPE 1 ☐ TYPE 2 ☐ OTHER

♦ **CAD** ___CHRONIC ANGINA, YEAR OF DX: ___MI, YEAR OF DX: ___CABG, DATE:
___ ___ACS/UNSTABLE ANGINA , YEAR OF DX: ___PCI/Stent. DATE:

♦ PATIENT NAME

♦ HSN # (OR OTHER UNIQUE PATIENT ID) | ♦ GENDER ☐ Male ☐ Female ☐ Undifferentiated

♦ PHONE (INCLUDE AREA CODE) | ♦ BIRTHDATE (DD-MMM-YYYY)

CHART NUMBER | PRACTICE NAME

♦ PROVIDER NAME | PROVIDER ID # (MSP #)

FRAMINGHAM RISK SCORE

DIAGNOSTIC/ CLINICAL DATA, BY DATE

REVIEW FIELDS — ♦ = MANDATORY

				MOST RECENT DATA			NEW DATA √ = RECALL DATE OF VISIT:
3 TO 6 MONTHS	CLINICAL STATUS		URGENT CARE for DM &/or CAD ER/hospitalizations since last planned visit				☐ None ☐ (enter # of urgent visits)
		GLYCEMIC CONTROL	REVIEWED BLOOD GLUCOSE RECORDS				☐ REVIEWED
			♦ A1C EVERY 3 MONTHS: TARGET ≤ 7.0%				**ENTER VALUE DATE OF TEST**
			DIABETES MEDICATIONS/INSULIN Review & adjust PRN				☐ REVIEWED ☐ ADJUSTED
		CAD	SYMPTOMS STABLE: angina, palpitations, shortness of breath, swelling, dizziness				☐ N/A ☐ STABLE ☐ NOT STABLE ☐ angina ☐palp. ☐ SOB ☐ swelling ☐ dizzy
	HTN		**♦ BLOOD PRESSURE TARGET ≤130/80**				**ENTER VALUE DATE OF TEST**
	LIFESTYLE		TARGET BODY MASS INDEX (BMI) 18.5 – 24.9 Height: Enter weight (LBS or KG)				☐ LBS ☐ KG
			♦ SMOKING				☐ **Current** ☐ **2nd Hand** ☐ **Past** ☐ **Never**
			AEROBIC EXERCISE > 30 minutes most days, moderate intensity				☐ YES ☐ NO ☐ IA
			OTHER LIFESTYLE FACTORS Stress, diet, alcohol				☐ REVIEWED
	MEDICATIONS		**♦ ANTI-PLATELET (ASA/OTHER)**				☐ **YES** ☐ **NO:** ☐ **CI** ☐ **NT** ☐ **$** ☐ **RF** ☐ **DA** ☐ **IA**
			♦ ACE OR ARB				☐ **YES** ☐ **NO:** ☐ **CI** ☐ **NT** ☐ **$** ☐ **RF** ☐ **DA** ☐ **IA**
			♦ STATIN				☐ **YES** ☐ **NO:** ☐ **CI** ☐ **NT** ☐ **$** ☐ **RF** ☐ **DA** ☐ **IA**
			♦ BETA-BLOCKER (IF CAD)				☐ **YES** ☐ **NO:** ☐ **CI** ☐ **NT** ☐ **$** ☐ **RF** ☐ **DA** ☐ **IA**
			GENERAL REVIEW & ADJUST PRN				☐ REVIEWED ☐ ADJUSTED
Annually OR 3-6 mos (CAD)	DYSLIPIDEMIA	Fasting lipid profile (High-risk targets)	LDL Target < 2.5 mmol/L				**ENTER VALUE DATE OF TEST**
			♦RATIO (TOTAL CHOL/HDL) TARGET RATIO < 4.0 — **TOTAL CHOL**				**ENTER VALUE DATE OF TEST**
			HDL				**ENTER VALUE DATE OF TEST**
			LIPID RISK				☐ MODERATE ☐ HIGH
ANNUALLY AND/OR OTHERWISE NOTED	FBG		METER/LAB COMPARISON (Optimally, this is based on fasting glucose)				☐ COMPLETED
	EYE		DILATED EYE EXAM Ophthalmologist, optometrist, retinal photo				DATE ☐ IA ☐ OPHTHALM ☐ OPTOM ☐ RETIN PHOTO
	RENAL	Screen for Nephro-pathy	**♦ MICROALBUMIN SCREEN (<2.0 M: <2.8 F) (Albumin:creatinine**				**ENTER VALUE** *OR* ☐ **NEG** ☐ **POS** ☐ **IA**
			KIDNEY FUNCTION estimated CrCl mL/min (Cockroft-Gault formula)				SERUM CREATININE μmol/L DATE OF TEST
	NEURO-PATHY		LOWER EXTREMITY EXAM Check for peripheral anesthesia				☐ REVIEWED ☐ IA
			HISTORY AND PHYSICAL: Check for pain, erectile dysfunction, gastrointestinal disturbance				☐ REVIEWED
	OTHER		ASSESS & DISCUSS SELF-MANAGEMENT GOALS				☐ REVIEWED
			ANNUAL INFLUENZA VACCINE				☐ COMPLETED DATE ☐ **CI**
			PNEUMOCOCCAL VACCINE				☐ COMPLETED DATE ☐ **CI**
			♦ REFERRAL TO DIABETES EDUCATION, CARDIAC REHAB, OR OTHER				☐ **YES** ☐ **NO:** ☐ **NP** ☐ **TRP** ☐ **$** ☐ **RF** ☐ **DA** ☐ **IA**

CI – contraindicated NT – not tolerated $ – financial barrier RF – patient refused NP – no program available IA – Inappropriate DA – Didn't Ask TRP– transportation barrier

Adapted from BCMA Collaborative Flowsheet

FOR COMMENTS SEE NEXT PAGE

DIABETES (+/- coronary artery disease)

COLLABORATIVE FLOW SHEET/ ENCOUNTER FORM

♦ PATIENT NAME		
♦ HSN # (OR OTHER UNIQUE PATIENT ID)		♦ GENDER ☐ Male ☐ Female ☐ Undifferentiated
♦ PHONE (INCLUDE AREA CODE)		♦ BIRTHDATE (DD-MMM-YYYY)
CHART NUMBER	PRACTICE NAME	
♦ PROVIDER NAME		PROVIDER ID # (MSP #)

COMMENTS

MULTI-DISCIPLINARY REFERRAL FORM

PAST HISTORY

- ❑ Alcohol Overuse
- ❑ Arthritis
- ❑ Arrhythmia: Atrial Fib
- ❑ Arrhythmia: Other
- ❑ Cancer
- ❑ Cardiomyopathy
- ❑ Depression
- ❑ Hypertension
- ❑ Liver Dysfuntion
- ❑ Lipid Abnormality
- ❑ Lung Disease
- ❑ Mental Health
- ❑ Obesity
- ❑ Periph. Vas. Disease
- ❑ Renal Dysfuntion
- ❑ Tuberculosis (T. B.)
- ❑ Other

Comments on past history: _____

_____

_____

_____

Patient Name

_____

HSN #

_____

DOB

_____

TREATY #

_____

ADDRESS

_____

PHONE # ALT #

TO: _____

_____

_____

_____

Phone: _____ Fax: _____

REFERRED TO:

- ❑ Specialist
- ❑ Family Physician
- ❑ Diabetic Team
- ❑ Respiratory services
- ❑ Dental
- ❑ Children's Kinsmen Centre
- ❑ NP
- ❑ Ophthalmologist
- ❑ Mental Health
- ❑ Alternative Therapies
- ❑ Tuberculosis (T. B.)
- ❑ Dietitian
- ❑ Other

DATE: _____

REASON FOR REFERRAL: _____

_____

_____

_____

_____

_____

_____

PLEASE SEE ATTACHED PAGES FOR:

- ❑ Current Medication List
- ❑ Recent Lab Results
- ❑ ECG
- ❑ Diagnostic Test Results
- ❑ Referral Letters
- ❑ Transportation Requirements
- ❑ Other

FROM: _____

PLEASE SEND RESULTS OF CONSULT INCLUDING TEST RESULTS TO:

COMMUNITY CONTACT INFORMATION

2009. These materials were developed by the Clinical Subcommittee of the Chronic Disease Network and Access Program of the Prince Albert Grand Council and its partners and funded by Aboriginal Health Transition Fund.

PATIENT HEALTH QUESTIONNAIRE (PHQ-9)

NAME:_____ **DATE:**_____

Over the last two weeks, how often have you been bothered by any of the following problems?	Not at all	Several days	More than half the day	Nearly every day
1. Little interest in doing things	0	1	2	3
2. Feeling down, depressed or hopeless	0	1	2	3
STOP *If you checked "more than half the days" or "nearly every day" for at least* ***ONE*** *of the above questions please complete the following questions.*				
3. Trouble falling or staying asleep, or sleeping too much	0	1	2	3
4. Feeling tired or having little energy	0	1	2	3
5. Poor appetite or overeating	0	1	2	3
6. Feeling bad about yourself – or that you are a failure or have let yourself or your family down	0	1	2	3
7. Trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3
8. Moving or speaking so slowly that other people could have noticed. Or the opposite- being so fidgety or restless that you have been moving around a lot more than usual	0	1	2	3
9. Thoughts that you would be better off dead, or hurting yourself in some way.	0	1	2	3
Add columns		+	+	
Total				

10. If you checked off *any* problems how difficult have these problems made it for you to do your work, take care of things at home or get along with people?	
	Not difficult at all _____
	Somewhat difficult _____
	Very Difficult _____
	Extremely difficult _____

PHQ-9 is adapted form PRIME MD TODAY, developed by Drs Robert L. Spitzer, Janet B.W. Williams, Kurt Kroenke, and colleagues, with an educational grant from Pfizer Inc. For research information, contact Dr. Spitzer at ris8@columbia.edu. Use of the PHQ-9 may only be made in accordance with the terms of use available at http://www.pfizer.com. Copyright © 1999 Pfizer Inc. All rights reserved. PRIME MD TODAY is a trademark of Pfizer Inc.

SASKATCHEWAN HEALTH QUALITY COUNCIL

Depression Care Algorithm

Suspect possible depression → 'At-risk' population → Screen using the PHQ-2 → **PHQ-9** (for individuals 19 years of age and older*)

↓

Clinical Interview - DSM-IV - TR

Minimal	**Mild**	**Moderate**	**Moderately Severe**	**Severe**
PHQ-9 score 0-4	PHQ-9 score 5-9	PHQ-9 score 10-14	PHQ-9 score 15-19	PHQ-9 score 20-27
Almost no depressive symptoms	Some depressive symptoms, possibly other mood disorder, no Major Depressive Episode	Major Depressive Episode (mild)	Major Depressive Episode (moderate)	Major Depressive Episode (severe)

Assess Suicide Risk

Develop supported self-management plan and goals with the patient.

Provide patient with appropriate education materials, such as information about lifestyle changes. (Examples: diet, exercise, physical activity, drug and alcohol use.)

Patient to contact practice if symptoms worsen. Consider self-administration of the PHQ-9.	"Watchful waiting" Follow up with patient within 2-4 weeks to re-evaluate symptoms. Possibly try focused psychological intervention.	Discuss patient preference for antidepressants. Psychotherapy or combination of treatment (only if specifically indicated). Assess suicide risk at each visit.	Offer antidepressants to the patient before psychological intervention. Discuss combination of treatment. Assess suicide risk at each visit.	Offer antidepressants to the patient before psychological intervention. Discuss combination of treatment. Consider urgent psychiatric consultation if disability is severe and hospitalization may be required. Assess suicide risk at each visit.

Follow up every 2-6 weeks as appropriate to evaluate treatment response.

IF:

Drop of >5 in PHQ-9 score, then	**Drop of 2-4 points in PHQ-9 score, then**	**Increase or <1 point drop in PHQ-9 score, then**
continue with same treatment.	consider modifying treatment depending on function and patient preference (e.g., give antidepressant, increase dosage of antidepressant, change antidepressant or add counseling.)	modify, switch or augment treatment (e.g., give antidepressant, increase dosage of antidepressant, change antidepressant or add counseling.)

Maintenance Phase

PHQ-9<5, Goal: Prevent return of symptoms during current episode. Recall and continue current treatment as appropriate.

Recovery Phase/Remission

PHQ-9<5, Goal: Prevention of new episodes. Recall as appropriate.

This guideline is designed to assist collaborative primary care treatment teams in enhanced depression management. This guideline is not intended to replace a clinician's judgment or establish a protocol for all patients with a particular condition.

Depression

FLOW SHEET/ ENCOUNTER FORM

CO-MORBID CONDITIONS AND OTHER FACTORS	
☐ *ALCOHOL OVERUSE	☐ *SUBSTANCE ABUSE
☐ ANXIETY	☐ *OTHER PSYCHIATRIC
☐ *BIPOLAR	
☐ PAST SUICIDE ATTEMPT	
☐ PRESENCE OF CHRONIC PHYSICAL CONDITION	*** If these conditions or factors are checked off, treat this patient for these conditions or factors prior to beginning treatment for depression.**

♦ PATIENT NAME		
♦ HEALTH # (OR OTHER UNIQUE PATIENT ID)	♦ GENDER ☐ Undifferentiated ☐ Male ☐ Female	
♦ PHONE (INCLUDE AREA CODE)	♦ BIRTHDATE (DD-MMM-YYYY)	
CHART NUMBER	CITY	POSTAL CODE
♦ PROVIDER NAME	PROVIDER ID #	

DIAGNOSTIC/ CLINICAL DATA, BY DATE REVIEW ♦ = MANDATORY FIELDS		MOST RECENT DATA			NEW DATA √ = RECALL DATE OF VISIT:
RELAPSE	**♦ DEPRESSION URGENT CARE SINCE LAST VISIT (Enter number of visits or admissions)**				**#ER VISITS: _____** **#HOSPITAL ADMISSIONS: _____** **# WALK INS: _____**
	RISK FACTORS FOR RELAPSE (check all that apply)				CHANGES IN: ☐MOOD ☐ENERGY ☐SLEEP ☐WORK ☐ENJOYMENT OF ACTIVITIES ☐INVOLVEMENT IN FAMILY ACTIVITIES ☐SIDE EFECTS FROM MEDICATION
PHQ-9 ©	**♦ RECOVERY PHASE (improving:** PHQ-9 is the same or lower in the last month; **not improving**: PHQ-9 increased by ≥ 2 in last month; **maintenance:** at target score and in ongoing treatment or support; **recovery:** PHQ-9 < 5)				☐ **IMPROVING** ☐ **NOT IMPROVING** ☐ **MAINTENANCE** ☐ **RECOVERY**
	♦ SCORE FROM QUESTION 1-9				**ENTER SCORE Q1-9: _____**
	♦ RESULT FROM QUESTION 10				☐ **NOT DIFFICULT** ☐ **SOMEWHAT DIFFICULT** ☐ **VERY DIFFICULT** ☐ **EXTREMELY DIFFICULT**
	REMISSION				☐ IN REMISSION (PHQ-9 © Q1 < 5)
SUICIDE RISK	ASSESSED (If positive, document management plan and refer to mental health specialist)				☐ POSITIVE SUICIDAL IDEATION ☐ NEGATIVE SUICIDAL IDEATION
	MANAGEMENT PLAN (DOCUMENTED)				☐ DOCUMENTED/REVIEWED
MEDS	ANTIDEPRESSANT MEDICATION				☐ YES ☐ TNS ☐ NO: ☐ CI ☐ PD ☐ OTHER: _____
	ANTIDEPRESSANT MEDICATION REVIEWED				☐ ADJUSTED ☐ REVIEWED DATE :
REFERRALS	MENTAL HEALTH SERVICES REFERRAL				☐ REFERRAL MADE ON WAIT LIST ☐ TREATMENT ONGOING ☐ TREATMENT COMPLETED ☐ NP ☐ PD ☐ OTHER _____
	PSYCHIATRY REFERRAL				☐ REFERRAL MADE ON WAIT LIST ☐ TREATMENT ONGOING ☐ TREATMENT COMPLETED ☐ NP ☐ PD ☐ OTHER _____
	PRIVATE PRACTICE PSYCHOLOGIST/SOCIAL WORKER				☐ REFERRAL MADE ON WAIT LIST ☐ TREATMENT ONGOING ☐ TREATMENT COMPLETED ☐ NP ☐ PD ☐ OTHER _____
	COMMUNITY SERVICE/OTHER PROGRAM REFERRAL				☐ REFERRAL MADE ON WAIT LIST ☐ TREATMENT ONGOING ☐ TREATMENT COMPLETED ☐ NP ☐ PD ☐ OTHER _____
GOALS AND FOLLOW-UP	EDUCATION – COMMUNITY RESOURCES AND SUPPORT (check all that apply)				REVIEWED: ☐WITH PATIENT ☐WITH FAMILY/SUPPORT NETWORK
	SELF-MANAGEMENT GOALS				☐SET/REVIEWED
	♦ NEXT FOLLOW-UP VISIT (enter one)				_____ ☐**DAYS** _____ ☐**WEEKS** _____ ☐**MONTHS** ☐**NO FOLLOW-UP PLANNED**
	IF NO FOLLOW-UP PLANNED, INDICATE REASON				REASON: _____

PD – patient declined **NP – no program available** **CI – contraindicated** **TNS – tried or not suitable**

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Adapted from BCMA Flowsheet – October 28, 2009

Depression
FLOW SHEET/ ENCOUNTER FORM

♦ PATIENT NAME		
♦ HEALTH # (OR OTHER UNIQUE PATIENT ID)	♦ GENDER ☐ Undifferentiated ☐ Male ☐ Female	
♦ PHONE (INCLUDE AREA CODE)	♦ BIRTHDATE (DD-MMM-YYYY)	
CHART NUMBER	CITY	POSTAL CODE
♦ PROVIDER NAME	PROVIDER ID #	

COMMENTS

Date:
Date:
Date:

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Adapted from BCMA Flowsheet – October 28, 2009

DIABETES MANAGEMENT

Manual for Health Professionals

Chronic Disease Network and Access Program 2009

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Available on the Chronic Disease Network and Access Program website at: www.ehealth-north.sk.ca

2009 - These materials were developed by the Clinical Subcommittee of the Chronic Disease Network and Access Program of the Prince Albert Grand Council and its partners and funded by the Aboriginal Health Transition Fund.

It is recommended that prescribers evaluate their patients' individual conditions and circumstances before any diagnosis or treatment is made, or procedure is followed that may be based on suggestions by the authors of this resource. Prescribers should consult product monographs before prescribing any of the medications mentioned or discussed in this resource.

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1.1 Management of Type 1 Diabetes

Diagnosis

- Random PG ≥11.1 mmol/L or FPG ≥7.0mmol/L
- Signs/symptoms: frequent urination, thirst, weight loss despite hunger, fatigue, ketoacidosis
- Usually presents in children, adolescents, or young adults

Glycemic Targets:

- A1C ≤ 7%
- FPG 4.0-7.0 mmol/L
- PPG 5.0-10.0 mmol/L

Diet counselling

- Carbohydrate intake has immediate impact on BG level
- Adjust insulin dose according to carbohydrate intake or consume a fixed amount
- Time meals and snacks to prevent hypoglycemia and optimise glycemic control

Insulin Regimens

- Adapt to patients lifestyle, diet, age, general health, motivation, ability to self-manage.
- Basal-prandial regimens or insulin pump are of choice for adults.
- Educate patient about risks, prevention, and treatment of hypoglycemia.

Prevent/Manage Complications

- Vascular protection and Blood Pressure Control
- Screen for retinopathy
- Screen for nephropathy
- Monitor neuropathy
- Foot care

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2.1 Type 1 Diabetes in Children and Adolescents

- **If diabetes is suspected in a child or adolescent, the diagnosis should be immediately confirmed.**
- **Targets:**

Age (years)	A1C	FPG	2hr PPG
<6[1]	<8.5	6.0-12.0 mmol/L	*
6-12	<8.0	4.0-10.0 mmol/L	*
13-18[2]	≤7.0	4.0-7.0	5.0-10.0

*PPG not usually measured in young children except those on pump therapy.

1. It is important to avoid hypoglycemia. Severe hypoglycemia is associated with cognitive impairment.
2. If safe to do so, attempt to reach A1C ≤6%, FPG 4.0-6.0 mmol/L; PPG 5.0-8.0 mmol/L

Insulin Therapy

- When choosing an insulin regimen, consider: age, duration of diabetes, family lifestyle, motivation and abilities of parents, socioeconomics, and family/patient preferences.
- After diagnosis, there may be a honeymoon period of up to 2 years where glycemic control is good and insulin requirements are low.
- After the honeymoon period, a more intense regimen may be required to meet targets.
- MDI (multiple daily injections) and CSII (continuous subcutaneous insulin infusion) are preferred
- LAIA seem to improve glycemic control with fewer episodes of nocturnal hypoglycemia.

Diet

- Counselling from a registered dietician or diabetes educator about nutritional considerations in diabetes is important to ensure proper growth and development of the child with optimal glycemic control

Hypoglycemia

- Management and prevention of hypoglycemia is a challenge in children.
- In some cases, administration of glucagon (20mcg/year of age up to 150mcg) is useful in managing mild or impending hypoglycemia when the child cannot or will not consume oral carbohydrate.

Ketoacidosis (DKA)

- Results from not taking insulin or improper management of sick days.
- Is the leading cause of morbidity and mortality in children with diabetes.
- Cerebral edema is a possible consequence if DKA is not properly managed.

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2.2

Comorbid Conditions

- Autoimmune Thyroid Disease – screen all children (TSH and thyroperoxidase antibodies) at diagnosis and every 2 years thereafter. If thyroid symptoms, goiter, or +ve thyroid antibodies screen every 6-12 months.
- Addison Disease – screen (Na^+, K^+, AM cortisol) whenever symptoms appear (unexplained recurrent hypoglycemia and ↓insulin requirement.
- Celiac Disease – screen (IgA, tissue transglutaminase) whenever symptomatic (recurrent GI symptoms, poor growth, poor weight gain, fatigue, anemia, poor metabolic control)

Complications

- Nephropathy – screen (ACR) yearly from 12 years of age in those with diabetes >5 years (treat as per adult guidelines if microalbuminurea persists)
- Retinopathy – screen yearly from 15 years of age in those with diabetes > 5years
- Neuropathy – screen adolescents with poor metabolic control (question about symptoms – numbness, pain, cramps, paresthesia; examine for skin sensation, light touch and ankle reflexes)
- Dyslipidemia – screen at 12 and 17 years; earlier if obese or family history of hyperlipidemia or premature CVD (treat as per dyslipidemia in adults with diabetes)
- Hypertension – all children at least twice per year (treat as per recommendations for children without diabetes)

Other considerations in Adolescents

- Eating disorders or non-compliance with insulin to avoid weight gain
- Contraception in adolescent girls
- Smoking (avoidance to prevent microvascular and macrovascular complications)
- Alcohol use (over indulgence impedes glycemic control, increases risk of hypoglycemia)

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3.1 Type 2 Diabetes in Adults

Risk Factors for Diabetes

- age ≥40 years
- family history of diabetes
- member of high-risk population
- vascular disease
- dyslipidemia
- obesity
- PCOS
- history of gestational diabetes or delivery of macosomic infant
- other[1]

Targets for Glycemic Control

- A1C ≤ 7%[2]
- FPG 4.0-7.0 mmol/L
- PPG 5.0-10.0 mmol/L[3]

Lifestyle Interventions

- Achieve and maintain healthy weight
- Healthy diet[4]
- Regular exercise[5]
- Smoking cessation[6]
- Limit alcohol intake[7]

BP test at each diabetes-related visit

- target 130/80
- reinforce lifestlye interventions
- treat with antihypertensives as per guidelines[8]

Lipid profile at diagnosis and every 1-3 years

- Primary target LDL≤ 2.0 mmol/L
- Secondary target TC/HDL ratio <4.0
- reinforce lifestyle interventions
- treat dyslipidemia as per guidelines[9]

Screen for microvascular complications

- neuropathy[10] at diagnosis then annually
- nephropathy[11] at diagnosis then annually
- retinopathy[12] at diagnosis the every 1-2 years

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3.2 Type 2 Diabetes in Adults cont'

1. Other risk factors for Type 2 diabetes include: acanthosis nigricans, history of IGT or IFG, schizophrenia, genetic defects of beta-cell function or insulin action, diseases of the pancreas, endocrine diseases such as acromegaly, drug or chemical induced, and other genetic syndromes such as Down syndrome.

2. A1C should be checked every 3 months until glycemic targets are achieved, then every 6 months thereafter. A target A1C of ≤ 6.5% may be considered for some, although there is an increased risk of hypoglycemia and mortality in patients with cardiovascular disease.

3. PPG 5.0-8.0 mmol/L may be considered if A1C target is not being met.

4. Follow 'Eat Well with Canada's Food Guide' which includes choices of foods from the four food groups that reflect personal and cultural preferences. Ensure regular timing and spacing of meals to help control blood glucose and body weight. Diet counselling is recommended.

5. 150 minutes of aerobic exercise spread over 3 days/week (moderate to vigorous aerobic exercise spread over 3 non-consecutive days with no more than 2 consecutive days without exercise). Also resistance exercise 3 times per week.

6. To minimize risk of a cardiovascular event. Use a combination of counselling and pharmacologic agents as required.

7. Patients using insulin or insulin secretagogues should be aware of hypoglycemia which can occur up to 24 hours after alcohol consumption. Excessive alcohol use limits the choices of pharmacologic agents because of drug interactions/contraindications. Patients should limit their intake to 1-2 drinks per day (≤14/week for men; ≤9/week for women).

8. Give special consideration to ACEI and ARB because of their demonstrated benefit in preventing renal failure and offering cardiovascular protection. See Section 13 for details.

9. See Section 12 for details. Special consideration should be given to statins because of their demonstrated efficacy, however if TG >10mmol/L a fibrate should be used.

10. See Section 17 (Neuropathy) and 18 (Foot Care).

11. Screen using random ACR and SCr. Nephropathy is defined as ACR ≥ 2.0mg/mmoL in men and ≥ 2.8mg/mmoL in women.

12. Ophthalmic exam by professional.

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3.3 Type 2 Diabetes in Adults

Screening for Type 2 Diabetes

- All persons ≥ 40 years old: every 3 years
- Persons with additional risk factors[1]: sooner and more often

FPG < 5.6mmol/L	• normal
FPG 5.6 - 6.0 mmol/L	• screen more often if no risk factors[1,] • consider OGTT[2] if ≥ 1 risk factors[1]
FPG ≥ 6.1 - 6.9 mmol/L	• OGGT to diagnose IGT or IFG[3]
FPG ≥ 7.0 mmol/L	• diabetes[4]

1. Risk factors for Type 2 diabetes include: family history, being a member of a high risk population, vascular disease, presence of diabetes complications, obesity, hypertension, dyslipidemia, history of gestational diabetes, IGT, IFG, and others listed on page 3.1.
2. 2 hour PG after 75g glucose load
3. IFG = OGTT <7.8; IGT = OGTT 7.8-11.0mmol/L. Note that it is possible to have both.
4. Confirm diagnosis on another day with laboratory-tested FPG or OGGT (2hourPG ≥ 11.1mmol/L) unless acute metabolic decompensation is present.

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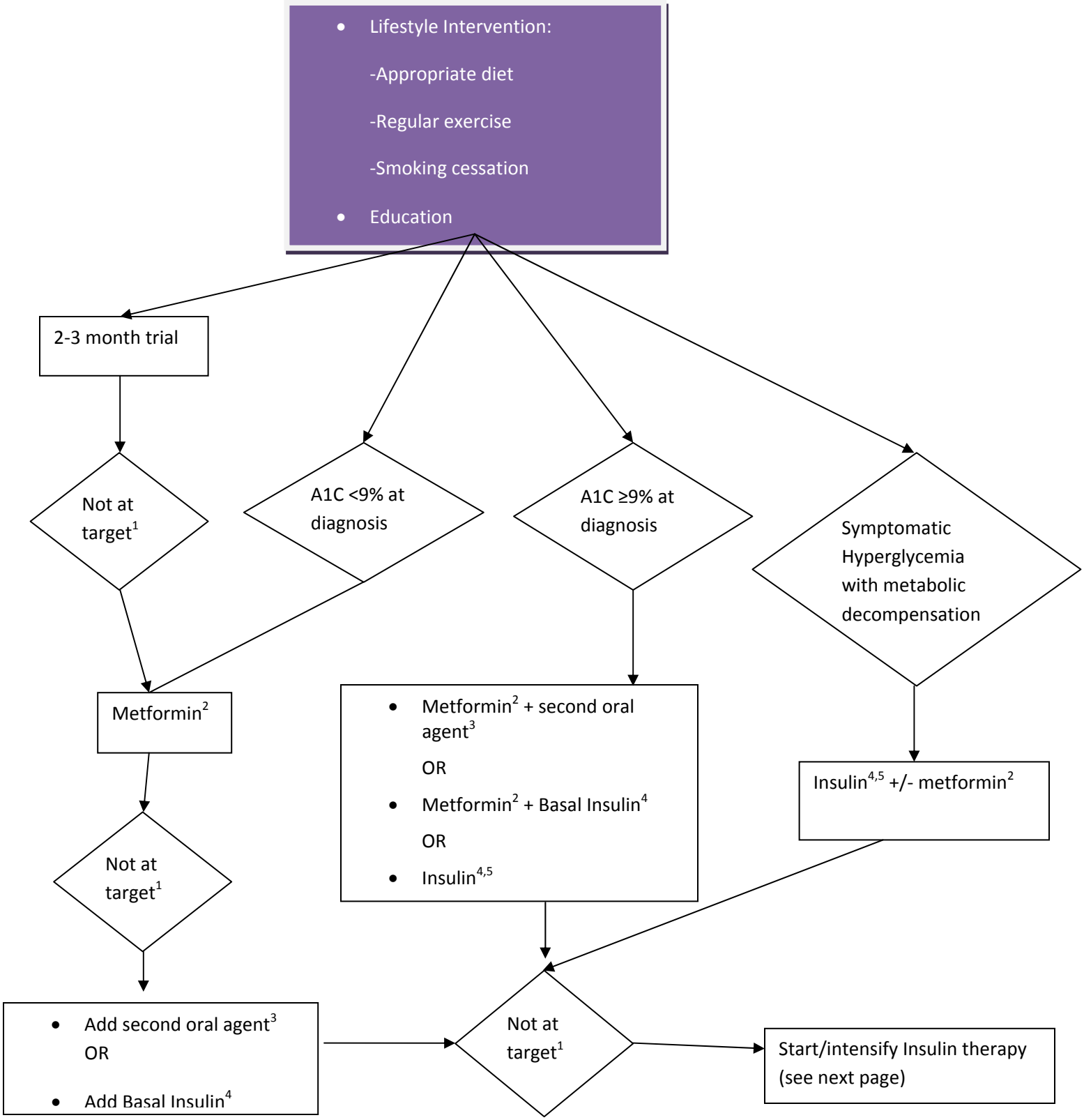
3.4 Type 2 Diabetes in Adults



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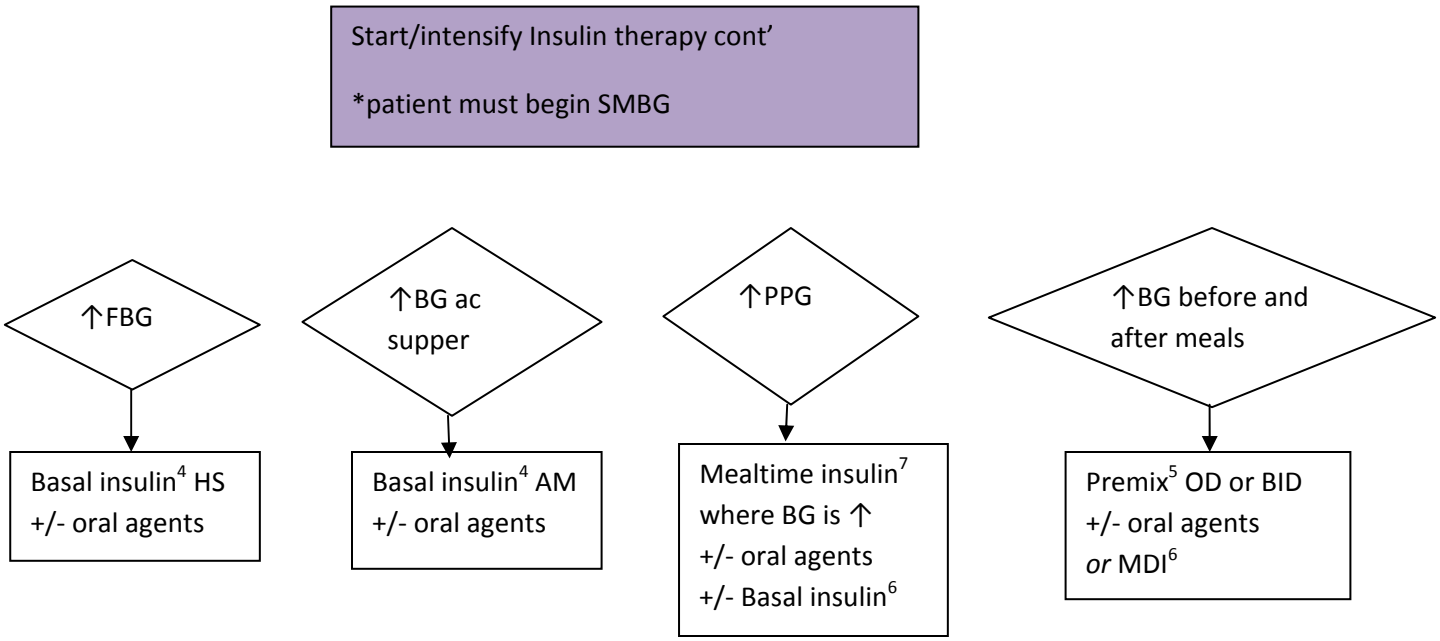
3.5 Type 2 Diabetes in Adults



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3.6 Type 2 Diabetes in Adults

1. **Targets for glycemic control: A1C <7%; FPG 4-7 mmol/L; PPG 5-10 mmol/L**

   Check A1C every 3 months when targets are not met or treatment is adjusted, then every 6 months once targets are achieved.

   Whenever targets are not met, check compliance and reinforce lifestyle interventions.
2. Unless contraindicated: pregnancy, excessive alcohol use, liver disease, CrCl <30mL/min, CHF. See Pharmacologic Agents for Diabetes section for alternatives.
3. See Pharmacologic Agents for Diabetes section for choices. Consider therapeutic advantages and disadvantages as well as cost to patient when choosing an agent. Also consider contraindications and comorbidities including liver disease and impaired renal function as well as lifestyle choices such as alcohol intake. It is recommended to choose agents with different mechanisms of action.
4. Basal Insulin:

   -Patient must begin SMBG and understand when/how to adjust diet/insulin dose.

   -Consider discontinuing insulin secretagogue.

   -Suggested starting dose is 10U HS. A calculated-dose (0.1-0.2U/kg) may be considered for elderly or non-obese patients where hypoglycemia is a greater risk.

   -Increase by 1 unit/day until target is reached. If target is not met at 30U/day, a more intense regimen is needed.

   -Do not increase dose if patient experiences nocturnal hypoglycemia or 2 episodes of daytime hypoglycemia in 1 week. If daytime hypoglycemia occurs, ↓dose of oral agents.
5. Premix Insulin:

   -Patient must begin SMBG and understand when/how to adjust diet/insulin dose.

   -Consider discontinuing insulin secretagogue.

   -Suggested starting dose is 5-10 units OD or BID (pre-breakfast or pre-supper).

   -Increase 1 or 2 units prebreakfast and/or presupper until target is reached. Prebreakfast dose affects presupper BG and Presupper dose affects prebreakfast (fasting) BG.

   -SMBG BID during dose titration.

   -Do not increase dose if patient experiences nocturnal hypoglycemia or 2 episodes of daytime hypoglycemia in 1 week. If daytime hypoglycemia occurs, consider ↓dose of oral agents.
6. MDI = multi-dose intensive insulin therapy = Basal + Mealtime (bolus) Insulin:

   -Patient must be motivated and capable of frequent SMBG and understand how to make necessary adjustments to insulin dose. This regimen requires more frequent testing to avoid hypoglycemia.

   -Oral agents are generally not used with MDI

   -Note that insulin plus 3 oral agents has been shown to ↑mortality.

   -Calculate total daily dose (0.3-0.5U/kg) and distribute as follows: Basal Insulin dose = 40%; Bolus insulin dose=20% at each meal. Adjust each meal dose from here if necessary.

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3.7 Type 2 Diabetes in Adults cont'

-If already on Basal Insulin and adding mealtime insulin: start with 10% of total daily dose at largest meal; 90% of total daily dose is the new Basal dose. Add more mealtime boluses in a similar way.

-Do not ↑insulin dose if patient experiences nocturnal hypoglycemia or 2 episodes of daytime hypoglycemia in 1 week

7. Discontinue secretagogues when starting mealtime insulin.

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4.1 Type 2 Diabetes in Children and Adolescents

Risk factors for Diabetes

- obesity[1]
- family history of diabetes
- member of high risk population
- exposure to diabetes in utero
- IGT
- signs of insulin resistance[2]
- use of atypical antipsychotics[3]

Targets for Glycemic Control[4]

- A1C ≤7%
- FPG 4-7 mmol/L
- PPG 5-10 mmol/L

Lifestyle Interventions

- Healthy diet
- Regular physical activity
- avoid alcohol
- no smoking
- success is increased if these initiatives are adopted by the whole family

BP test at each diabetes-related visit

- reinforce lifestyle modifications
- treat with antihypertensives as per guidelines for children without diabetes

Lipid Profile every 1to 3 years

- Familial dyslipidemia
- Family history of early CV event AND
- If LDL >4.2 mmol/L after 3-6 months of dietary intervention a statin is warrented

Screen for microvascular complications yearly

- Nephropathy: ACR
- Neuropathy: question about numbness, pain, cramps, skin sensation, light touch, ankle reflexes
- Retinopathy: eye exam

1. BMI ≥95th percentile for age and gender.
2. Signs/symptoms of insulin resistance: hypertension, dyslipidemia, acanthosis negricans
3. Risperidone (Risperdal), Olanzepine (Zyprexa), Clozapine (Clozaril), Quetiapine (Seroquel)
4. Individualize targets according to functional ability, comorbidity and other circumstances.

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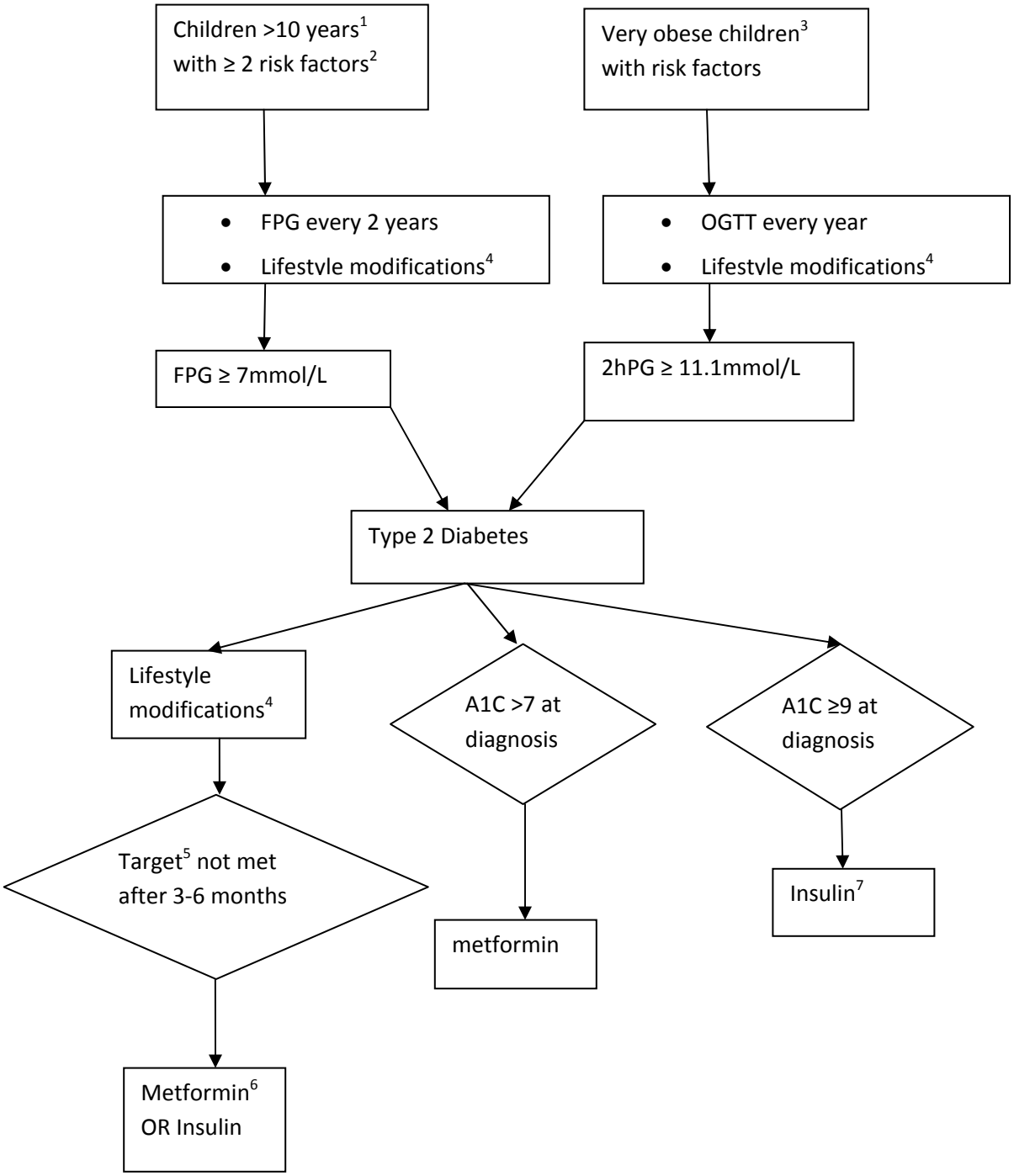
4.2 Type 2 Diabetes in Children and Adolescents



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4.3 Type 2 Diabetes in Children and Adolescents

1. Or younger if puberty has been reached.
2. Risk factors for diabetes:
    - obesity (BMI ≥95th percentile for age and gender)
    - family history of diabetes
    - member of high risk population
    - exposure to diabetes inutero
    - signs/symptoms of insulin resistance (hypertension, dyslipidemia, acanthosis nigricans); impaired glucose tolerance
    - use of atypical antipsychotics
3. BMI ≥99th percentile for age and gender.
4. Includes:
    - healthy diet (to achieve and maintain healthy weight)
    - regular exercise,
    - address avoidance of self destructive behaviours such as smoking and alcohol use.
5. Glycemic Control Targets:
    - A1C ≤7%;
    - FPG 4.0-7.0mmol/L;
    - PPG 5.0-10.0mmol/L
6. Dose of metformin for children >10 years old: 250mg-2000mg/day. Start with 250-500mg OD and titrate weekly as tolerated.
7. May be weaned off insulin once glycemic targets are achieved and lifestyle modifications implemented.

Prevention of Diabetes in Children and Adolescents

- Breastfeeding
- Healthy diet
- Regular exercise
- Involvement of the whole family in adopting a healthy lifestyle

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5.1 Diabetes in the Elderly

-Consider less stringent glycemic control if patient has multiple comorbidities or limited functional capacity

-Encourage healthy lifestyle[1]

-Optimise blood pressure control[2]

-Improve lipid panel[3]

-Prevent and treat complications (erectile dysfunction, depression, neuropathic pain, etc)

-Choose antyhyperglycemic regimen that is condusive to compliance while minimising hypo- and hyper-glycemia[4]

Drug	Comments
Acarbose	Moderately effective; poorly tolerated
Metformin	Good choice, especially in obese patients
Glitazones	Effective, but ↑heart failure and edema; use with caution in CVD
Sulfonylureas	↑risk of hypoglycemia with age (especially glyburide)
Repaglinide	Less hypoglycemia; preferred in people with irregular mealtimes
Lispro/Aspart Insulin	Similar kinetics to Regular insulin in the elderly
Premixed Insulins	Fewer errors (compared to mixing insulins); better glycemic control

1. Healthy diet to achieve and maintain healthy weight and optimise glycemic control; regular physical activity as permitted by comorbidities and physical limitations.
2. Treatment of isolated systolic and systolic/diastolic hypertension reduces CV morbidity/mortality and preserves renal function. ACEI, ARBs, thiazide diuretics, long acting CCB (except possibly amlodipine) are reasonable choices in the elderly. Cardioselective beta blockers and alpha blockers are not as effective in reducing CV events.
3. Statins have been shown to be effective in preventing CV events. Data on fibrates is conflicting.
4. In lean elderly patients with Type 2 diabetes, insulin secretion is impaired (an insulin secretagogue would be a good choice). In obese patients, insulin resistance is the main defect while insulin secretion is preserved (choose agents that reduce insulin resistance).

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6.1 Type 2 Diabetes in Aboriginal People

-Healthy lifestyle initiatives should be promoted and supported by the communitiy as a whole[1.]

-All persons should be regularily assessed for modifiable risk factors[2] (poor diet, lack of exercise, obesity).

-Follow screening guidlelines for high risk populations[3]

-Management of diabetes is the same as for the general population while respecting cultural issues[4]

-Education programs should be sensitive to and accomodate possible language differences and cultural issues.

1. Programs to promote healthy diets, regular exercise, and limitation of alcohol intake should be developed in collaboration with the community so that these health recommendations are relevant to the population and more likely to be followed. These programs should focus on preventing obesity in all age groups including pregnant women as well as promoting other preventative measures such as breastfeeding.
2. These individuals may benefit from diabetes prevention strategies (weight loss, metformin, diet counselling).
3. Screen people ≥ 40 years of age every 3 years. Screen people with additional risk factors earlier and/or more frequently: first degree relative with diabetes; history of IGT or IFG; presence of complications of diabetes (retinopathy, nephropathy); history of GDM; previous delivery of macrosomic infant; hypertension; dyslipidemia; overweight; abdominal obesity; PCOS; acanthosis nigricans; use of atypical antipsychotics.
4. It is important develop treatment protocols in collaboration with the community so that cultural aspects can be incorporated.

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7.1 Pregnancy in Pre-existing Diabetes

Before Pregnancy

- Achieve A1C ≤ 7%[1]
- Start Folic Acid 5mg OD 3 months preconception
- Discontinue ACEI, ARB, statin[2]
- Discontinue oral antihyperglycemics[3]
- Screen for retinopathy[4]
- Screen for nephropathy[5]
- Quit smoking and alcohol consumption

During Pregnancy

- Targets[6]: A1C <6%

  FPG 3.8-5.2 mmol/L

  1 hour PPG 5.5-7.7 mmol/L; 2 hour PPG 5.0-6.6 mmol/L
- SMBG at least QID[7]
- Prevent hypoglycemia[8]
- Follow recommended diet and exercise plan (as glycemic control/obstetric considerations allow)
- Continue Folic Acid 5mg OD to 12 weeks gestation, then take 1mg OD
- Regular medical visits, including ophthalmology

Postpartum

- Insulin requirement returns to pre-pregnancy levels 5-7 days after delivery
- Consider breastfeeding[9]
- Resume vascular protection, hypertension treatment (as allowed by breastfeeding)
- Screen for thyroiditis 6 weeks postpartum (Type 1 diabetes)
- Continue Folic Acid 1mg OD for 6 weeks or until breastfeeding stops

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7.2 Pregnancy in Pre-Existing Diabetes

1. **Higher A1C levels are associated with poorer outcomes (spontaneous abortion, congenital malformations, pre-eclampsia, and progression of retinopathy.**
2. Control blood pressure with agents that are safe in pregnancy (CCB, beta blockers, labetolol, methyldopa, hydralazine).
3. Or switch to insulin once pregnant.
4. Risk factors for worsening retinopathy: hypertension, poor glycemic control during pregnancy, pre-eclampsia, more severe pre-existing retinopathy.
5. Microalbuminuria and nephropathy are associated with increased risk of maternal and fetal complications. In women with normal renal function, pregnancy does not affect renal function as long as blood pressure and blood glucose are optimally controlled. Women with early CKD should have their renal function monitored each trimester (ACR, estimated CrCl)
6. **Hyperglycemia poses a risk to the fetus throughout pregnancy: malformations during the first trimester; macrosomia and metabolic complications at birth**.
7. Preprandial and postprandial levels guide diet and pharmacologic therapy; testing during the night in patients on insulin to avoid nocturnal hypoglycemia
8. Normal hormone responses to hypoglycemia are blunted during pregnancy. Hypoglycemic unawareness may occur with repeated episodes of hypoglycemia (due to trying to achieve tight glycemic control) or use of certain antihypertensives (beta blockers). Hypoglycemia does not seem to affect the fetus, but can cause maternal seizures.
9. Breastfeeding offers many benefits to the mother and the baby including reducing risk of infant obesity. Glyburide and metformin appear to be safe in breastfeeding, but further studies are warranted.

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8.1 Gestational Diabetes

GDM Counselling	•Risks to mother: retinopathy, pre-eclampsia, difficult birth, diabetes later in life •Risks to baby: macrosomia, congenital defects, hypoglycemia at birth, diabetes later in life
Nutrition counselling	•Within 2 weeks of Diagnosis •Review compliance at each medical visit
SMBG	•Before breakfast and 1 hour after meals •3 times weekly initially or as needed to achieve glycemic targets •Record episodes of hypoglycemia •Review at each medical visit
Glycemic Targets	•FPG 3.8 - 5.2 mmol/L •1hour PPG 5.5 - 7.7 mmol/L •2hour PPG 5.0 - 6.6 mmol/L
Excercise	•As obstetric and other considerations allow
Regular Medical visits	•Review glycemic control (SMBG) •Frequency of hypoglycemia •Blood pressure •Weight •Compliance with food plan, exercise regimen

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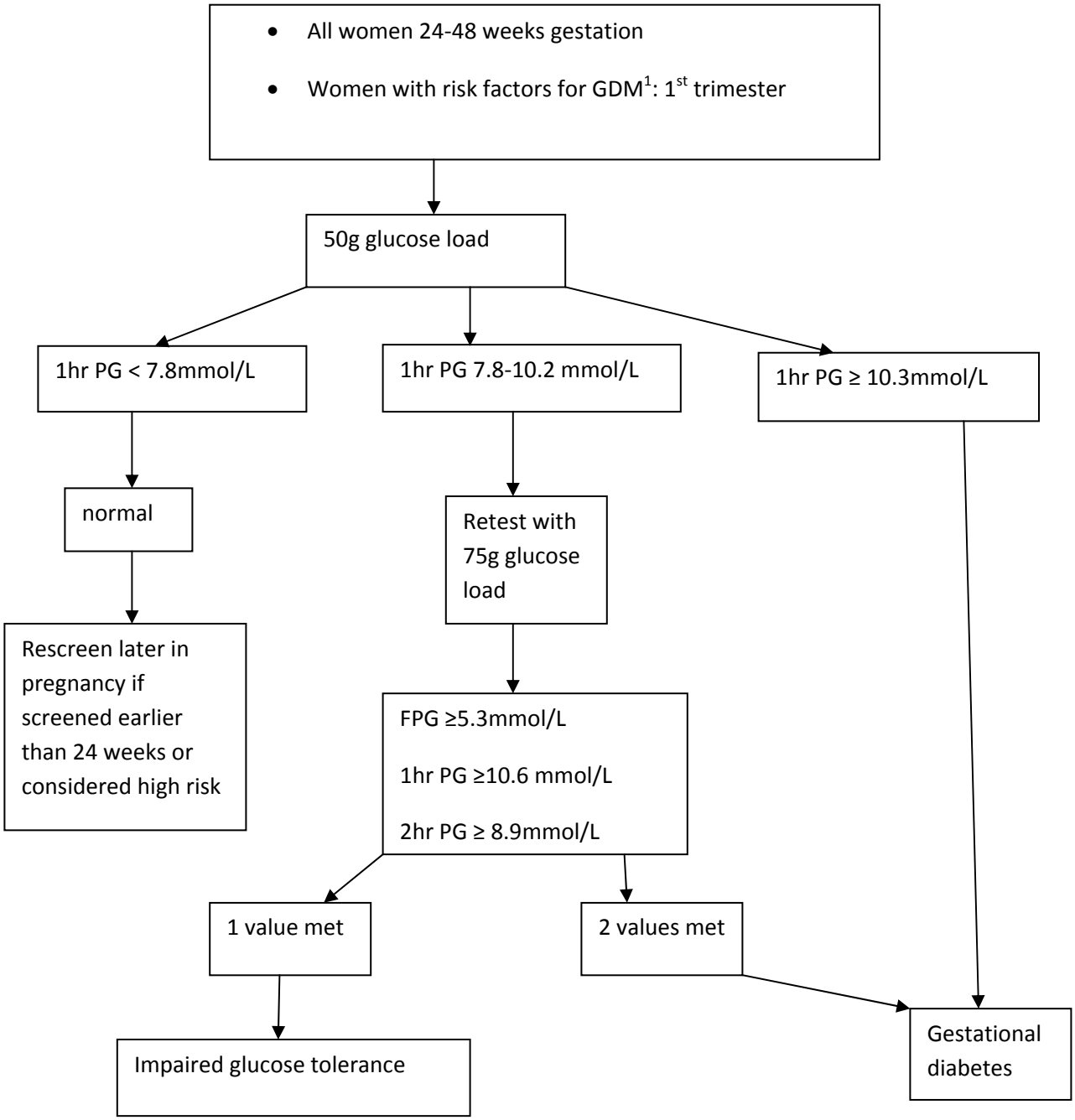
8.2 Gestational Diabetes



1. Risk factors for GDM: previous GDM; delivery of macrosomic infant; high-risk population (including Aboriginal); ≥35 years; obesity; polycystic ovary syndrome; corticosteroid use.

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8.3 Gestational Diabetes

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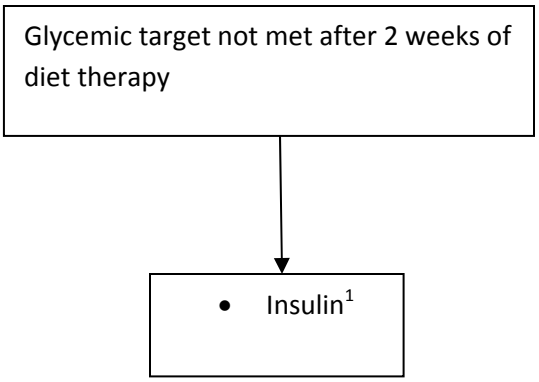

- Regular Medical visits: <20 weeks gestation – every 4 weeks
  20 – 30 weeks gestation – every 2 weeks
  >30 weeks gestation – every week
- At each visit review : SMBG including achievement of targets and episodes of hypoglycaemia
  : weight
  : medications (efficacy, compliance, side effects)
  : blood pressure
  : compliance with diet and exercise plan
- Other monitoring: ultrasound (18-21 weeks for anomalies, placenta, etc and 35 weeks for fluid and fetus; fetal movement (kick chart from 32 weeks); non-stress testing weekly from 32 weeks (fetal monitor required)

1. Glyburide or metformin may be considered if the patient refuses insulin, but their use in pregnancy is considered off-label. This decision should be made by an obstetrician.

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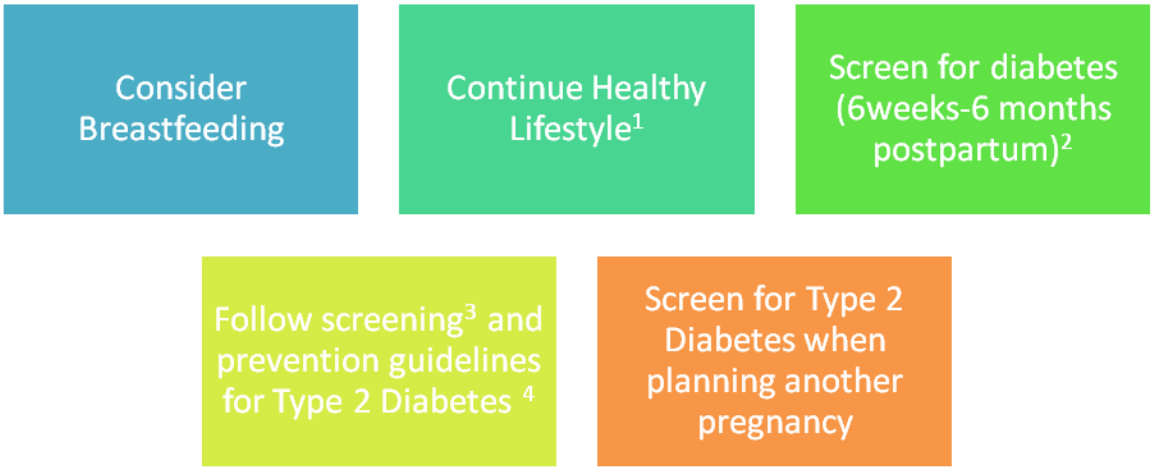
8.4 Gestational Diabetes

Postpartum:



1. Healthy Lifestyle: regular exercise, healthy diet, smoking cessation, limited alcohol intake.
2. Screen for diabetes with oral 75g glucose load.
3. Screening for diabetes: every 3 years for people ≥40 years old; earlier and more frequently if risk factors (family history, obesity, etc)
4. Prevention of diabetes: achieve and maintain healthy weight; low fat, high fibre diet; regular exercise; smoking cessation; limitation of alcohol intake.

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9.1 Pharmacologic Management of Diabetes in Pregnancy

Glycemic Control

Insulin Type	Comments
Regular	safe
Rapid-acting	Safe, help achieve PPG target with minimal hypoglycemia
Intermediate-acting (NPH)	Safe, but nocturnal hypoglycemia may occur
Detemir	May be considered if nocturnal hypoglycemia occurs with NPH
Glargine	Not recommended
Premixed	May not achieve tight glycemic control in Type 1

Hypertension

Drug	Trade Name	Comments
Methyldopa	Aldomet	First Line
Hydralazine		First Line
Labetolol		First Line
CCB	Nifedepine, etc	Alternative
Beta Blockers	Atenolol, etc	May cause reduced birth weight and persistent beta blockade in infant

See section on antihypertensive agents for dosing, side effects, etc.

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9.2 Pharmacologic Management of Diabetes while Breastfeeding

Medication	Compatibility (Y/N[1]/?[2])
	Hypoglycemics
Insulin	Y
Metformin	?
Sulfonylureas[3]	N
Acarbose[4]	?
Glitazones	?
Repaglinide[3]	N
	Antihypertensives
Ramipril[5]	Y
ARB	?
Norvasc, Felodipine	?
Nifedipine[6]	Y
Verapamil[6], Diltiazem[6]	Y
B-Blockers[6,7]	Only propranolol,metoprolol
Labetolol[6,8]	Y
Methyldopa	Y
Hydralazine	Y
Clonidine	N
Hydrochlorothiazide[9]	Y
Furosemide[9]	?
	Antihyperlipidemics
Statins	N
Fibrates	N
Cholestyramine[10]	?

1. Either there are potential risks to the infant, or the risks are unknown. If the mother continues to breastfeed, she should not take the medication *or* if the mother chooses to take the medication, she should not breast feed. The risks to the mother of complications of diabetes by not taking medication must be carefully weighed against risks to the baby of not being breast fed or of being exposed to the medication.
2. Safety data is unknown, or effects of exposure of infant to the medication is unknown.
3. Potential for hypoglycemia in the infant.
4. Is not appreciably absorbed by the mother, but there is no safety data available.
5. Also captopril and enalapril.
6. Consider breastfeeding 3-4 hours after taking the medication to reduce infant exposure.
7. Monitor bradycardia, respiratory depression, and hypoglycemia in the infant.
8. Monitor heart rate and blood pressure in the infant.
9. May ↓ lactation.
10. Not absorbed systemically by the mother, but does prevent absorption of fat-soluble vitamins by the mother therefore posing the risk of vitamin deficiency in the mother and the infant.

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10.1 Pharmacologic Management of Diabetes

Oral Agents

Drug	Trade Name	Usual Dose	Onset	Peak	Duration
	Biguanide[1]				
Metformin	Glucophage, Glycon	500-1000mg[2]BID		3h	3-12h
	Glitazones[3]				
Pioglitazone	Actos	15-45mg OD	3-8weeks		
Rosiglitazone	Avandia	4-8mg OD[4]	3-8weeks		
	Sulfonylureas[5]				
Chlorpropamide[6]	Diabinase	100-250mg OD		6-8h	24-72h
Gliclazide[7]	Diamicron reg,MR	800mg reg BID[8] 60-120mg MR		4-6h	10-24h
Glyburide	Diabeta	5-10mg BID	<60min	2-4h	12-14h
	Meglitinides[9]				
Repaglinide	Gluconorm	0.5-4mg AC[10]	15-60min	60-90min	4-6h
	α Glucosidase Inhibitor[11]				
Acarbose	Glucobay	50-100mg TID[12]	8 weeks		
	Incretin Enhancer				
Sitagliptin[13]	Januvia	100mg OD[14]	≤4 weeks		
Saxagliptin[13]	Onlgyza	5mg OD[14]			
Liraglutide[15]	Victoza	0.6-1.8mg OD[15]			
Exenatide[15]	Byetta	5-10mcg BID			

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10.2 Pharmacologic Management of Diabetes cont'

1. Side Effects: GI upset, nausea, diarrhea (take with meals, temporarily decrease dose); metallic taste; lactic acidosis: rare but potentially fatal, (tends to occur in hepatic or renal disease; concerns with CHF, dehydration, sepsis; stop if acutely ill or hypoxic)
   Drug Interactions: alcohol; radio contrast media
   Contraindications: renal impairment (CrCl <30mmol/L), hepatic impairment, previous lactic acidosis
2. Start with 250-500mg OD and titrate up every 2 to 4 weeks to avoid GI effects. Use lower dose if elderly or CrCl <60mL/min. Maximum 850mg TID. TID is an option for higher doses to improve tolerance.
3. Side Effects: edema; heart failure (higher risk when given with insulin); weight gain; fractures; macular degeneration; monitor liver function. Note that pioglitazone has comparable A1C lowering to rosiglitazone, but is less likely to increase the risk of heart attack and more favourable effects on lipids. For these reasons some clinicians recommend pitoglitazone over rosiglitazone.
   Drug Interactions: gemfibrozil (↑effects of glitazone)
   Contraindications: avoid in heart failure
4. Can give 4mg BID. Maximum 4mg OD if on sulfonylurea. Indicated only in Type2 diabetes when all other oral medications (alone or in combination) do not result in adequate glycemic control. Patients must sign a consent form stating they understand the risks (CHF, cardiac ischemia). Not recommended in patients with history of ischemic heart disease.
5. Side Effects: hypoglycemia (increased risk in elderly, debilitated, malnourished, or with irregular mealtimes); sulfa skin reactions; rash; photosensitivity; GI effects; headache; dizziness; weight gain; concerns with hyperinsulinemia, hyponatremia, cardiac toxicity
   Drug Interactions: hypoglycemic effect potentiated by ASA, NSAIDs, alcohol, cimetidine, fluconazole, sulfonamides, MAOIs; beta blockers may mask symptoms of hypoglycemia; ↓effect with rifampin
   Contraindications: Type 1 diabetes; pregnancy
6. Alcohol-associated flushing; hyponatremia. Not recommended due to ↑BP and retinopathy.
7. Has antiplatelet effect; less hypoglycemia than other sulfonylureas
8. Use lower dose if renal/hepatic dysfunction or prone to hypoglycemia. Titrate up every 1-2 weeks.
9. Side Effects: hypoglycemia (less than with sulfonylureas); weight gain
   Drug Interactions: many potential including: ↑effect with azole antifungals, macrolides, HIV meds, cyclosporine; ↓effect with rifampin, carbamazepine; avoid with gemfibrozil
   Contraindications: Type 1 diabetes, pregnancy
10. Titrate every 7 days. Can start with higher dose if already on treatment or if A1C ≥8%. Take 15 minutes before eating or immediately after meal; skip if meal is skipped.
11. Side Effects: diarrhea, flatulence, GI intolerance; ↑LFT and hepatic failure; accumulates in renal failure
    Drug Interactions: may ↓absorption of metformin; ↓effect of digoxin; ↑side effects with cathartics, cholestyramine
    Contraindications: severe GI disease IBS, inflammatory bowel disease
12. Mealtime dosing. Start with 25mg OD and increase every 4 to 8 weeks. Not recommended as initial therapy if A1C ≥9%.
13. Side Effects: sore throat; headache; nausea; diarrhea; arthralgias; SJS; no safety data available yet
    Drug Interactions: ↑hypoglycemia with sulfonylurea, few known yet
14. Sitagiptin: lower dose in renal failure. Saxagliptin: not recommended in moderate or severe renal failure. Not recommended for monotherapy – to be given with metformin. No outcome or safety data available yet.
15. Side Effects: nausea, vomiting (subsides after several weeks); pancreatitis; thyroid tumors (in rodents)

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16. SC injection; not yet recommended for monotherapy- give with metformin or metformin + sulfonylurea; or use instead of insulin or sulfonylurea to assist with weight loss; use instead of saxagliptin/sitagliptin to achieve further A1C lowering; do not combine with sitagliptin/saxagliptin.

10.3 Pharmacologic Management of Diabetes cont'

Insulins[1]

Drug	Trade Name	Dosing	Onset	Peak	Duration
	Rapid Insulin[2] (RAIA)				
Lispro	Humalog	Just Before Meal[3]	10-15min	60-90min	3.5-6h
Aspart	NovoRapid	"	10-30min	60min	3.5-6h
Apidra	Glulisine	"		60-90min	4-5h
	Short Acting[4]				
Regular Insulin	Humulin R	20-30min AC	30-60min	2-3h	5-10h
	NovolinToronto	"	"	"	"
	Intermediate-acting[4]				
NPH	Humulin N	HS or BID	2-4h	4-10h	12-18h
	Novolin NPH	"			
	LAIA[5]				
Detemir	Levemir	OD or BID	1h	6-8h[8]	16-24h
Glargine[6]	Lantus	OD[7]	2-4h	No peak	20-24h
	Premixed[9] Human				
Regular/NPH	Humulin 30/70	20-30min AC	0.5-1h	Dual peak	14-28h
	Novolin 30/70[10]				
	Premixed Analogues[11]				
Lispro/Lispro-protamine	Humalog Mix 25,50	Just Before Meal			
Aspart/Aspart-Protamine	NovoMix 30	"			

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10.4 Pharmacologic Management of Diabetes cont'

1. Side Effects: hypoglycemia, weight gain, lipodystrophy
2. Less variability between sites; less need for snacks; flexible dosing; less night hypoglycemia; better control of PPG; safe in pregnancy. Rapid-acting insulin analogue.
3. Or within 20 minutes of starting meal.
4. Safe in pregnancy; more safety data in general.
5. ↓hypoglycemia
6. Some pain at injection site.
7. Split dose if >50 units.
8. Considered to have flat-action profile, but maximum serum concentration is reached 6-8 hours after injection.
9. May give OD, BID, or TID, but avoid at HS. Useful for patients with a non-intensive regimen or Type 2 diabetics with consistent foot intake and activity (ex elderly, bedridden, institutionalized). Note that the first number refers to the % of short-acting insulin and the second number refers to the % of long-acting insulin
10. Also 10/90, 20/80, 40/60, 50/50
11. Similar glycemic control to premixed human insulin. Better glycemic control than LAIA but ↑ hypoglycemia. Clinical outcome data is lacking. Note that the number refers to the % of rapid-acting insulin.

Insulin Compatibility

R + NPH: √ (draw short-acting first)

RAIA + NPH: use immediately; draw RAIA first

LAIA: do not mix with other insulins

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10.5 Pharmacologic Management of Diabetes

Combinations of Agents in Type 2 Diabetes

- Combinations with Metformin result in less weight gain than sulfonylurea combinations
- Metformin + pioglitazone has positive lipid effects, but ↑edema
- Metformin + rosiglitazone ↓A1C but↑edema
- Metformin + acarbose ↓weight and PPG, but ↑GI intolerance
- Metformin (+/-sulfonylurea) + liraglutide ↓weight and ↓A1C
- Insulin + sulfonylurea with caution in the elderly; d/c sulfonylurea when mealtime insulin is given
- Insulin + metformin superior to insulin + sulfonylurea; preferred in obese patients; allows lower dose of insulin
- Insulin + glitazone not approved in Canada (↑edema, CHF, and weight gain)
- Insulin + repaglinide is an option if ↑PPG is a problem
- Insulin + 3 oral agents ↑mortality

Special Situations: Recommended Agents *(unless otherwise contraindicated)

Renal Failure	Glitazones, Repaglinide, insulin
Hepatic Disease	Insulin, Repaglinide (use glyburide, metformin, glitazones with caution
Obesity	Metformin, Victoza
Irregular Mealtimes	Repaglinide
PPG ≥10, little ↑FPG	Repaglinide, rapid-acting insulin, diet modification
IGT, IFG	Lifestyle modifications, metformin

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Hypoglycemia	Metformin, glitazones, repaglinide, gliclazide, LAIA, Incretin Enhancers
Pregnancy	Diet, exercise, insulin
Heart Failure	Metformin (unless severe renal impairment), insulin, sulfonylureas, repaglinide

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10.6 Pharmacologic Management of Diabetes

Insulin Regimens[1]

Schedule	Breakfast	Lunch	Supper	Bedtime
Conventional Regimens				
OD[2]	-	-	-	NPH/LAIA[3]
BID[4]	NPH/Detemir	-		NPH/Detemir
BID[5]	R/RAIA & NPH/Detemir	-	R/RAIA & NPH/Detemir	-
TID[6]	R/RAIA & NPH	-	R/RAIA	NPH
Multidose Intensive Regimens (MDI)				
QID[7]	R/RAIA	R/RAIA	R/RAIA	NPH
QID [8]	R/RAIA & NPH	R/RAIA	R/RAIA	NPH
Continuous SC Infusion (CSII)[9]				

1. No maximum dose for insulin. Fix low BG first and high BG later and only adjust one insulin at a time. Consider Somogyi effect with low morning BG.
2. Simple, but poor control; useful in Type 2 with oral agents during the day. Less weight gain than with insulin alone (especially with metformin). Remember insulin plus glitazone is not approved in Canada. If PM BG is↑, may need BID insulin. With ↑PPG, short-acting insulin with meals or premix may be needed.
3. Long-acting agent may be given before breakfast (rare). BID regimens are more effective with consistent food intake and activity.
4. Improved morning control and overnight coverage.
5. May use premix instead of separate injections of short-acting and long-acting agents. Using premix at bedtime should be avoided as it poses a higher risk of nocturnal hypoglycemia.
6. More likely to last until morning. Detemir or Glargine may be used instead of NPH
7. Frequent SMBG at first. Good control. Allows flexibility with meals.
8. Useful for people with varying meal schedules.
9. R or RAIA used: basal & bolus when needed. RAIA are preferred. ↑risk of rapid ketoacidosis if discontinued.

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10.7 Anti-obesity Agents[1]

Drug	Trade Name	Dosing
	GI Lipase Inhibitor[1]	
Orlistat[2]	Xenical	120mg CC (max TID)[3]

Source: RxFiles, CDA Guidelines

1. Decreases fat breakdown and absorption. Not studied in children <12 years old. Seems safe in children 12-16 years old.
2. Side Effects: Common: diarrhea, oily stools, ↑bowel movements, flatulence, abdominal pain, bloating, nausea, vomiting, dry skin, pedal edema; Serious: anaphylaxis, angioedema, urticaria
   Drug Interactions: warfarin (↑INR); cyclosporine
   Contraindications: chronic malabsorption syndromes; cholestasis
3. Start on a weekend (ie while at home) OD and slowly titrate up to TID. Give during or within 1 hour of a meal. Omit dose if meal is skipped or contains no fat. Recommend a multivitamin to prevent deficiency in fat-soluble vitamins.

AGENTS NOT OFFICIALLY INDICATED FOR WEIGHT LOSS

Drug	Trade Name	Dose[4]
	Antidepressants	
Bupropion[1] SR,XL	Wellbutrin	150mg-200mg BID 300mg XL OD
Fluoxetine[2]	Prozac	60mg OD
	Mood Stabilizer	
Topiramate[3]	Topamax	50-100mg BID

1. Not enough evidence to recommend for weight loss. May ↑seizure risk at >300mg/day. Consider if bupropion would be of other benefit to the patient besides weight loss.
2. Weight loss appears to be dose dependant and may lose effectiveness over time. May result in modest ↓A1C in type 2 diabetes. Consider if patient suffers depression +/- anxiety.
3. Weight loss may be dose related. May minimize weight gain by other psychotropics. May be beneficial in obese type 2 diabetes along with metformin and exercise, but side effects may limit its use.
4. ↓ dose in renal impairment.

10.8 Anti-obesity Agents

Herbal/Natural Products for weight loss

- Overall evidence of efficacy is weak.
- Herbal/Natural products for weight loss are often expensive and not covered by NIHB, provincial drug plans, or private health plans.
- Some have the potential for serious complications.
- **Avoid their use in CVD and hypertension**. Many contain caffeine , ephedrine, or other stimulants that may ↑BP, ↑HR, cause tremors and CNS stimulation (irritability, insomnia), and have a diuretic effect.
- **Avoid their use in patients taking medications with possible drug interactions** (ex warfarin, digoxin, statins).
- **Avoid their use in pregnancy and breast feeding.**
- Because of the lack of evidence of efficacy and possible safety concerns, generally advise against their use. If the patient insists on trying a herbal/natural product, however, encourage choosing a product with a NHP (Natural

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Health Product) number (ie regulated by Health Canada for quality) that is purchased at a pharmacy (so the pharmacist can be consulted for information).

- Common mechanisms of action:
  - Stimulant (↓appetite, ↑metabolism): caffeine, ephedra (Ma Huang), green tea products, guarana, yerba mate, kola, bitter orange, pinellia. Note safety concerns above.
  - Laxative (ie bowel cleansers): cascara sagrada, rhubarb, golden seal, fennel, ginger, marshmallow, slippery elm, probiotics, flax, psyllium. Concern with electrolyte imbalance.
  - Bulking agent (↓appetite): PGX, psyllium, flax, xanthan gum. May ↓absorption of oral medications
- **Health Canada Warnings:** (This is not a complete list. Many herbal/natural products are taken off the market because of safety concerns.)
  - Hydroxycut: nausea, tremor, dizziness, palpitations, chest pain, SOB, vomiting, insomnia, syncope, fatal MI.
  - Zantrex-3: headache, nervousness, tachycardia, nausea, diarrhea, tremor, sweating
  - Xenadrine EFX: tachycardia, abdominal cramps, nausea, vertigo, tremor, chest pain, SOB, ↑amylase
  - Ephedra (Ma Huang): banned because of MI and death
  - Ezee Slimming Patch: leucopenia, thrombocytopenia, neutropenia, ↓hemoglobin, menstrual irregularity, agitation, possible fatal jaundice, hepatitis, and clotting disorder
- Other common products:
  - Hoodia (non-stimulating appetite suppressant; evidence is weak)
  - Green Tea (conflicting evidence; contains caffeine)
  - Pyruvate (↑exercise capacity; evidence is weak)
  - Iodine (no evidence and may cause thyroid disorders)

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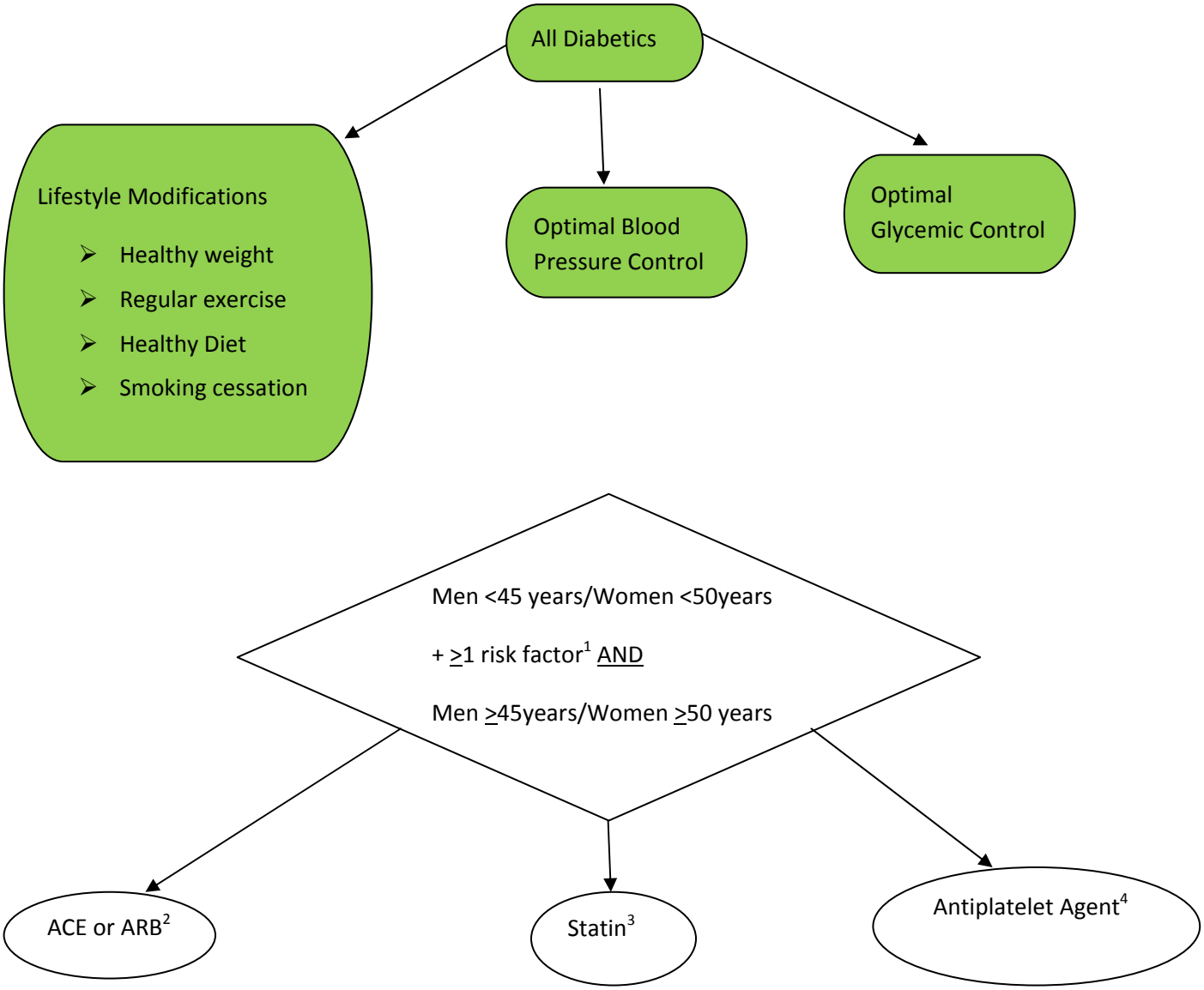
11.1 Vascular Protection



1. Macrovascular disease (MI, stroke, TIA, ischemia); Microvascular disease (retinopathy, nephropathy); LDL >5mmol/L; Systolic BP >180mmHg; Duration of diabetes >15 years and >30 years old
2. Unless contraindicated: pregnancy, history of angioedema, renal artery stenosis (solitary kidney or bilateral). See Hypertension section for alternatives
3. Unless contraindicated: pregnancy, excessive alcohol use, acute liver disease. See Dyslipidemia section for alternatives.
4. ASA 81 to 325mg OD or Clopidrogel 75mg OD if ASA not tolerated. Contraindicated in recent/active bleeding, major GI intolerance, history of ASA allergy, and persons <21 years old.

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11.2 ACEI = Angiotensin Converting Enzyme Inhibitor

ARB = Angiotensin Receptor Blocker

Drug	Trade Name	Dosing Range	Usual Dose
	ACEI[1,3,4,5]		
Benazepril	Lotensin	10-40mg OD or BID	20mg/day
Captopril	-	25-150mg/day BID or TID	25mg TID Empty stomach
Cilazapril	Inhibace	2.5- 10mg/day OD or BID	2.5-5mg OD
Enalapril	Vasotec	5-40mg/day OD or BID	10-40mg/day
Fosinopril	Monopril	10-40mg/day OD or BID	20mg/day
Lisinopril	Prinivil, Zestril	10-40mg OD	20mg OD
Perindopril	Coversyl	4mg OD or BID	-
Quinapril	Accupril	10-20mg OD or BID	-
Ramipril	Altace	2.5-10mg/day OD or BID	10mg/day
Trandolapril	Mavik	1-4mg OD	-
	ARB[2,3,4]		
Candesartan	Atacand	8-32 mg OD	8-16mg OD
Eprosartan	Tevetin	300-400mg OD or BID	-
Irbesartan	Avapro	75-300mg OD	150-300mg/day
Losartan	Cozaar	25-100mg OD or BID	25-100mg/day
Telmisartan	Micardis	40-80mg OD	-
Valsartan	Diovan	80-320mg OD	-

Source: Therapeutic Choices, RxFiles

1. Side Effects of ACEI: Dry cough; Hyperkalemia (especially with renal insufficiency, K^+ sparing diuretics, K^+ supplements, NSAIDs); angioedema, hypotension (especially if volume depleted or with diuretics); acute renal failure with bilateral renal stenosis; headache; dizziness; fatigue; rash; loss of taste; hepatotoxicity; dysguesia; pancreatitis; blood dyscrasias.
2. Side Effects of ARBS: same as ACE except no cough and less dizziness and headache.
3. Drug Interactions: K^+ supplements; K^+ sparing diuretics (assess K^+ and SCr regularly); NSAIDs; Lithium (possible toxicity)
4. Contraindications: pregnancy, history of angioedema, renal artery stenosis (solitary kidney or bilateral)
5. Use lower dose in renal impairment.
6. **Renal Function and K^+ must be monitored. Check BUN, Cr, electrolytes before starting, after 7 days, then regularly thereafter, including when dose ↑ or when a diuretic is added or ↑.**

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11.3 Statin = HMG Co-A Reductace Inhibitor

= ↓LDL, ↓TG, ↑HDL

Drug	Trade Name	Dose Range	Usual Dose
	Statin[1,2,4]		
Atorvastatin[3]	Lipitor	10-80mg OD	10-40mg HS
Fluvastatin[5]	Lescol	20-80mg/d HS or BID	20-40mg/d
Lovastatin[5]	Mevacor	20-80mg/d HS orBID	20-40mg HS
Pravastatin[3,6]	Pravachol	10-40mg HS	-
Rosuvastatin[3,6]	Crestor	5-40mg OD	-
Simvastatin	Zocor	10-80mg HS	20-40mg HS

Source: Therapeutic Choices, RxFiles

1. Side Effects of Statins: common: upper GI effects, headache, muscle pain, rash, sleep disturbances; rare: peripheral neuropathy, lupus-like symptoms, impotence, pancreatitis; ↑LFT (dose dependant); myopathy (concern if weakness accompanies muscle pain – check CK); rhabdomyolysis (increased risk with combinations of lipid-lowering agents or drug interactions that increase level of statin)
2. Drug Interactions: many potential including: ↑effect of digoxin and warfarin; increased toxicity of statin with amiodarone, clarithromycin, erythromycin, gemfibrozil, grapefruit juice, -conazole antifungals, certain HIV meds, verapamil, also transplant meds, diltiazem, ethynyl estradiol, fenofibrate, fluoxetine, niacin; decreased effect of statin with: cholestyramine (separate by 2 hours), phenytoin, phenobarb, carbamazepine, rifampin, St John's Wort, certain HIV meds **Avoid with macrolides, gemfibrozil, grapefruit, azoles, amiodarone, non-DHP CCB, cyclosporine, protease inhibitors.**
3. Few Drug Interactions with pravastatin and rosuvastatin – some transplant meds and gemfibrozil.
4. Contraindications: acute liver disease, pregnancy, excessive alcohol use
5. ↓dose in hepatic dysfunction.
6. ↓dose in renal dysfunction.

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11.4 Antiplatelet Agents

Drug	Trade Name	Dose
Acetylsalicylic Acid[1,2,4]	ASA, Aspirin, Novasen	81-325mg/day
Clopidrogel[1,3,4]	Plavix	75mg OD

Source: Canadian Journal of Diabetes September 2008

1. Side Effects: GI upset, hypersensitivity, GI bleed, major bleed, hemorrhagic stroke.
2. Drug Interactions with ASA: agents that cause GI irritation (NSAIDs, alcohol); agents that cause bleeding (warfarin).
3. Drug Interactions with Plavix: same as with ASA; also certain proton pump inhibitors ↓efficacy of Plavix (omeprazole (Losec), esoeprazole (Nexium), lansoprazole (Prevacid), rabeprazole (Pariet) – assess whether PPI treatment is necessary and change acid suppression medication accordingly.
4. Contraindications: recent bleed; active bleed; major GI intolerance; history of ASA allergy; ASA – persons <21 years of age

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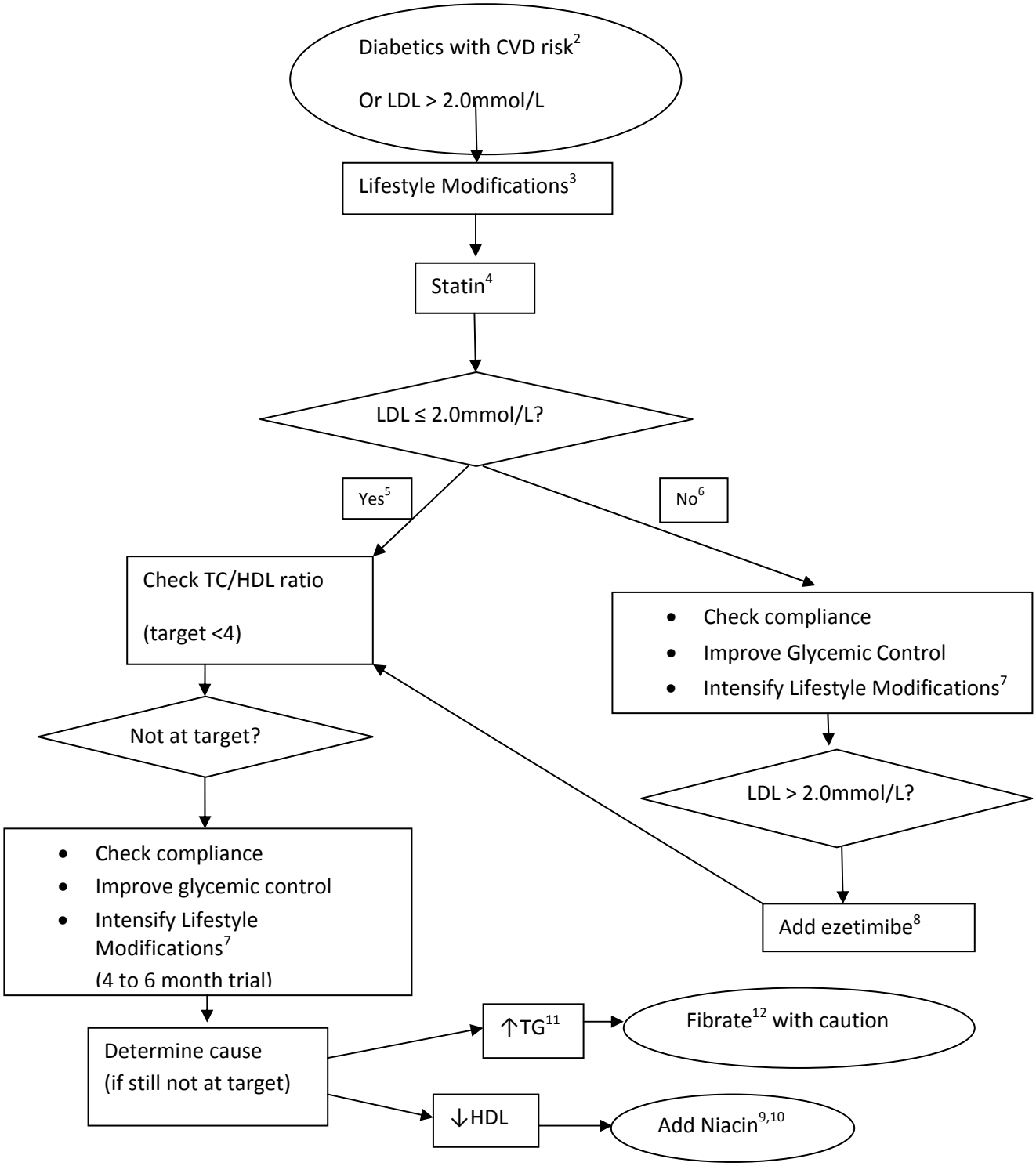
12.1 Dyslipidemia[1]



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12.2 Dyslipidemia cont'

1. Lipid profile typically shows ↑TG, ↓HDL, and normal LDL. However, the LDL particles tend to be more artherogenic.
2. CVD is the primary cause of death in persons with diabetes. Persons at high risk of CV event include: men ≥45 years and women ≥50 years;

   :men <45 years/women <50years with at least one of: macrovascular disease (MI, stroke, TIA, CVD, ischemia, etc), microvascular disease (nephropathy or retinopathy), family history of premature coronary or cerebrovascular disease in first degree relative, extreme level of single risk factor (LDL >5.0mmol/L, systolic BP >180mmHg), duration of diabetes >15 years and age >30 years.
3. **Lifestyle modifications are important in preventing CVD and managing diabetes in general. They are an adjunct to pharmacologic management and include: maintaining healthy weight, healthy diet (including restriction of alcohol and carbohydrate intake), regular exercise, smoking cessation.**
4. Unless contraindicated: pregnancy, active liver disease, excessive alcohol use.
5. Once target LDL is reached, consider lowering TC/HDL ratio to <4.0. This is more difficult to achieve and requires ongoing reinforcement of lifestyle issues and often combination with other agents.
6. If LDL remains 2.0-2.5mmol/L while on medication, the decision to further lower LDL to target should be individualized.
7. Weight loss, tight glycemic control, and restriction of alcohol and carbohydrate intake.
8. Unless contraindicated: hepatic dysfunction
9. Unless contraindicated: severe peptic ulcer disease, chronic liver disease, overt diabetes, severe gout
10. Studies are underway to determine if Niacin ↓risk of CVD in diabetics.
11. If TG >10mmol/L, a fibrate is first line to reduce the risk of pancreatitis. If TG 4.5-10mmol/L, a statin is first line in diabetics given their demonstrated benefit in reducing CV risk in this population.
12. Unless contraindiciated: severe hepatic disease, severe renal disease, smoking (gemfibrozil). When given with a statin, watch for rhabdomyolysis (CK >10x, darkened urine, renal failure).

These materials were developed by the Clinical Subcommittee of the Chronic Disease Network and Access Program of the Prince Albert Grand Council and its partners and funded by the Aboriginal Health Transition Fund.

12.3 Statin = HMG Co-A Reductace Inhibitor

= ↓LDL, ↓TG, ↑HDL

Drug	Trade Name	Dose Range	Usual Dose
	Statin[1,2,4]		
Atorvastatin[3]	Lipitor	10-80mg HS	10-40mg HS
Fluvastatin[5]	Lescol	20-80mg/d HS or BID	20-40mg/d
Lovastatin[5]	Mevacor	20-80mg/d HS orBID	20-40mg HS
Pravastatin[3,6]	Pravachol	20-40mg HS	-
Rosuvastatin[3,6]	Crestor	5-40mg OD	-
Simvastatin	Zocor	20-80mg HS	20-40mg HS

Source: Therapeutic Choices, RxFiles

1. Side Effects of Statins: common: upper GI effects, headache, muscle pain, rash, sleep disturbances; rare: peripheral neuropathy, lupus-like symptoms, impotence, pancreatitis; ↑LFT (dose dependant); myopathy (concern if weakness accompanies muscle pain – check CK); rhabdomyolysis (increased risk with combinations of lipid-lowering agents or drug interactions that increase level of statin)
2. Drug Interactions: many potential including: ↑effect of digoxin and warfarin; increased toxicity of statin with amiodarone, clarithromycin, erythromycin, gemfibrozil, grapefruit juice, -conazole antifungals, certain HIV meds, verapamil, also transplant meds, diltiazem, ethynyl estradiol, fenofibrate, fluoxetine, niacin; decreased effect of statin with: cholestyramine (separate by 2 hours), phenytoin, phenobarb, carbamazepine, rifampin, St John's Wort, certain HIV meds. **Avoid with macrolides, gemfibrozil, grapefruit juice, azoles, amiodarone, non-DHP CCB, cyclosporine, protease inhibitors.**
3. Few Drug Interactions with pravastatin and rosuvastatin – some transplant meds and gemfibrozil.
4. Contraindications: acute liver disease, pregnancy, excessive alcohol use
5. Use lower dose in hepatic dysfunction.
6. Use lower dose in renal dysfunction.

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12.4 Other Lipid-Lowering Agents

Drug	Trade Name	Dosing	Effect on Lipids
	↓cholesterol absorption		
Ezetimibe[1]	Ezetrol	10mg OD[2]	↓LDL,↑HDL,↓TG
	Nitcotinic acid		
Niacin[3]	-	50-100mg B-TID CC, ↑ by 100mg/week to 500mg TID	↑HDL, ↓TG[4]
	Niaspan	500-750mg HS	
	Fibrate[5]		
Benzafibrate	Benzalip	200mg B-TID CC 400mg SR OD	↑HDL,↓TG[6]
Fenofibrate	Lipidil Micro	200mg OD CC	
	Lipidil Supra	160mg OD CC	
	Lipidil EZ	144mg OD	
Gemfibrozil	Lopid	300-600mg BID AC	
	Resins[7]		
Cholestyramine	Quenstran	4-8g BID AC[8]	↓LDL, ↑HDL[9]

Source: RxFiles

1. Side Effects of Ezetrol: generally well tolerated, but monitor LFT

   Drug Interactions: ↑levels with cyclosporine, fibrates

   Contraindications: hepatic dysfunction

2. When added to statin, may allow ↓dose of statin.

3. Side Effects of niacin: flushing (pre-treat with ASA or ibuprofen 30minutes prior; abates with time); dry eyes, itching; headache; GI upset; ↑LFT; torsades de pointes; ↑uric acid; ↑glucose. Monitor LFT, glucose, uric acid at 3 months, 6 months, 12 months, then yearly.

   Drug Interactions: ↑myopathy with lovastatin, ASA may ↑niacin level

   Contraindications: chronic liver disease, overt diabetes, sever gout, peptic ulcer disease

   Note: do not use No-flush Niacin b/c less effective and ↑hepatic side effects

4. Only higher doses of niacin affect LDL (ie >2g/day)

5. Side Effects of fibrates: common: GI upset, rash, abdominal pain; less common: headache, itching, ↓libido, dizziness, drowsiness, arthralgia, ↑glucose, sleep/vision changes; rare: ↓renal function, anemia, myopathy, ↑LFT, pancreatitis, gallstones

   Drug Interactions: ↑toxicity with furosemide, statins, cyclosporin, MAOIs, probenacid; ↓effect with cholestyramine; ↑levels of glitazones, sulfonylureas, warfarin (monitor INR); chlorpropamide, furosemide; monitor for rhabdomyolysis if given with statin

   Contraindications: severe hepatic disease; smoking (gemfibrozil)

   Use lower dose in renal impairment.

6. Variable effect on HDL. Benefits in persons with diabetes and hyperinsulinemia.

These materials were developed by the Clinical Subcommittee of the Chronic Disease Network and Access Program of the Prince Albert Grand Council and its partners and funded by the Aboriginal Health Transition Fund.

12.5 Other Lipid-Lowering Agents cont'

7. Side effects of resins: common: constipation (↑fluid and bulk in diet or Metamucil), nausea, bloating; rare: hyperchloremic acidosis in kids or ↓renal function; monitor LFT, TG

   Drug Interactions: separate administration of other medications by 2 hours (↓ absorption otherwise)

   Contraindications: biliary obstruction; TG >4.6mmol/l; dysbetalipoproteinemia

8. Can mix with Metamucil+orange juice/lemonade the night before; refrigerate and give the next day – ½ before breakfast and ½ before supper (shake well)

9. Possible ↑TG (monitor).

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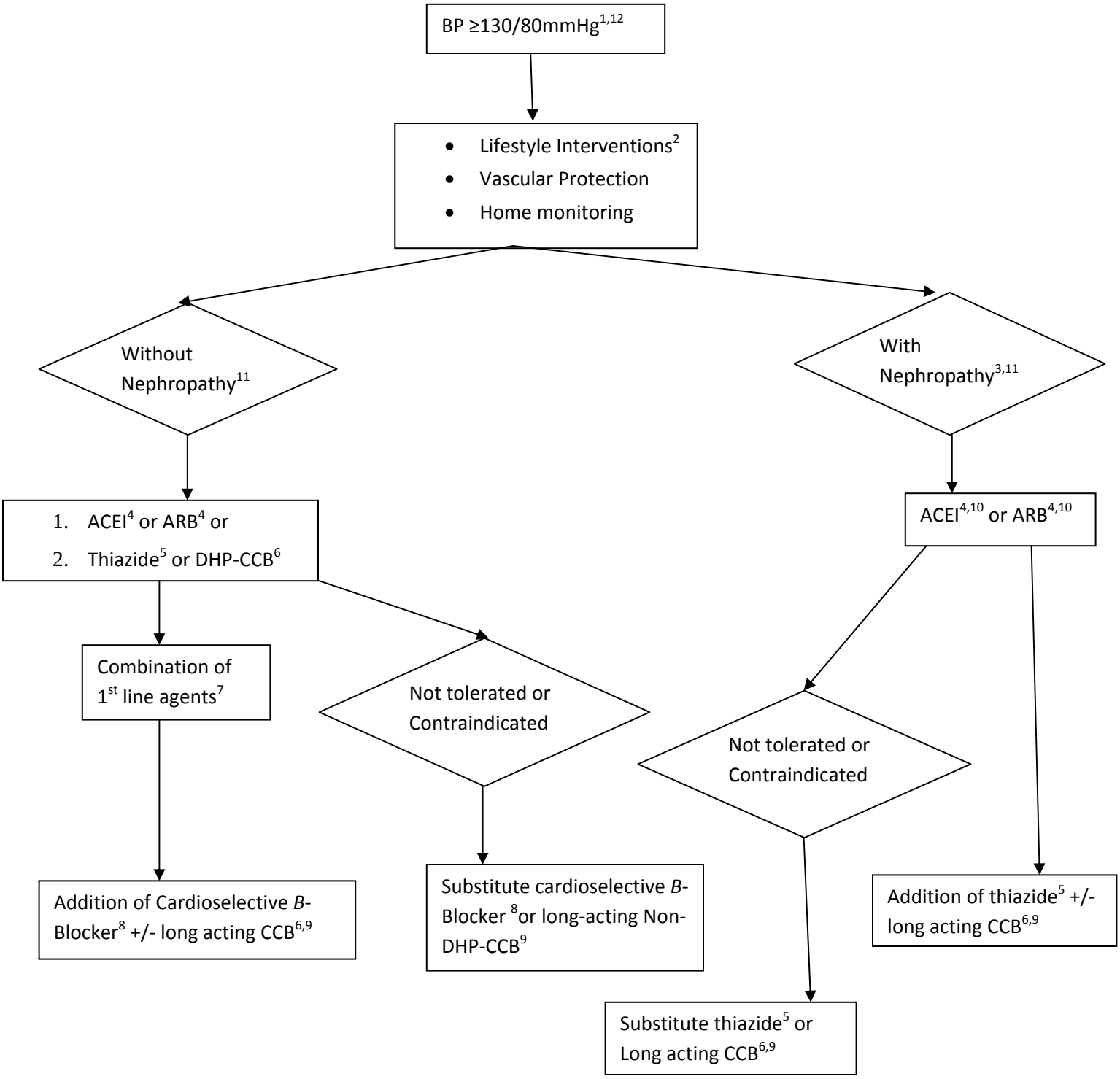
13.1 Hypertension in Diabetes



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13.2 Hypertension in Diabetes cont'

1. This includes isolated systolic hypertension. BP should be measured at each diabetes-related visit.
2. Maintenance of healthy weight, healthy diet (low fat, high fibre), regular exercise, limitation of salt and alcohol intake, and stress management.
3. Nephropathy = urinary albumin:creatinine ratio ≥2.0mg/mmoL in men / ≥2.8mg/mmoL in women or chronic kidney disease. Refer to specialist.
4. Unless contraindicated: pregnancy, history of angioedema, renal artery stenosis (solitary kidney or bilateral).
5. Unless contraindicated: gout, sulfa allergy, anuria, hyponatremia. If CrCl <30mL/min or SCr > 150umol/L furosemide should be used instead.
6. Unless contraindicated: SBP<90mmHg, recent MI, pulmonary edema, AV block, sick sinus syndrome
7. Combination of ACEI and ARB not recommended except in proteinuric nephropathy.
8. Unless contraindicated: 2nd or 3rd degree heart block (in absence of pacemaker). Avoid in patients with asthma, severe peripheral artery disease, and patients > 60years. Efficacy is uncertain in smokers or patients with no previous MI or angina.
9. Use with caution in heart failure or 2nd or 3rd degree heart block without pacemaker.
10. Monitor K^+ and SCr carefully in patients with CKD taking an ACEI or ARB. Consider d/c ACEI/ARB during acute illness that results in intravascular volume depletion (fever, diarrhea).
11. A combination of 2 first line agents may be considered as initial therapy if SBP ≥20mmHg above target or DBP ≥10mmHg above target. Do not combine ACEI and ARB in absence of proteinuria.
    Preferred Combinations: ACEI or ARB + thiazide (ACEI increases efficacy of the thiazide and reduces hypokalemia); ACEI or ARB + DHP-CCB (ACEI reduces possible edema from DHP-CCB)
    Acceptable Combinations: CCB + thiazide; thiazide + potassium-sparing diuretic; aliskiren + thiazide or CCB; *B*-blocker + diuretic or DHP-CCB
    Combinations *not* recommended: ACEI + ARB; *B*-blocker + ACEI or ARB; *B*-blocker + nonDHP-CCB; *B*-blocker + centrally-acting agent (clonidine)
12. Three or more agents may be required to reach target BP. For resistant hypertension, consider other causes: obstructive sleep apnea; renal artery stenosis; aldosteronism; NAIDs; white-coat hypertension.

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13.3 ACEI = Angiotensin Converting Enzyme Inhibitor

ARB = Angiotensin Receptor Blocker

Drug	Trade Name	Dosing Range	Usual Dose
	ACEI[1,3,4,5,6]		
Benazepril	Lotensin	10-40mg OD or BID	20mg/day
Captopril	-	25-150mg/day BID or TID	25mg TID Empty stomach
Cilazapril	Inhibace	2.5- 10mg/day OD orBID	2.5-5mg OD
Enalapril	Vasotec	5-40mg/day OD or BID	10-40mg/day
Fosinopril	Monopril	10-40mg/day OD or BID	20mg/day
Lisinopril	Prinivil, Zestril	10-40mg OD	20mg OD
Perindopril	Coversyl	4mg OD or BID	-
Quinapril	Accupril	10-20mg OD or BID	-
Ramipril	Altace	2.5-10mg OD or BID	10mg/day
Trandolapril	Mavik	1-4mg OD	-
	ARB[2,3,4,6]		
Candesartan	Atacand	8-32 mg OD	8-16mg OD
Eprosartan	Tevetin	300-400mg OD or BID	-
Irbesartan	Avapro	150-300mg OD	-
Losartan	Cozaar	25-50mg OD or BID	50-100mg/day
Telmisartan	Micardis	80mg OD	-
Valsartan	Diovan	80-320mg OD	-

Source: Therapeutic Choices, RxFiles

1. Side Effects of ACEI: Dry cough; Hyperkalemia (especially with renal insufficiency, K^+ sparing diuretics, K^+ supplements, NSAIDs); angioedema, hypotension (especially if volume depleted or with diuretics); acute renal failure with bilateral renal stenosis; headache; dizziness; fatigue; rash; loss of taste; hepatotoxicity; dysguesia; pancreatitis; blood dyscrasias
2. Side Effects of ARBS: same as ACE except no cough and less dizziness and headache.
3. Drug Interactions: K^+ supplements; K^+ sparing diuretics (assess K^+ and SCr regularily); NSAIDs; Lithium (possible toxicity)
4. Contraindications: pregnancy, history of angioedema, renal artery stenosis (solitary kidney or bilateral)
5. Use lower dose in renal impairment.
6. **Renal function and K^+ must be monitored. Check BUN, CrCl, electrolytes before starting, after 7 days, then regularly thereafter, including when dose ↑ or when a diuretic is added or ↑.**

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13.4 Diuretics

Drug	Trade Name	Dose Range	Usual Dose
	Thiazides[2,3,4,12]		
Hydochlorothiazide	HCTZ	6.25-100mg OD[1]	12.5-25MG OD
Chlorthalidone[5]	-	12.5-25mg OD[1]	12.5-25mg OD Or 25mg EOD
Indapamide[6]	Lozide	1.25mg-5mg OD[1]	1.25-5mg OD
Metolazone[8]	Zaroxolyn	2.5mg-10mg OD	5mg OD
	Loop Diuretics[3,4,7,12]		
Furosemide	Lasix	20-240mg/day OD or BID	
	K^+sparing[12]		
Spironolactone[9,10,11]	Aldactone	12.5-200mg/day[1] OD or BID	25-50mg OD

Source: RxFiles, Therapeutic Choices

1. Lower dose in renal impairment. Use furosemide if CrCl ≤30mL/min (SCr > 150mmol/L)
2. Side Effects: lower doses are well-tolerated; rash; allergic reaction; photosensitivity; ↑calcium; ↑uric acid; ↑cholesterol; ↑glucose; ↓sodium; ↓potassium; ↓magnesium;↓zinc; pancreatitis; sexual dysfunction.
3. Drug Interactions: Digoxin (toxicity if K^+ is low); ↑lithium; NSAIDs (loss of BP control), corticosteroids (↓K^+)
4. Contraindications: symptomatic hyperuricemia (gout); sulfa allergy; anuria; hyponatremia
5. More potent and longer acting than HCTZ. Minimal lipid/electrolyte changes.
6. Other side effects: headache, dizziness. Less effect on lipids and glucose.
7. Side Effects: dehydration; ↓(K^+, magnesium, calcium); ↑(glucose, uric acid, glucose, lipids); azotemia; nausea; anorexia; weakness; fatigue; rash; ototoxicity at high doses
8. Is effective in patients with mild to moderate renal dysfunction; beneficial in CHF +/- furosemide
9. Effective in CHF, hyperaldosteronism, edema, cirrhosis, systolic dysfunction (alternative first line)
10. Side Effects: ↑K^+ (especially in renal failure, diabetes; avoid if K^+ >5mmol/L); ↓Na; dehydration; rash; gynecomastia; abnormal menstruation; GI ulcers
11. Drug Interactions: ↑K^+ with ACEI, ARB, potassium supplements; ↓diuretic effect, worsening renal function with NSAIDs
12. **Electrolyte disturbances can be life-threatening. Electrolytes and renal function must be monitored regularly.**

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13.5 CCB = Calcium Channel Blockers

Drug	Trade Name	Dose Range	Usual Dose
	DHP (long acting)[1,2,3,4]		
Amlodipine[5]	Norvasc	2.5-10mg OD	5-10mg OD
Felodipine[6]	Renedil, Plendil	2.5-20mg OD[7]	5-10mg OD
Nifedipine	Adalat XL[8]	30-120mg OD	30-60mg OD
	Non-DHP[9,10,11]		
Diltiazem[13]	Cardizem reg Cardizem CD,ER,SR Tiazac reg, XC	120-420mg/day[12] (reg TID; SR give BID; CD, ER, XC give OD)	240-360mg/day Reg TID; SR- give BID; CD,ER,XC give OD)
Verapamil[14]	Isoptin reg, SR Chronovera (SR)	120-480mg/day (reg TID; SR give OD)	180-240mg/day (reg TID; SR give OD)

Source: RxFiles, Therapeutic Choices

1. DHP = dihydropyridine. Relatively more peripheral vasodilation and less heart effect than non-DHP.
2. Side Effects: dizziness; headache; flushing (dose-related); rash; peripheral edema; gingival hyperplasia; gynecomastia; dyspnea and pulmonary edema in LV dysfunction (may worsen HF); ↑heart rate.
3. Drug Interactions: carbamazepine; cyclosporine; azole antifungals; macrolides; HIV meds; many other potential
4. Contraindicatins: SBP <90mmHg; recent MI; AV block; sick sinus syndrome; pulmonary edema
5. ↑toxicity with grapefruit. May be effective in diastolic dysfunction.
6. ↑toxicity with grapefruit. Less negative inotropic effects than nifedipine. Safe in heart failure
7. Do not crush or chew tablets.
8. Do not use short-acting formulations for essential hypertension. Can be used in pregnancy. Potential negative inotropic effects
9. Side Effects: as per DHP except ↓heart rate, AV block, HF
10. Drug Interactions: ↑negative inotropic effects with amiodarone, *B*-blockers, digoxin; ↑level of carbamazepine, cyclosporine, digoxin; ↑myopathy with simvastatin, lovastatin; ↑level with HIV meds, cimetidine; ↓level with rifampin; many other potential
11. Contraindications: as per DHP plus systolic dysfunction, CHF; use with caution in 2nd or 3rd degree heart block without pacemaker
12. Can sprinkle contents of capsule but do not crush tablets.
13. May also cause lupus-like rash.
14. May also cause constipation. Most negative inotropic and chronotropic

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13.6 *B*-Blockers ("oprolols")

Drug	Trade Name	Dose Range	Usual Dose
	Cardioselective[4,5,6]		
Acebutolol[3]	Sectral	100-800mg/day[1] OD or BID	400mg/day
Atenolol	Tenormin	25-100mg/day [1] OD or BID	50mg/day
Bisoprolol	Monocor	2.5-20mg OD[1,2]	5-10mg OD
Metoprolol	Lopressor	12.5mg-400mg/day[2] (reg BID, SR give OD)	100-200mg/day
	Non-Cardioselective[4,5,6]		
Nadolol	-	20-320mg/day[1]	160mg/day
Pindolol[3]	Viskin	5-30mg BID[2]	15mg BID
Propranolol[7]	Inderal	80-320mg/day[2] (reg BID, LA give OD)	160-320mg/day
Timolol	-	5-30mg BID[2]	20mg BID

Source: Therapeutic Choices

1. Lower dose in renal impairment.
2. Lower dose in liver impairment.
3. Also ISA (intrinsic sympathomimetic actvitiy) IE less bradycardia, lipid changes and cold extremities; NOT recommended in angina or with history of MI
4. Side effects: fatigue, ↓HR; ↓exercise capacity; headache; impotence; vivid dreams; hallucinations; worsens PAD, CHF, Reynauds syndrome; cold extremities; dyslipidemia (↑TG, ↓HDL); may mask/delay symptoms of hypoglycemia; less common: hyperglycemia, depression, heart failure, heart block; acebutolol may cause +ve antinuclear antibody test and Lupus
5. Drug Interactions: ↓HR with digoxin, nonDHP-CCB; ↑effect of amiodarone; ↑toxicity with cimetidine; clonidine (hypertensive crisis); insulins, NSAIDs (↓hypotensive effect); ↓level of B-Blocker with phenobarb
6. Contraindications: severe or poorly controlled asthma/COPD; 2nd or 3rd degree heart block; uncompensated heart failure; severe peripheral artery disease
   Use with caution in persons >60 years. Sudden withdrawal may exacerbate angina/MI: taper dose before discontinuing.
7. Possibly more CNS effects and lipid effects. Also used for anxiety; migraine prophylaxis; thyrotoxicosis; GI bleed.

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13.7 Other Antihypertensive Agents

Drug	Trade Name	Dose Range	Usual Dose
	B&α Blockers		
Labetolol[4]	Trandate	100mg BID-400mg TID[2]	200mg BID
	á Blockers[5,7]		
Doxazosin	Cardural	2-8mg HS	8mg HS
Prazosin	Minipress	0.5-5mg BID	2mg BID
Terazosin[6]	Hytrin	1mg HS-10mg BID	5mg HS
	Centrally Acting[8]		
Clonidine[9]	Catapres, Dixarit	0.1mg BID-0.2mg TID	0.1-0.2mg BID
Methyldopa[10]	Aldomet	125mg BID-500mg QID[2]	250mg BID
	Vasodilators[11]		
Hydralazine[12]	Apresoline	10-50mg QID[1]	25mg QID
Minoxidil[13]	Loniten	2.5-50mg BID[1]	10mg BID
	Renin Inhibitor		
Aliskiren[14]	Rasilez	150-300mg OD[3]	-

Source: Therapeutic Choices, RxFiles

1. Lower dose in renal impairment.
2. Lower dose in liver impairment.
3. Absorption decreased by high fat meal.
4. Side Effects: see non-selective B- Blockers but no effect on lipids; also: edema, dizziness, nasal congestion, postural hypotension
   Drug Interactions: see non-selective B- Blockers
   Contra Indications: see non-selective B- Blockers
   Used in pregnancy.
5. Side Effects: orthostatic hypotension; headache; drowsiness; palpitations; nasal congestion;
   Drug Interactions: Add other hypotensives with caution (syncope).
6. ↑level with verapamil
7. Do not use for initial treatment (3rd line agent). Not recommended for hypertension in diabetes. May be beneficial in pheochromocytoma or prostatism.
8. 2nd or 3rd line agents (if alternatives are contraindicated or in refractory hypertension). May worsen depression, impotence. An option for pheochromocytoma or prostatism
9. Causes rebound hypertension if abruptly stopped. Has a greater role in psychological conditions (ADHD)
   Side Effects: sedation; dry mouth; ↓HR
   Drug Interactions: cyclosporine, mirtazapine, TCAs
   Contraindications: CHF, heart block, diabetes (neuropathy)
10. First line for hypertension in pregnancy
    Side Effects: sedation; dry mouth; depression; nasal congestion; orthostatic hypotension; palpitations; sexual dysfunction; sodium and water retention; drug fever; hepatotoxicity;
    Drug Interactions: ↓absorption with iron (separate by 2 hours); ↓BP with levodopa; ↑BP with TCAs; ↑side effects of lithium
11. 2nd or 3rd line. Consider adding a B-blocker or centrally acting agent to minimize reflex tachycardia and a diuretic to prevent sodium and water retention.
12. Side Effects: reflex tachycardia; headache; edema; Lupus syndrome (at high doses); aggravate angina; dizziness; hepatitis
    Contraindications: left ventricular hypertrophy
13. Side Effects: reflex tachycardia; edema; pericardial effusion; lupus; rash; ↑facial hair
14. Side Effects: diarrhea; headache; ↑K^+; rash; allergy; sore throat; rare: cough, angioedema, gout
    Drug Interactions: cyclosporine; furosemide; irbesartan; ketoconazole
    Contraindications: pregnancy

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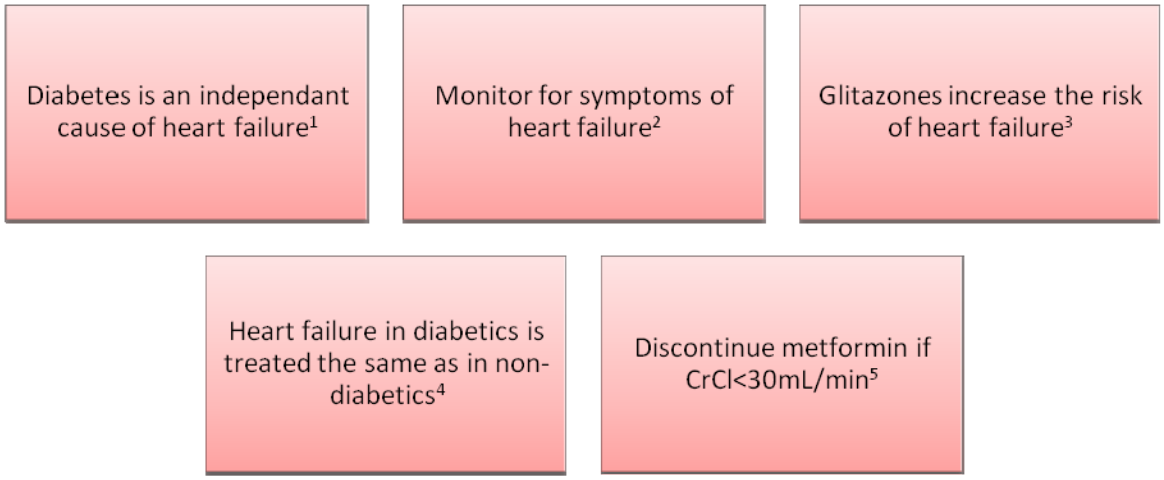
14.1 **Heart Failure**



1. Diabetes can cause a cardiomyopathy which results in a decline in cardiac function. Microalbuminuria is also an independent risk factor for heart failure. ACEI, by reducing kidney albumin excretion, lower the risk of new-onset heart failure.
2. Shortness of breath, peripheral edema, fatigue. Heart failure is sometimes misdiagnosed as COPD, pneumonia, varicose veins, etc.
3. Glitazones should not be given to patients with unstable or severe heart failure; close monitoring is required for patients with mild-moderate heart failure. Use of glitazones plus insulin is not recommended nor approved in Canada.
4. Persons with renal failure may require lower doses of medications for heart failure and slower titration. Monitor electrolytes, creatinine, BP, body weight more frequently.
5. Heart failure patients taking metformin are at increased risk of lactic acidosis if they have impaired renal function.

   CrCl can be calculated using the Cockroft/Gault equation: GFR (men)= (140-age) * weight(kg)/72 * SCr; GFR (women)= calculate as per men then multiply by 0.85.

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15.1 Hypoglycemia

Severity	Symptoms[1]	Treatment
Mild	• Patient can self-treat • Trembling, palpitations, sweating, anxiety, hunger, nausea, tingling	• 15g carbohydrate[3](CHO) • Wait 15 minutes, retreat if BG <4.0mmol/L • Monitor BG until stable at >4mmol/L
Moderate	• As above • Also confusion, difficulty concentrating, weakness, dizziness, drowsiness, headache, vision changes, difficulty speaking	• As above
Severe[4]	• Patient requires assistance • May be unconscious[2] • BG usually <2.8mmol/L • Call 911 • Discuss episode with diabetes nurse ASAP	• Conscious: 20g CHO • Wait 15 minutes, re-treat with 15g CHO if BG <4.0mmol/L • Unconscious: 1mg Glucagon[4] IM or SC • IV access: glucose 10-25g Over 1-3 minutes • Once alert give meal or snack

1. Hypoglycemia is most often drug-induced, especially if trying to meet tight glycemic target and can remain problematic for several hours. **Repeat BG every 15 minutes until stable at >4mmol/L**. To prevent repeated hypoglycemia, offer the usual meal or snack that is due once hypoglycemia is reversed. If the next meal is > 1hour away, give a snack that includes protein and 15g carbohydrate.

   It occurs in about 20% of persons taking insulin secretagogues. It is rarely fatal, but can cause immediate danger if the patient is driving, operating machinery, etc when the episode occurs.

2. Prolonged coma is associated with transient paresis, convulsions, and encephalopathy.

3. **Glucose tablets/solution are preferred to glucose gel (gel has slower onset). Alternatives to glucose: ¾ cup regular pop or juice; 6 'Lifesavers'; 1 tablespoonful honey; 3 teaspoonfuls table sugar dissolved in water**. 15g CHO raises BG by 2.1mmol/L within 20 minutes – enough to bring symptom relief. Glucose gel, orange juice, and milk have slower onset.

4. Glucagon raises BG 3.0-12.0mmol/L within 60 minutes. With advanced liver disease and after 2 standard alcoholic drinks, the effect of Glucagon is impaired.

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16.1 Erectile Dysfunction

Affects 45% of men with diabetes

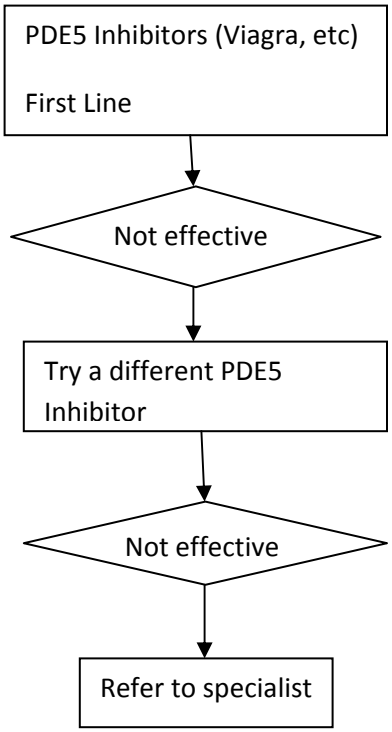
Risk Factors: ↑age, longer duration of diabetes, poor glycemic control, smoking, hypertension, dyslipidemia, CVD, ↓androgen

- May be first sign of CVD
- retinopathy may correlate with erectile dysfunction

Due to micro/macrovascular disease and neuropathy

- May be side effect of medication used to manage diabetes

May be psychological and situational influences



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16.2 PDE5 Inhibitors = Phosphdiesterase-5 Inhibitor

Drug	Trade Name	Dosing	Onset	Duration
Sildenafil[1]	Viagra	25-100mg[2,3,4]	30-60 minutes[6,7]	4-12 hours (peak effect in 1 hour)
Tadalafil[1]	Cialis	10-20mg/event OR 2.5-5mg OD[4]	30-60 minutes	36 hours (peak effect in 2hours)
Vardenafil[1]	Levitra	5-10mg[2,5]	30-60 minutes[6,7]	As per Viagra

1. Side Effects: common: flushing, headache, dyspepsia, nasal congestion; diarrhea, GI upset (dose related); blurred vision (more with Viagra, Levitra); rash; myalgia; ↓smell; hearing loss; amnesia; rare but serious: QT prolongation (Levitra), MI, priapism, vision loss

   Drug Interactions: ↑hypotension with alpha-1 blockers (ex prazosin – avoid or space by 4hours), antihypertensives, alcohol; ↑toxicity of PDE5I: azole-antifungals, cimetidine, macrolides, ciprofloxacin, doxycycline, grapefruit, isoniazid, HIV meds, quinidine, verapamil (use lowest dose of PDE5I and maximum interval of Q24H for Viagra and Levitra, Q72H for Cialis); ↓effect of PDE5I: carbamazepine, phenytoin, phenobarb, rifampin

   Contraindications: concurrent use of nitrates (NitroDur, ISDN, etc) may cause serious ↓BP leading to fainting, stroke, or MI (allow nitrate washout of 24 hours before Viagra or Levitra and 48 hours before Cialis); concurrent use of alpha-blocker (prazosin, terazosin); symptomatic hypotension or any condition where lowering of BP would not be tolerated; previous priapism or conditions predisposing to priapism; seek emergency care if chest pain occurs within 24 to 48 hours of taking PDE5I

2. Take 30-60 minutes prior to intercourse.
3. Maximum dose 100mg once in 24 hours.
4. Lower dose in renal or liver disease
5. Lower dose in liver disease
6. Possible onset in 10-15 minutes.
7. Onset may be delayed by high-fat meal.

These materials were developed by the Clinical Subcommittee of the Chronic Disease Network and Access Program of the Prince Albert Grand Council and its partners and funded by the Aboriginal Health Transition Fund.

17.1 Depression in Diabetes

Affects 15% of diabetics[1]

Use a screening tool[2] to identify patients who may require treatment

Associated with poor self-care (less likely to be compliant with diet, exercise plan and medications)

May develop from stress of being diagnosed with and managing a chronic disease or from metabolic affects of diabetes on the brain

Counselling/mental health therapy and antidepressant medications improve mood and therefore blood glucose control

Counselling/metal health therapy should be ongoing since antidepressants take time to work.

1. Consequences include suboptimal glycemic control and increased risk of health complications (from poor self-care), decreased quality of life, increased family problems, and increased health care costs.

2. Ex PHQ-9 (Patient Health Questionnaire-9 for depression) or other screening tool to identify patients who may be depressed. Treatment (mental health counselling with or without medication) can then be prescribed according to the patient's assessed severity of depression.

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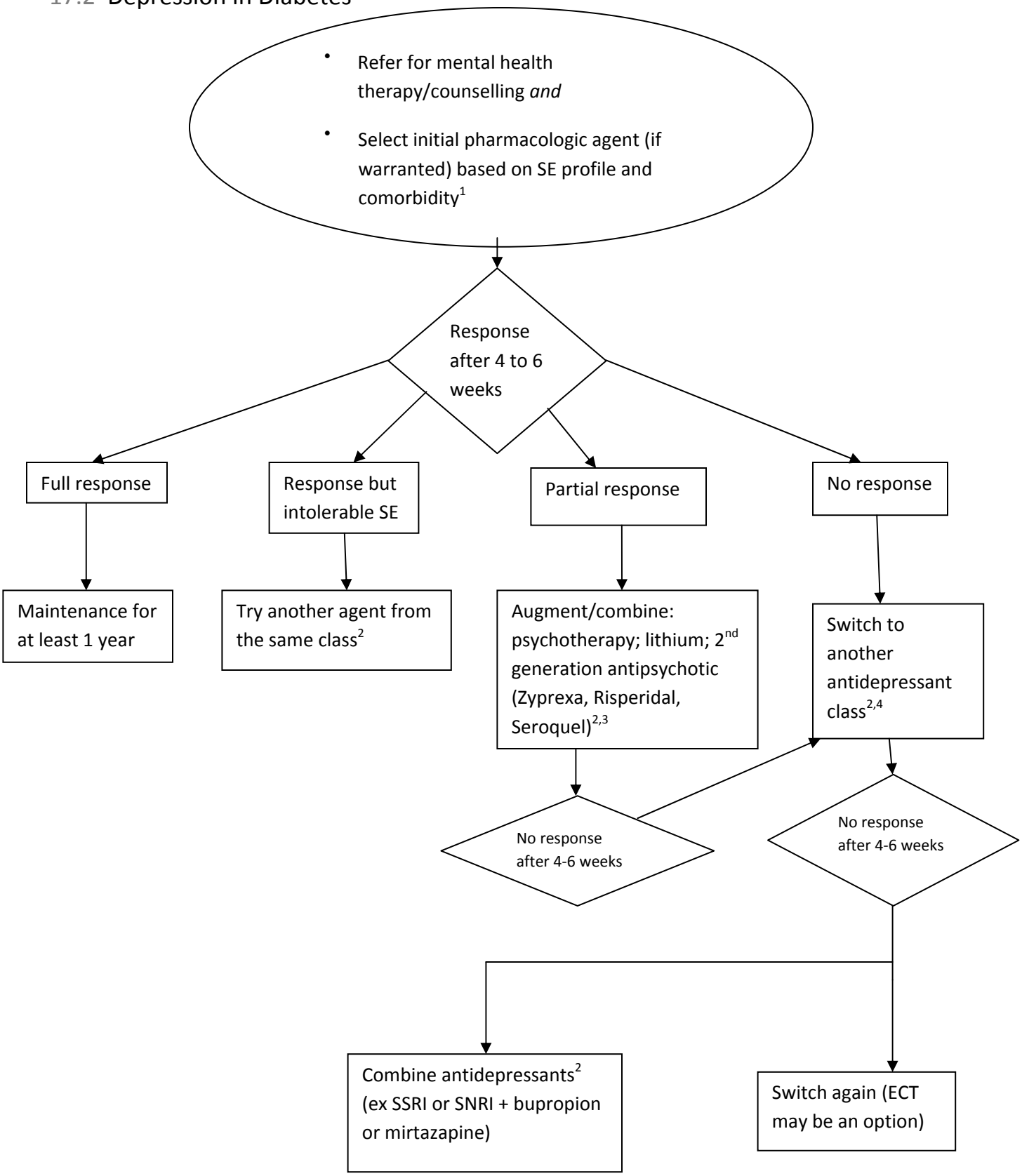
17.2 Depression in Diabetes



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17.3 Depression in Diabetes cont'

1. Antidepressants are generally well-tolerated and safe for diabetics.

   SSRIs, Venlaflaxine, RIMAs, Duloxetine, Bupropion may be good choices because they cause less weight gain.

   Bupropion, Mirtazapine, Moclobomide, Venlaflaxine (lower doses), cause less sexual dysfunction.

   Duloxetine, Venlaflaxine, TCAs are also used to treat neuropathic pain.

   Whichever agent is chosen, optimize dosing during the first 4 to 6 weeks.

2. Once a response is achieved, treatment should be maintained for at least 1 year.
3. These are best prescribed by a specialist. Use the 2nd generation antipsychotics with caution in diabetics because of their tendency to cause weight gain and insulin resistance.
4. Generally there is no need for a washout period, but one agent can be tapered while the other is titrated up. An exception is when switching from MAOI, moclobamide, or fluoxetine to another agent. If any agent is discontinued, it slow tapering is recommended to prevent withdrawal symptoms.

Adolescents: Safety and efficacy is not well-established (concerns with suicide ideation; aggression; agitation). Fluoxetine, clomipramine, fluvoxamine, or sertraline may be possible options.

Pregnancy: Must consider risks to baby and benefits to mother. TCA and SSRI's have the most data. Use the lowest dose and if possible, taper 5-10 days before delivery. Fluoxetine is the agent most studied.

Breastfeeding: Sertraline, paroxetine, and fluvoxamine show lower levels in breast milk and no reported adverse effects in the infant.

Elderly: Dose according to renal function; start low and titrate slowly.

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17.4 Pharmacologic Management of Depression in Diabetes

Drug	Trade Name	Dose Range
	SSRI[1]	
Citalopram	Celexa	10-40mg OD
Fluoxetine	Prozac	10mg AM to start 20-60mg AM
Fluvoxamine	Luvox	25mg HS to start, 100-150mg HS
Paroxetine	Paxil	10mg AM[2 to] to start; 20-60mg AM
Sertraline	Zoloft	25-50mg AM[3] to start; 50-100mg AM
	Dual Action	
Bupropion[8]	Wellbutrin SR	150-300mg/day
	Wellbutrin XL	150-450mg OD[1]
Mirtazapine[9]	Remeron	15-45mg OD
Trazodone[10]	Desyrel	50-400mg HS or BID
	SNRI[4]	
Venlaflaxine	Effexor XR	37.5mg OD to start; 112.5-225mg/day[2,3]
Duloxetine	Cymbalta	30-60mg/day[2]
	TCA[5]	
Amitriptyline	Elavil	10mg HS to start 50-200mg HS
Clomipramine	Anafranil	As per Amitriptyline
Desipramine	-	As per Amitriptyline
Imipramine	Tofranil	As per Amitriptyline[3]
Nortriptyline	Aventyl	10mg HS to start 25-100mg HS
	RIMA[6]	
Moclobamide	Manerix	100-300mg/day to start 450-600mg/day BID PC
	MAOI[7]	
Phenelzine	Nardil	15-30mg/day to start; 30-75mg/day B-TID
Tranylcypromine	Parnate	10-20mg/day to start; 20-60mg/day B-TID

Source: RxFiles, Therapeutic Choices

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17.5 Depression in Diabetes cont'

1. Selective Serotonin Reuptake Inhibitor
   Side Effects: nausea, dry mouth, sexual dysfunction, ↑risk of GI bleed
   Citalopram: also somnolence, sweating; Fluoxetine also nervousness, anorexia, insomnia;
   Fluvoxamine also: drowsiness, sweating, anorexia, most nauseating, constipating,sedating;
   Paroxetine also: drowsiness, fatigue, sweating dizziness more weight gain and sexual dysfunction;
   Sertraline also diarrhea, tremors, most sexual dysfunction
   Drug Interactions: many possible including : MAOI; NAIDs (↑bleeding); ↑SSRI level with cimetidine, clarythromycin, erythromycin, azole antifungals, isoniazid, some HIV meds; ↓level of SSRI with carbamazepine, phenytoin, phenobarb, rifampin; fewest DI with Citalopram; ↑ toxicity of clozapine, methadone, mexelitine, phenytoin, pimozide, propafenone; more drug interactions with Fluoxetine and Fluvoxamine
2. Lower dose in renal dysfunction
3. Lower dose in hepatic dysfunction
4. Serotonin/Norepinephrine Reuptake Inhibitor
   Side Effects: nausea, drowsiness, nervousness, dizziness, dry mouth, ↑BP if >300mg/day, tremor, agitation,headache, sleep disturbances
   Duloxetine also: diarrhea, ↑LFT, ↓appetite, urinary retention
   Drug Interactions: few
5. Tri-cyclic Antidepressants
   Side Effects: anticholinergic (dry mouth, blurred vision, constipation, urinary hesitancy, tachycardia, delirium); antihistaminergic (sedation, weight gain); orthostatic hypotension; lower seizure threshold; sexual dysfunction;
   Fewer with Nortriptyline and Desipramine
   Drug Interactions: many including: MAOI; ↑toxicity with cimetidine, antipsychotics, ↓effect with carbamazepine, phenobarb, rifampin; antiarrythmics; clonidine (↓hypotensive effect); thiazides (↑hypotensive effect)
6. Reversible Inhibitor of Monoamine Oxidase A
   Side Effects: nausea, insomnia, dizziness
   Drug Interactions: avoid sympathomimetics, meperidine; caution with opioids, antihypertensives, antipsychotics, SSRIs, selegiline, excessive alcohol; cimetidine
7. Monoamine Oxidase Inhibitor
   Side Effects: edema, postural hypotension, insomnia, sexual dysfunction, edema
   Drug Interactions: sympathomimetics, meperidine, SSRIs, TCAs, levodopa, tyramine foods
8. Side Effects: agitation, insomnia, anorexia,
   Contraindications: anorexia or bulimia nervosa; seizure disorders; situations that ↓seizure threshold
9. Side Effects: weight gain, sedation, dry mouth, edema, arthralgias
10. Side Effects: drowsiness, nausea, headache, dry mouth, priapism, ↓BP
    Drug Interactions: may potentiate effects of other CNS depressants and hypotensive effects of antihypertensives

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18.1 Neuropathy

Risk Factors[1]: ↑BG; ↑TG; high BMI; smoking; hypertension

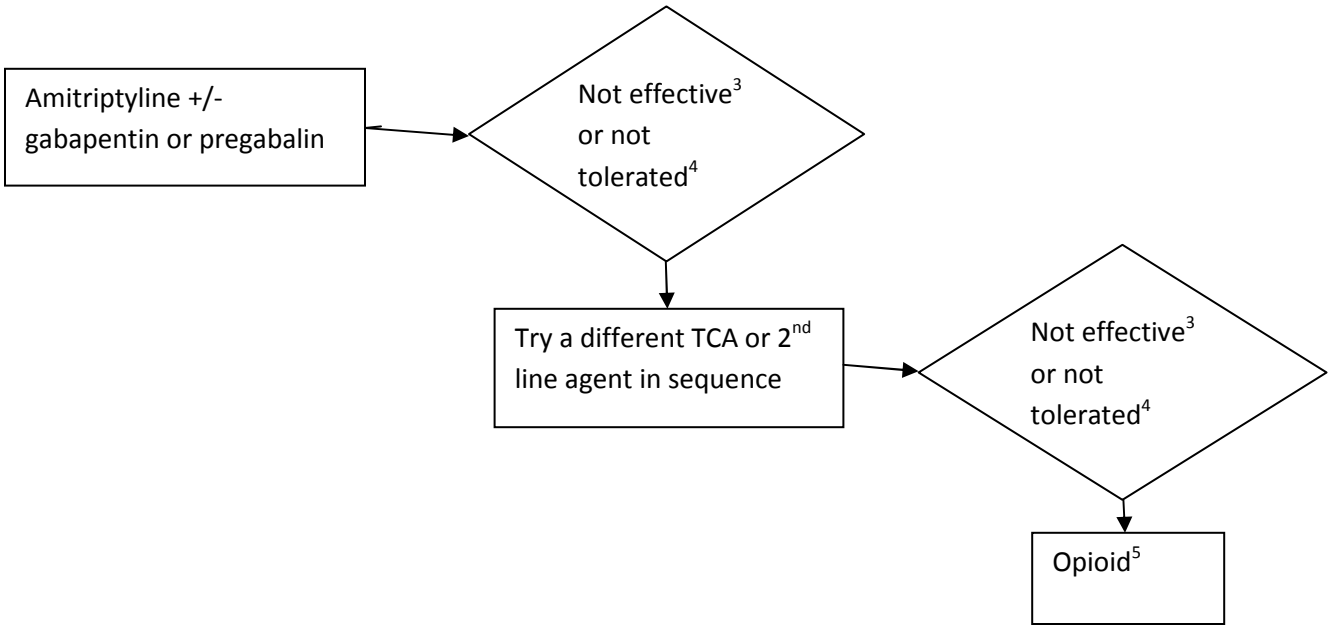
<50% will develop neuropathy within 10 years of onset of diabetes

Type2 diabetics may already have neuropathy at diagnosis

Neuropathic pain can be severe

Foot ulcer and amputation are serious consequences

Other body systems can be involved[2] and should be assessed by a specialist



1. Note that metformin can cause vitamin B12 deficiency, which has similar symptoms to diabetic nephropathy. Patients taking metformin may require vitamin B12 supplementation.
2. Cardiovascular (affects innervations of the heart and cardiac vessels and contributes to exercise intolerance, LV dysfunction, silent MI); gastrointestinal (slows gastric emptying leading to abdominal discomfort and delayed absorption of medications and glucose); genitourinary (incontinence and sexual dysfunction).
3. A reasonable trial duration of a medication to determine efficacy is 2 to 3 months. Ensure patient has realistic expectations of treatment (ie improved functioning and reduced pain by 30%).
4. Ensure patient understands that some side effects are inevitable, but may be tolerable or treatable.
5. Consider tramadol or codeine for mild to moderate pain; morphine or hydromorphone for more severe pain.

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18.2 Pharmacologic Management of Neuropathic Pain

Drug	Trade Name	Initial Dose	Titration
	First Line Agents[1,2,3,4]		
Amitriptyline[6]	Elavil	10mg HS	↑10mg weekly to 150mg HS (max)
Gabapentin[7]	Neurontin	100mg TID[8]	↑300mg weekly to 1200mg/day max
Pregabalin[7]	Lyrica	75-150mg/day[8]	↑150mg weekly to 300mg/day
	Second Line Agents[1,2,3,4]		
Venlaflaxine[9]	Effexor	37.5mg/day[8]	↑37.5mg weekly to 150-225mg/day
Duloxetine[10]	Cymbalta	60-120mg/day	
Topical Lidocaine	Xylocaine	5% gel/cream On 12 hours-off 12 hours	
	Third Line Agents[1,2,3,4]		
Tramadol[11]	ZytramXL,Tridural,Ralivia	150mg OD[8]	↑weekly to 200-400mg OD
Morphine[5,12]	-	5mg Q6H PRN[13]	↑slowly until relief of symptoms or intolerable SE
Hydromorphone[5,12]	Dilaudid	1mg Q4H PRN[13]	As for morphine

Source: Canadian Pain Society; Therapeutic Choices; RxFiles

1. Combinations of agents are often required; be aware of additive side effects (ex sedation) and drug interactions. Do not combine agents from the same class.
2. Try alternate drugs within a class before determining that the class is ineffective or intolerable (ex TCA) .
3. For continuous pain, consider administering the agent(s) regularly to prevent pain and allow tolerance to side effects to develop. For intermittent pain, administer the agent just prior to the pain trigger.
4. Make one change at a time so drug therapy benefits/adverse effects can be accurately assessed.
5. Ensure adequate trial of non-opioid analgesics and adjuncts (at target dose and for appropriate duration) before using opioids.
6. Side Effects of TCA: drowsiness, confusion, constipation, dry mouth, urinary retention, arrhythmia, orthostatic hypotension. Desipramine and Nortriptyline may have fewer side effects.
   Contraindications of TCA: glaucoma, prostatism, CVD.
7. Side Effects: drowsiness, dizziness, peripheral edema, blurred vision, diarrhea, nausea.
8. Adjust dose in renal failure.
9. Side Effects: nausea, drowsiness, dizziness, constipation, hypertension
   Drug Interactions: possible ↑effects with macrolides, azole-antifungals, grapefruit, MAOIs
10. Side Effects: sedation, nausea, constipation, dry mouth. Contraindicated in glaucoma.
11. Side Effects: sedation, ataxia, constipation, seizures (use with caution in epilepsy), orthostatic hypotension.
    Drug Interactions: possible Drug Interactions: possible ↑toxicity with paroxetine, azole-antifungals, macrolides. MAOI
12. Side Effects of opioids: nausea, constipation (requires bowel regimen), allergic reaction, drowsiness. Addiction is unusual unless patient has past history of substance abuse.
13. After 1 or 2 weeks, switch to equivalent daily dose of controlled-release agent (ex MS Contin, Hydromorph Contin). If management of breakthrough pain is required, use the immediate-release formulation of the same agent (ex Statex and MS Contin; Dilaudid and Hydromorph Contin). If the opioid is to be discontinued, slow tapering is required to prevent withdrawal effects.

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19.1 Foot Care

Prevention and Management of Diabetic Foot Problems Includes:

1. Diabetic foot problems can be prevented by optimising glycemic control; implementing vascular protection strategies; treating renal disease and peripheral vascular disease; smoking cessation; optimising nutritional status; and managing neuropathy. Patients should be educated to adopt lifestyle modifications accordingly and be compliant with prescribed treatment. Patients should also be educated about daily foot care including:

   -what to watch for when inspecting the feet;

   -how to inspect the feet if mobility is limited;

   -proper cleansing and moisturising of the feet;

   -proper nail trimming;

   -how to prevent injury to the feet (ex not walking barefoot, etc);

   - to report swelling, redness, warmth, pain or injury to the feet right away.

2. Patients should be educated about how to choose appropriate footwear including: instruction to change the socks daily; not to wear tight socks, garters, or knee-highs; to try on new shoes late in the day (when the feet may be slightly swollen); to choose shoes with a low heel (<5cm); to avoid over-the-counter insoles (which may cause blisters); purchase a shoe from a reputable store (fitted properly). Professional orthotics are recommended for persons with loss of sensation in the feet, vascular insufficiency, or foot deformities.

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19.2 Foot Care cont'

3. Diabetics should have their feet inspected by a professional at least annually or more often if there is a high risk for ulceration. The inspection should include assessment for:

-structural abnormalities (range of motion of ankles and toes, callus pattern, bony deformities, skin temperature);

-neuropathy using a 10-g Semmes-Weinstein Monofilament;

-peripheral artery disease;

-ulceration;

-and evidence of infection.

At this time, the professional should also evaluate the patient's choice of footwear and educate the patient about proper foot care as above.

4. Risk Categories for Ulceration/Amputation (with use of 10-g monofilament)

> 0 – no loss of protective sensation in the feet (continue daily foot care routine; follow up for nail/callus care as needed; annual professional foot inspection)
>
> 1 – loss of protective sensation (continue daily foot care routine; orthotics may be warranted; follow up in 3-6 months for foot/shoe exam and nail/callus care)
>
> 2 – loss of protective sensation in the feet with high pressure (callus/deformity) or poor circulation (continue daily foot care routine; orthotics recommended; follow up in 1-3 months for foot/shoe/activity evaluation and nail/callus care)
>
> 3 – history of plantar ulceration or neuropathic fracture (continue daily foot care routine; orthotics recommended; follow up in 1-12 weeks)

Warning signs for increased risk of complications: previous ulceration; neuropathy; structural deformity; limited joint mobility; peripheral vascular disease; microvascular complications.

5. Non-ulcer diabetic foot complications should be managed according to the etiology of the problem (ex treatment of neuropathic pain with pharmacologic agents; referral to vascular surgeon for severe peripheral vascular disease; referral to orthopaedic surgeon or podiatrist for structural deformities). **If further investigation or specialist-referral is warranted, the patient should not weight-bear on the affected limb to prevent further deformity.** Foot ulcers should be assessed for signs of infection and adequate circulation for wound-healing. **Note that an important indicator of infection is pain in a previously insensate foot.** A wound-care specialist should be consulted. Non-infected foot ulcers with adequate circulation should be debrided if necessary and treated as per recommendations for moist wound healing. Non-infected foot ulcers with poor circulation should be kept dry. Foot infections should be treated aggressively, though current studies do not identify any particular antibiotic agent as being of choice in treating foot infections. The initial agent should be empiric and broad-spectrum. Deep tissue cultures may identify the appropriate agent to use. Uncontrolled diabetes may blunt cellular response to infection: the patient may not present with fever or leukocytosis. Deep infections require surgical debridement as well as antibiotic treatment. Studies suggest that the time limit for healing is 4 weeks (ie if a wound is not healed by week 4, it is not likely to heal at all).

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20.6 Abbreviations

A1C – glycosylated haemoglobin A1C

ACR – Albumin Creatinine Ratio

ADHD – Attention Deficit Hyperactivity Disorder

BG – blood glucose

BMI – body mass index

BP – blood pressure

CHF – congestive heart failure

CKD – chronic kidney disease

CNS – Central Nervous System

COPD – Chronic Obstructive Pulmonary Disease

CrCl – creatinine clearance

CSII – continuous subcutaneous insulin infusion

CV – cardiovascular

CVD – cardiovascular disease

DBP – diastolic blood pressure

DHP – dihydropyridine

DKA – diabetic keto acidosis

ECT – electroconvulsive therapy

FPG – fasting plasma glucose

GDM – gestational diabetes mellitus

GI – gastrointestinal

HDL – high density lipoprotein

HF – heart failure

HIV – human immunodeficiency virus

HR – heart rate

IFG – impaired fasting glucose

IGT – impaired glucose tolerance

INR – International Normalised Ratio

K^+ - potassium

LAIA –long acting insulin analogue

LDL – low density lipoprotein

LFT – liver function test

MDI – multiple daily injections

MI – myocardial infarction

Na – sodium

NSAID – nonsteroidal anti-inflammatory drug

OGTT – oral glucose tolerance test

PAD – Peripheral Artery Disease

PCOS – polycystic ovary syndrome

PG – plasma glucose

PPG – post prandial glucose

PPI – proton pump inhibitor

SBP – systolic blood pressure

SCr – serum creatinine

SE – side effects

SJS – Stevens Johnson Syndrome

SMBG – self-management of blood glucose

TC – total cholesterol

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20.7 Abbreviations cont'

TCA – tricyclic antidepressants

TG – triglyceride

TIA – transient ischemic attack

↑ - increased

↓ - decreased

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20.8 Benefit Status with NIHB

Agents that require prior approval for coverage as a benefit with NIHB:

Bupropion (Wellbutrin): depression in patients not responsive to or intolerant of other antidepressants

Clopidrogel (Plavix): 1 year duration after implantation of intracoronary stent OR acute coronary syndrome (unstable angina or non-STEMI MI) in combination with ASA

Ezetimibe (Ezetrol): for use with a statin when the maximally tolerated dose of statin does not achieve target LDL level OR as monotherapy when statin is not tolerated

Hydromorph Contin: moderate to severe chronic pain not controlled by other agents OR other agents are not tolerated

Insulin-detemir (Levemir)

Insulin-glargine (Lantus)

Pioglitazone (Actos); Rosiglitazone (Avandia): Type 2 diabetes not controlled by metformin or a sulfonylurea OR patient cannot tolerate metformin or sulfonylurea OR metformin or sulfonylurea is contraindicated

Agents that are not a benefit from NIHB:

Aliskiren (Rasilez)

Duloxetine (Cymbalta)

PDE5 Inhibitors (Viagra, Cialis, Levitra)

Pregabalin (Lyrica)

Sitagliptin (Januvia)

Tramadol (Zytram, Relivia, Tridural)

Other agents relevant to the management of Diabetes that are not a benefit from NIHB:

Anti-obesity drugs

Alternative therapies (St John's Wort)

Selected OTC products

Regular soaps, shampoos, and moisturizers

Megavitamins

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20.9 Benefit Status with NIHB cont'

All other items in this publication are at time of printing covered by NIHB. Note that the benefit status of pharmacologic agents is subject to change. For further information about benefit status, prior approval criterion or NIHB in general, please contact the local pharmacy or consult the Health Canada website (www.hc-sc.gc.ca) and follow the links to NIHB from Aboriginal Health.

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20.10

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NUTRITIONAL MANAGEMENT OF TYPE 2 DIABETES

Chronic Disease Network and Access Program

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These materials do not replace the advice or expertise of a registered dietitian.

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1.1 Nutritional Management of Type 2 Diabetes in Adults

- The information provided in this manual is for management of type 2 diabetes in adults and is not appropriate for children under 18 years of age.

Nutritional Goals

- To maintain or improve quality of life, nutritional status and physiological health
- To prevent and treat acute and long-term complications of diabetes and associated conditions (dyslipidemia, hypertension, obesity, etc.)

The Importance of Nutrition in Diabetes Care

- Nutrition therapy can improve glycemic control, reduce A1C by 1-2% and improve clinical outcomes resulting in reduced hospitalization rates
- Counseling by a registered dietitian with expertise in diabetes management, either in a small group or individually, can benefit those with or at risk for diabetes
- Nutrition therapy should be individualized and regularly evaluated and reinforced
- Consistency in carbohydrate intake, spacing and eating regular meals may help control blood glucose levels
- Refer to Figure 1 Nutritional management of hyperglycemia in type 2 diabetes in the Nutrition Therapy chapter of the Canadian Diabetes Association 2013 Clinical Practice Guidelines for the Prevention and Management of Diabetes in Canada

1.2 Nutrient Requirements

Carbohydrate

- Carbohydrate intake should be 45-60% of total daily calories
- Fibre does not raise blood glucose and should be subtracted from the total carbohydrate content of food
- It has been found that soluble fibre (ex. oat products, beans, psyllium, barley, etc.) slows gastric emptying and delays the absorption of glucose in the intestine and therefore improves post meal blood glucose levels
- The fibre (soluble and insoluble) recommendation for people with diabetes is 25-50 grams per day. Refer to the handout "*Foods with Fibre*".

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Sucrose and Fructose

- High consumption of sucrose and fructose (found in candies, junk food, honey, table sugar, syrups, etc.) may increase blood glucose and triglyceride levels
- Sucrose consumption should not exceed more than 10% of total daily intake (eg. approximately 50 grams per day based on 2000 kcal) and fructose consumption should not exceed 60 grams per day

Sugar Alcohols

- Sugar alcohols (maltitol, mannitol, sorbitol, lactitol, isomalt, xylitol, etc.) effect on blood glucose levels are variable and may have no significant effect
- Consumption of 10 grams or greater may produce gastrointestinal symptoms in some individuals

Sweeteners

- Acesulfame potassium, aspartame (Equal®, NutraSweet®, Sugar Twin®, Sweet'N Low®), cyclamate (Sucaryl®, Sugar Twin®, Sweet'N Low®), saccharin (Hermesetas®), sucralose (Splenda®) and steviol glycosides (Stevia®) have been approved by Health Canada as safe to use by people with diabetes
- Saccharin and cyclamate are not recommended during pregnancy and lactation due to the lack of safety evidence
- Refer to Canadian Diabetes Association (CDA) handout *"Sugars and Sweeteners".* Available at: http://www.diabetes.ca/for-professionals/resources/nutrition/sugars-sweeteners/

Protein

- The recommended intake for protein is 15-20% of total daily calories
- People who have complications with their kidneys will need their protein intake evaluated by a Registered Dietitian. See Type 2 Diabetes and Chronic Kidney Disease section.

Fat

- The recommended intake for fat is 20 - 35% of total daily calories
- A high fat diet increases the risk for dyslipidemia. People with dyslipidemia have an increased risk of developing coronary artery disease. This is significant as

people with diabetes already have a 2 - 3 times higher risk for coronary artery disease.

- Saturated fat should be <7% of total daily calories (eg. 15 grams for a 2000 kcal intake) and trans fat should be minimal
- Fish contains heart healthy fats (omega-3 fats) and people should strive to eat fish 2 times per week (non-battered, non-deep fried fish)

Alcohol

- The recommendation is ≤ 3 standard drinks per day for men and ≤ 2 standard drinks per day for women
- 2 - 3 standard drinks consumed with food does not cause concern for hypoglycemic events

What is a standard drink?	
Beer (5% alcohol)	360 ml (12 fl oz)
Hard Liquor (40% alcohol)	45 ml (1.5 fl oz)
Wine (12% alcohol)	150 ml (5 fl oz)

- People who are taking insulin or insulin secretagogues (Glyburide®, Diamicron®, Gluconorm®, etc.) are at high risk of hypoglycemia if they consume alcohol. **Hypoglycemia can occur up to 24 hours after drinking alcohol.**
- If a person with diabetes chooses to drink, special considerations should be taken. Stress the importance of continuing to eat 3 meals per day when drinking. Check with a doctor or pharmacist about the safety of taking medications when drinking. Continue to test blood sugars and make sure the client informs their friends and family that they have diabetes and how to identify and treat a low blood glucose.
- Refer to CDA resource titled *"Alcohol + Diabetes".* Available at: http://www.diabetes.ca/for-professionals/resources/nutrition/alcohol/

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2.1 Practical Nutrition Advice

- Nutrition therapy should be individualized to take into consideration the person's preferences, age, culture, lifestyle, income, activity level and readiness to change
- All people with diabetes should follow Eating Well with Canada's Food Guide for a healthy lifestyle
- This includes a variety of foods from all four food groups: Vegetables and Fruit, Grain Products, Milk and Alternatives and Meat and Alternatives
- Refer to the Saskatchewan Ministry of Health booklet "*Type 2 Diabetes: Your Guide to Getting Started".* This booklet is a good overview of diabetes management for people who are newly diagnosed or those who need a refresher. Available at: http://www.health.gov.sk.ca/type-2-diabetes
- Refer to CDA"handout"*Just the Basics"*. Available at: http://www.diabetes.ca/for-professionals/resources/nutrition/just-basics/ This handout is explained below.

Tips for nutritional management	Rational
Eat 3 meals per day at regular times and space meals no more than 6 hours apart	Consistency in carbohydrate intake, spacing and regularity in meal consumption may help control blood glucose levels
Limit high sugar foods such as sugar, regular pop, honey, jam, desserts, candies, slurpies, juice, etc.	Eating high sugar foods will make blood glucose levels increase quickly. Artificial sweeteners are a good alternative to sugar. Refer to CDA handout *"Sugars and Sweeteners"*. Available at: http://www.diabetes.ca/for-professionals/resources/nutrition/sugars-sweeteners/
Limit high fat foods such as fries, hotdogs, bacon, sausage, bologna, chips, chocolate bars, donuts, cake, cookies, deep fried foods, etc.	Eating high fat foods may lead to weight gain and increase the risk for heart disease. Having a healthy weight can help with blood glucose control and keep the heart healthy. People with diabetes are at an increased risk for heart disease as high blood sugars and a high fat diet can damage the large blood vessels in the body.
Try to have more fibre in your diet	Incorporating fibre into the diet can help to lower blood glucose and cholesterol levels. Fibre helps to slow down the release of glucose from the stomach into the bloodstream therefore blood glucose does not go as high. Fibre helps to keep the stomach full longer which may help to

	decrease food consumption. Refer to *"Foods with Fibre"* handout.
Tips for nutritional management	**Rational**
Water is the best for quenching thirst	Water is what our body needs. Drinking fluids such as pop, juice, juice crystals, hot chocolate, cappuccinos, coffee with cream and sugar, etc., will cause blood glucose levels to rise. Milk contains natural sugars that will raise blood glucose levels; however for a balanced diet and good bone health we need 2 cups of milk per day. Having one cup of milk at a time is healthy and will not drastically raise blood glucose levels.
Try to incorporate more physical activity into your day	Being active will help to improve blood glucose levels, maintain or achieve a healthy weight and lower cholesterol levels. See section 5.1 for Physical Activity guidelines.

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2.2 Using the Food Guide

- When planning a meal try to incorporate 3 - 4 of the food groups. For example, moose meat stew with vegetables (Vegetables and Fruit and Meat and Alternatives), bannock (Grain Products) and a glass of milk (Milk and Alternatives).
- When having a snack try to pick foods from 1 - 2 of the food groups. For example, a banana (Vegetables and Fruit) and yogurt (Milk and Alternatives).
- The Food Guide has recommended serving amounts for different age groups and genders. For each food group one can find their age and gender to know how many servings they need each day. In each food group the serving sizes are printed underneath the pictures of food. Using the serving sizes can help to determine if daily requirements have been met.
- Refer to *"Eating Well with Canada's Food Guide – First Nations, Inuit and Métis"*. Available at: http://www.hc-sc.gc.ca/fn-an/pubs/fnim-pnim/index-eng.php

Food Group	**Advice**
Vegetables and Fruit Children 2 - 3 (4 servings) Children 4 - 13 (5 - 6 servings) Female 14+ (7 - 8 servings) Male 14+ (7 - 10 servings)	• Limit potatoes, corn, turnips, yams and sweet potatoes to 1 serving per meal (1/2 cup or the size of a light bulb) • Limit juice to ½ cup or less per day • Select 100% fruit and vegetable juices • Eat lots of vegetables, they help you to feel full longer, prevent blood glucose from going too high and help to keep the bowel regular • Limit fruit to 1 serving per meal or snack (1/2 cup or the size of a tennis ball)
Grain Products Children 2 - 3 (3 servings) Children 4 - 13 (4 - 6 servings) Female 14+ (6 - 7 servings) Male 14+ (7 - 8 servings)	• Choose whole grain products more often • Try making bannock with oatmeal or whole wheat flour • Choose breakfast cereals with more than 4 grams of fibre per serving • Spread food guide servings throughout the day • Limit to 1 - 2 servings per meal (size of a light bulb)
Milk and Alternatives Children 2 - 3 (2 servings) Children 4 - 13 (2 - 4 servings) Teens 13 - 18 (3 - 4 servings) Adults 19 - 50 (2 servings) Adults 51+ (3 servings)	• Select skim, 1% or 2% milk and limit to 1 cup per meal • Select low fat cheese (20% or less Milk Fat) • Select low fat and artificially sweetened yogurt – limit to ¾ cup

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Food Group	Advice
Meat and Alternatives Children 2 - 3 (1 servings) Children 4 - 13 (1 - 2 servings) Female 14+ (2 servings) Male 14+ (3 servings)	• Select lean meats such as wild meat, chicken (without skin), fish, beef or pork • Trim off visible fat and drain fat off meat when cooking • Try to bake, roast or boil meat rather than frying • If frying use a vegetable oil such as canola or olive oil. Avoid lard, bacon fat, hard margarine and butter. • Limit high fat meats like bologna, bacon, salami, sausage, hotdogs, canned ham and pepperoni • Try meat alternatives such as peanut butter, eggs, beans and non-salted nuts/peanuts more often
Junk food	• Limit foods high in sodium (salt), sugar and fat • Try to limit to 0 - 1 serving per day • Refer to *"Foods that Turn into Sugar"* handout for serving examples

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2.3 Foods that Turn into Sugar

Food Group	Foods that affect blood sugar
Vegetables and Fruits	• Potato/sweet potato/yam/turnip • Corn • Peas/parsnips/squash (if eat more than 1 cup) • Vegetable juice • Fruits – all fruits • Fruit juice
Grain Products	• Bread • Buns/pitas/wraps • Bannock • Cereal/oatmeal • Pasta/noodles • Rice • Crackers • Perogies • Waffle/pancake
Milk and Alternatives	• Milk (carton, canned, powder) • Chocolate milk • Yogurt • Soy milk • Pudding
Meat and Alternatives	• Dried beans, peas or lentils (if you eat more than ½ cup)
Sugar and Sweet Foods	• Sugar/jam/honey/syrup • Chocolate bar • Chips • Candies • Cake/cookies/donut/pie • Muffins • Ice cream/frozen treats • Pop • Ice tea/drink crystals • Granola bar • Hot chocolate • Sport and energy drinks • French fries

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2.4 Budgeting

- Healthy eating is important for the management of diabetes. However, healthy eating may be challenging for people who have limited food availability.
- Budgeting skills are important to learn for people with diabetes
- Refer to the handout *"Healthy Eating on a Budget"*

2.5 Carbohydrate Counting

- Carbohydrate counting can help to control blood glucose levels. Carbohydrate counting takes time to learn and requires client involvement. This type of diet teaching is for a select group of clients.
- Carbohydrate counting can be useful for people on insulin. Clients are able to match their amount of insulin with the amount of carbohydrate containing foods they consume.
- When planning a meal include 3 - 4 of the food groups. Snacks should include 1 - 2 food groups.
- A guideline to start with when starting carbohydrate counting is 45 – 60 grams for women and 60 – 75 grams for men per meal. Snacks may contain 0 - 30 grams of carbohydrate. However, carbohydrate limits need to be individually evaluated and take into account a person's age, gender, level of physical activity, etc. Carbohydrate limits are only a guideline and the best way to find out an individuals carbohydrate limit is to test blood glucose levels before and after meals and snacks.
- Reading food labels is the best way to determine the carbohydrate content of foods. When reading a label, find the bolded word, **carbohydrate**. Beside this word are the total grams of carbohydrates that will affect blood glucose levels. Underneath the word carbohydrate you will find fibre. Fibre does not raise blood glucose levels and should be subtracted from the total carbohydrate amount.

For example:

Nutrition Facts
Per 1/2 cup (125 mL)

Amount	% Daily Value
Calories 70	
Fat 0.5 g	**1** %
Saturated Fat 0 g + Trans Fat 0 g	**0** %
Cholesterol 0 mg	
Sodium 250 mg	**10** %
Carbohydrate 13 g	**4** %
Fibre 2 g	**8** %
Sugars 6 g	
Protein 2 g	

Vitamin A	1 %	Vitamin C	2 %
Calcium	0 %	Iron	4 %

For example:

- 1/2 cup of corn has 13 grams of carbohydrate
- Corn has 2 grams of fibre therefore subtract 13 grams – 2 grams
- This equals 11 grams of carbohydrates that will affect blood glucose.

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3.1 Special Occasions

3.2 Hunting and Fishing

- It is important for people with diabetes to plan ahead when they plan on spending time away from home
- People with diabetes need to be prepared if they are going to be in isolated areas such as when hunting and fishing
- People with diabetes should not go hunting or fishing alone. They should make sure a family member or a friend knows where they are going and when they plan to return. A cell phone should be carried for emergencies (if there is cell service).
- If the client is using insulin, make sure they have a glucagon kit to treat severe hypoglycemia. Anyone going with them should also know how to use the glucagon kit.
- In extreme temperatures, insulin and testing strips need to be protected by using thermal bags with hot or cold packs, or by carrying the insulin next to the body in cold weather.
- Make sure the client takes their medication with them; tests blood glucose levels often (due to the increased activity) and has a proper treatment for low blood glucose. Refer to "*Treatment of Low Blood Sugar"* handout.
- People with diabetes need to pack enough food so they can eat every 4 - 6 hours. **Do not rely on eating what you catch**. When planning meals they should include foods from each of the 4 food groups. It is important to have carbohydrate and protein foods at each meal to maintain appropriate blood glucose levels.
- A first aid kit should be carried to treat cuts, burns, blisters and bites to prevent infection
- It is important to wear proper footwear. The footwear should be comfortable and not too tight. The clients should wear shoes that do not pinch or rub the feet. Socks should be worn with shoes and an extra pair of socks needs to be packed in case socks get wet.
- Refer to handout *"Diabetes Care: Hunting and Fishing"*

3.3 Fasting

- When fasting there is a concern for low blood sugars. It is important to perform frequent blood glucose tests to monitor fluctuations in blood glucose levels.
- People with diabetes should talk with the person(s) who are organizing the fast. The client could ask if special considerations are made for people with diabetes.

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Special considerations could include drinking water, eating a small meal, drinking other fluids, etc.

- People with diabetes should talk to their caregiver to learn how to fast safely. Clients on insulin and/or insulin secretagogues may need to adjust their doses.
- When fasting there is a concern for low blood glucose levels. Therefore, it becomes important to ensure frequent blood glucose testing is performed to detect low blood glucose levels.
- If a low blood glucose level is detected then it needs to be treated. Refer to "*Treatment of Low Blood Sugar"* handout.
- **People with diabetes should never perform a fast in seclusion.** A family member or friend should be present and educated on how to recognize and treat a low blood glucose.

3.4 Feasting

- When feasting there is a concern for high blood glucose levels. It is important to perform frequent blood glucose tests to monitor fluctuations in blood glucose levels.
- It is important for people with diabetes to control the portion size of the carbohydrate containing foods
- Those who are on insulin may be able to make adjustments to their insulin to handle the extra carbohydrate intake during a feast
- Encourage people with diabetes to have more of the foods that do not affect blood glucose (ie. vegetables) and have smaller portions of foods that do affect blood glucose (ie. bannock, bread, rice, potatoes, corn, noodles, etc.)
- It is important for people with diabetes to control the portion size of meat as some meats (processed meats, beef, pork) are high in saturated fat. Saturated fat can increase cholesterol levels.
- Eating smaller meals more often, rather than having one big meal, may help with blood glucose control

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4.1 Special Considerations

4.2 Treatment of Low Blood Glucose

- Some symptoms of hypoglycemia include shaking, sweating, hunger, nausea, dizziness, confusion, etc.
- A low blood glucose can be caused by doing more physical activity than usual, skipping, delaying or not finishing a meal or snack, taking too much diabetes medication and drinking alcohol on an empty stomach
- If a client is experiencing these symptoms they should check their blood glucose. If the blood glucose reading is below 4 mmol/L it must be treated immediately with 15 grams of quick acting sugar. Some examples of quick acting sugars include regular pop, juice, honey, jam, sugar, candies, etc. Some foods that are high in sugar are also high in fat such as a chocolate bars, chips and cookies. These foods should not be used as they do not raise blood glucose levels fast enough. Refer to handout *"Treatment of Low Blood Sugar"* for appropriate treatment of low blood glucose
- Consuming too much quick acting sugars can cause the blood glucose to go too high causing rebound hyperglycemia

4.3 Sick Days

- When sick, the body makes stress hormones to help fight the illness. When there are a lot of stress hormones, insulin may not work as usual, which can result in high blood glucose levels and dehydration.
- Always remind the client to get their annual flu shot

Dealing with Illness

1. Continue taking diabetes medications and/or insulin

   - Illness may cause blood glucose levels to increase regardless of food intake
   - People who take insulin may need insulin adjustments

2. Drink plenty of fluids

   - When someone is sick and blood glucose levels are high this may cause increased urination as the body is trying to get rid of the excess glucose. It is important to drink plenty of fluids to stay hydrated.

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- Drink one cup of sugar-free liquids every hour. Avoid coffee, tea and some pop as they contain caffeine which may make dehydration worse.
- Choose from these liquids

    - Water
    - Broth
    - Caffeine free tea
    - Diet caffeine-free pop
    - Artificially sweetened beverage

3. Eat at regular meal times

- If the client is well enough to eat they should continue with their usual meals. If they are too sick to eat, suggest they have a snack or a sugar containing fluid instead. Try to have one of these items every hour:

- Snack Ideas

    - 1 slice of bread or toast
    - 7 crackers
    - ¾ cup of oatmeal
    - A piece of fruit
    - Half a cup of applesauce
    - ½ cup of regular gelatin

- Fluids

    - 1 cup of milk (skim, 1% or 2%)
    - ½ cup of 100% juice
    - ¾ cup of regular caffeine free pop
    - 1 cup of caffeine free tea with 1 tbsp of sugar or honey

4. Test your blood glucose

- Test blood glucose levels every 2 - 4 hours
- If client has nausea, vomiting or stomach pains they should be tested for ketones.

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5. Not all cold and flu medicines are appropriate due to the high sugar content

    - Use sugar free cough syrups and cough drops
    - Not all cold and flu medication are safe for people on high blood pressure medication
    - Talk to a pharmacist

6. When to tell the client to seek medical advice

    - If they cannot eat or drink
    - If they are vomiting and/or have diarrhea 2 times or more in 4 hours

- Refer to the handout *"Diabetes and Sick Days"*

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5.1 Physical Activity

- Physical activity has many benefits for people with type 2 diabetes including:

    - Helps insulin to work better
    - Prevents heart disease and stroke
    - Improves blood pressure and cholesterol levels
    - Controls appetite and helps people to lose weight
    - Enhances energy, mood and decreases stress levels
    - Improves quality of life

- Regular physical activity can improve blood glucose control. Engaging in regular physical activity can result in a decrease or elimination of diabetes medications.
- All clients who have not exercised in a long time should check with their doctor to make sure there are no reasons why they should not be active
- People with possible cardiovascular disease or microvascular complications who want to undertake exercise more vigorous then brisk walking should have a medical evaluation for conditions that might increase exercise-associated risk.
- Assess for conditions such as:
    - Neuropathy (autonomic and peripheral)
    - Retinopathy
    - Coronary heart disease (resting ECG and/or exercise stress test)
    - Peripheral artery disease
- It is important to wear proper footwear when doing physical activity. The footwear should be comfortable and not too tight. The client should wear shoes that do not pinch or rub the feet. Socks should be worn with shoes and an extra pair of socks needs to be packed in case socks get wet.
- People with diabetes should accumulate a minimum of 150 minutes of moderate- to vigorous-intensity aerobic exercise each week, spread over at least 3 days of the week, with no more than 2 consecutive days without exercise
- People with diabetes (including elderly people) should perform resistance exercise at least twice a week and preferably 3 times per week in addition to aerobic exercise

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5.2 Types of Physical Activity

- We all need a combination of aerobic, resistance and flexibility activities

1. Aerobic Activities

- Helps to keep the heart strong and healthy
- This activity involves continuous, rhythmic movements of large muscle groups and must be done for at least 10 minutes at a time to have a benefit for the heart
- Example: brisk walking, biking, dancing, hockey, soccer, jogging, swimming, etc.

2. Resistance Activities

- Increases muscle strength and power
- Helps the body to be more sensitive to insulin
- If the client has hypertension or retinopathy, they need to check with their doctor first before starting strength activities. Strength activities may strain the blood vessels in the eye.

  Example: lifting weights, hauling wood, using tension bands, push ups, etc.

3. Flexibility Activities

- Keeps the muscles relaxed and joints flexible
- Enhances the ability of joints to move through their full range of motion
- Example: stretching, bending, reaching, yoga etc.

5.3 How often to Exercise

1. Aerobic activities

- Everyone needs 150 minutes (2 ½ hours) of aerobic activities each week of moderate to vigorous intensity
- Aerobic exercise should be spread over at least 3 days with more than 2 consecutive days without any activity

2. Resistance activities

- Try to do strength activities at least 2 times a week, preferably 3 times a week

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- Try for one set of 15 - 20 reps of each exercise and gradually increase to 2 sets of 10 - 15 reps then 3 sets of 8 reps

3. Flexibility activities

- Try to do flexibility activities everyday
- It is recommended to stretch before and after activity to prevent injury

5.4 How Exercise helps Blood Sugars

- Being physically active can help to achieve good blood glucose control
- Regular activity and healthy eating can help people to lose weight, improve insulin sensitivity and have better blood glucose control
- Regular exercise may also lead to a decrease in the amount of diabetes medication needed

5.5 Testing Blood Sugars and Exercise

- Testing should be done before the client starts exercising and after. This will help to show how effective the exercise was on lowering blood glucose levels. This can be motivating for people to see the result on their blood glucose levels.
- Clients taking insulin or insulin secretagogues should ingest 15 – 30 grams of carbohydrate if their pre-exercise blood sugar is < 5.5 mmol/L
- Exercise needs to be delayed or avoided if blood glucose levels go below 4 mmol/L
- Generally exercise does not need to be postponed because of high blood glucose, provided they feel well. If blood sugar levels are elevated >16.7 mmol/L, it is important to ensure proper hydration and monitor for signs and symptoms (e.g. increased thirst, nausea, severe fatigue, blurred vision or headache), especially for exercise to be performed in the heat.

5.6 Snacks and Exercise

- If the client is not on any medications to manage diabetes then a snack is not required and there is no risk for a low blood glucose
- If the activity is unplanned and the client is taking pills that increase the secretion of insulin or are taking insulin, they are at risk of having a low blood glucose. Blood glucose levels should be monitored and depending on the intensity of the physical activity a snack may be needed. The client should be prepared to treat a low blood glucose.

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- If the client is on insulin and wants to control their weight they may need to reduce the dose of insulin so added snacks are not required

5.7 Fluids and Exercise

- Water is the best choice for staying hydrated
- Sports drinks contain added sugar and are not required for most people
- To avoid dehydration:

    - Keep blood glucose level in target ranges
    - Aim for 8 - 10 cups of fluid everyday
    - Avoid excess caffeine and alcohol
    - Do not wait until you are thirsty to have a drink
    - Carry a water bottle with you
    - Exercise when it is cooler. This is usually in the mornings and evenings.

- Refer to the handout *"Diabetes and Physical Activity´*

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6.1 Weight loss

- Approximately 80 - 90% of persons with type 2 diabetes are overweight or obese
- A small weight loss of 5 - 10% of body weight can improve insulin sensitivity, blood glucose, blood pressure and lipid control
- The initial assessment should include weight and waist circumference
- Waist circumference values ≥ 102 cm (40 inches) in men and ≥ 88 cm (35 inches) in women is associated with increased health risks
- A healthy weight loss means eating 3 meals a day and taking diabetes medications regularly

6.2 Treatment of Obesity:

Goals

- Reduce body fat
- Attain and maintain a healthy or lower body weight
- Prevent weight regain

Healthy Weight Loss

- A healthy weight loss is 1 - 2 kg (2.2 - 4.4 lbs) per month
- Eating appropriate portion sizes and being physically active are an important part of weight management. For most people a calorie deficit of 500 kcal is required to lose 0.45kg/week, however this may not apply to all individuals.
- Refer to the handout *"Tips for Healthy Weight Loss"*

6.3 Safety of Alternative Weight Loss Solutions

- There are many different natural health products (NHP) being promoted for weight loss. They are sold over the counter in many retail stores such as pharmacies, grocery stores and health food stores.
- There is not enough evidence to support that supplementation with NHP will lead to significant weight loss
- The evidence is very strong that healthy, well-balanced diets and regular physical activity will help with weight loss and weight control
- Many NHP have been shown to be unsafe when not used properly
- The long term effects of these products are unknown
- The safety of many NHP are unknown for people with medical conditions
- The use of weight loss products such as pills or herbal supplements should be discussed with a physician before starting

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7.1 Type 2 Diabetes and Hypertension

- Most people with diabetes will develop hypertension, which is a major risk factor for microvascular and cardiovascular complications.
- Cardiovascular risk is 2 - 7 times higher in people with diabetes. Up to 75% of this risk can be attributed to hypertension.

Nutrition Goal

- To attain or maintain a healthy blood pressure of < 130/80 through healthy eating and exercise

7.2 Nutrition Recommendations

1. Sodium (salt)

- Maximum sodium intake should be limited to 2300 mg per day while working towards a goal of 1500 mg per day
- This includes sodium added during cooking, at the table and from sodium already in food
- Refer to the handout *"How to Reduce Salt Intake"*

2. Alcohol

- The recommendation is ≤ 3 standard drinks per day for men and ≤ 2 standard drinks per day for women

What is a standard drink?	
Beer (5% alcohol)	360 ml (12 fl oz)
Hard Liquor (40% alcohol)	45 ml (1.5 fl oz)
Wine (12% alcohol)	150 ml (5 fl oz)

- People who are taking insulin or insulin secretagogues are at high risk of hypoglycemia due to alcohol consumption. **Hypoglycemia can occur up to 24 hours after drinking alcohol.**

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3. Caffeine

- Limit to 400 mg per day
- Caffeine can be found in coffee, most pops, some teas, chocolate and energy drinks

Food or Drink	**Caffeine**
Brewed Coffee (1cup)	100 mg
Instant Coffee (1 cup)	66 mg
Decaffeinated Coffee (1 cup)	3 mg
Tea (1cup)	50 mg
Herbal Tea (1 cup)	0 mg
Cola (1 can)	37 mg
Chocolate bar (1)	0 - 10 mg
Chocolate chips (1/4 cup)	26 mg

4. Fibre

- Try to include high fibre foods in the diet. A goal of 25 - 50 grams per day is recommended for people with diabetes.
- Refer to the handout *"Foods with Fibre"* for examples

5. Food Guide

- Include fruits and vegetables, whole grain products and dairy products in a healthy diet
- These foods contain potassium, calcium and magnesium which helps to lower blood pressure
- Supplementation of potassium, calcium and magnesium is not recommended to lower your blood pressure

6. Herbal Supplements

- Some herbal products may interact with cardiovascular drugs and have variable effects on blood pressure
- The use of herbal products should be discussed with a doctor or pharmacist
- For example, avoid grapefruit, grapefruit juice, seville oranges, black licorice, ephedra, coenzyme Q-10 and garlic preparation

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7.3 Lifestyle Factors

1. Smoking

    - Encourage smoking cessation
    - Refer to Partnership to Assist with Cessation of Smoking (PACT) website for additional resources. Available at: http://www.makeapact.ca/

2. Stress

    - Additional stress in life can increase blood pressure and blood glucose
    - Discuss with the client ways that they can relax

3. Exercise

    - People with diabetes should accumulate a minimum of 150 minutes of moderate- to vigorous-intensity aerobic exercise each week, spread over at least 3 days of the week, with no more than 2 consecutive days without exercise
    - People with diabetes (including elderly people) should perform resistance exercise at least twice a week and preferably 3 times per week in addition to aerobic exercise
    - Refer to the Physical Activity section above
    - Refer to the handout *"Diabetes and Physical Activity"*

4. Weight loss

    - Refer to Weight Loss section above
    - Refer to handout *"Tips for Healthy Weight Loss"*

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8.1 Type 2 Diabetes and Cholesterol

- Diabetes is associated with a high risk of vascular disease (2 - 4 fold greater than that of individuals without diabetes)
- Cardiovascular disease is the primary cause of death (65 – 80%) among people with type 2 diabetes

Nutrition Goals

- To attain or maintain appropriate cholesterol levels through healthy eating and exercise (LDL $\leq$ 2 mmol/L)

8.2 Nutrient Requirements

1. Total dietary fat intake should be 20 - 35% of total daily caloric intake. For example, if you are consuming a 2000 kcal diet your fat intake should be between 45 - 75 grams of fat.

2. Limit the unhealthy fats which are saturated and trans fats. Saturated fat intake should be no more than 7% of your total caloric intake. For example if you are consuming a 2000 kcal diet your saturated fat intake should be less than 15 grams. Your diet should not include any trans fats.

   Saturated fats are found in animal based foods such as meat, dairy, butter, lard and processed foods. This type of fat is solid at room temperature. Trans fats are found in hard margarines and processed foods such as store bought cookies and crackers. Trans fat is also known as hydrogenated oil.

3. Consume more of the unsaturated fats such as the monounsaturated and polyunsaturated fats (omega-3). Unsaturated fats are found in plant foods such as canola or olive oil, peanut butter, flax seed, fatty fish, nuts and seeds, soy and non-hydrogenated margarine. Omega-3 fats are mainly found in fish (salmon, sardines, mackerel, herring, northern pike, trout, whitefish, perch and pickerel) and flax seed.

4. Increase soluble fibre intake to be in the range of 10 – 25 grams per day. Sources of soluble fibre include cereals with psyllium, oatbran, barley, legumes and fruits and vegetables.

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8.3 Nutrition Recommendations

1. Ways to lower LDL Cholesterol

- Consumption of saturated and trans fats can lead to increased LDL
- Limiting saturated and trans fat can lead to a decrease in LDL

    - Limit meat and alternative servings to 2 food guide servings (5 oz or 1 cup) for women and 3 food guide servings (7.5 oz. 1 ½ cups) for men each day
    - Choose lean meats such as wild game, fish and poultry (without skin). Wild game is a healthy choice. These animals are very active which makes them have less fat stores.
    - Choose meat alternatives instead of meat more often. This includes peanut butter, eggs and beans.
    - Trim visible fat off meat and remove skins off poultry
    - Drain fat off hamburger and use vegetable oil for frying instead of lard or butter
    - Cook meat in a way that fat drains away such as baking, boiling or roasting
    - Limit foods high in saturated fat such as bacon, bologna, hotdogs, sausage, pepperoni, salami, deep fried foods, chips, chocolate, baking, pastries and prepackaged foods (frozen meals, pizza, lasagna, corn dogs, fries, fish sticks, chicken fingers, instant noodles, etc.)
    - Limit fast food and restaurant meals
    - Choose low fat dairy products such as skim, 1% or 2% milk, light cheese and low fat yogurt
    - Limit added fats to 3 tbsp per day. For example oil, margarine, butter, lard, salad dressing, mayonnaise, sour cream, coffee creamer, gravy, etc.

- Consuming the majority of fat from plant sources can help lower LDL
- Increase the amount of fibre in your diet by choosing whole grain breads, cereals, pasta, beans, fruits and vegetables
- Increase physical activity
- Refer to the handout *"Ways to Lower your Cholesterol"*

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2. Ways to increase HDL Cholesterol

- Increasing physical activity is the most effective way to increase HDL
- Smoking cessation can increase HDL
- Limit saturated fats and choose plant based fats more often
- Eating fatty fish (salmon, sardines, mackerel, herring, northern pike, trout, whitefish, perch and pickerel) 2 times a week may help increase HDL
- Refer to handout *"Ways to Lower your Cholesterol"*

3. Ways to lower Triglycerides

- Try to achieve a healthy weight
- Limit alcohol to ≤ 3 standard drinks a day for men and ≤ 2 standard drinks for women
- Increase physical activity
- Achieve optimal blood glucose levels
- Limit high sugar foods such as table sugar, honey, syrup, juice (100% fruit juice, frozen, crystals, carton), pop, candy, baking, coffee whitener, chocolate bars, ice cream, sports and energy drinks and high sugar cereals
- Limit high fat foods. Refer to points listed under the section Ways to lower LDL Cholesterol.
- Refer to handout *"Ways to Lower your Triglycerides"*

- Refer to the following handouts for more information *"Tips for Healthy Weight Loss", "Diabetes and Physical Activity", "Foods with Fibre"* and *"Foods that Turn into Sugar"*

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9.1 Type 2 Diabetes and Chronic Kidney Disease

- 50% of people with diabetes have chronic kidney disease
- Chronic kidney disease associated with diabetes is the leading cause of kidney disease in Canada
- Clients with Chronic Kidney Disease would benefit from a consult with a Registered Dietitian
- Clients who manage their diabetes with healthy eating, being active and keeping blood sugars and blood pressure in target will help keep their kidney's healthy
- Refer to the Saskatchewan Ministry of Health booklet *"Diabetes and Kidney Disease"*. Available at: http://www.health.gov.sk.ca/diabetes-and-kidney-disease. This booklet is intended for clients who are at risk for chronic kidney disease and for people diagnosed with early stage chronic kidney disease.

Nutrition Goals

- To promote blood glucose control through diet and exercise to prevent the progression to chronic kidney disease
- To promote healthy eating to help reduce the workload on the kidney, lessen symptoms and to prevent disease progression
- To delay the need for dialysis or transplant

9.2 Nutrient Requirements

- For nutrition information on protein, sodium (salt), potassium, phosphorus and healthy eating refer to Saskatchewan Ministry of Health booklet "*Nutrition Tips for those with Diabetes and Chronic Kidney Disease"*. Available at: http://www.health.gov.sk.ca/nutrition-diabetes-kidney-disease. This booklet is intended for people diagnosed with early stage chronic kidney disease. People diagnosed with later stages of chronic kidney disease will need to be referred to a registered dietitian.
- This booklet contains information on potassium and phosphorus. If the client's lab values are not consistently high then potassium and phosphorus foods do not need to be restricted.

1. Protein

- When protein foods are broken down in the body, a waste product called urea is formed. As the function of the kidney decreases the kidney can no longer excrete urea efficiently. Too much protein in the diet can cause urea to build up in the blood.

- Too much urea in the blood may cause tiredness, nausea, headaches and a bad taste in the mouth
- Too little protein may cause muscle loss, weight loss, lack of energy and the body may have difficulty fighting infections
- In order to meet protein requirements clients should consume 0.8 g/kg/day of protein. Clients who are on dialysis may require more protein and would benefit from a consolation with a registered dietitian.
- Try to consume protein foods such as wild meat, lean meats, eggs, fish, poultry, milk, cheese, yogurt and beans

2. Energy

- Energy is needed for daily activities and to maintain a healthy body weight
- Adequate energy is needed in order for protein to be used to build, maintain and repair body tissues

3. Sodium (salt)

- Effects fluid balance and blood pressure
- Control sodium intake and avoid foods high in sodium
- Try to limit sodium intake to less than 2300 mg per day or approximately 1 tsp of salt per day
- Salt substitutes should not be used as they replace the sodium content with potassium. Potassium levels can be elevated in people with chronic kidney disease. Be aware of other types of salt such as sea salt, seasoning salt and garlic salt.
- If a client has high blood pressure, swelling of the face, hands or legs and experiencing shortness of breath a further sodium restriction may be required
- Refer to handout *"Tips to Reduce Salt Intake"*

4. Fluids

- Certain people may need to limit fluids depending on their kidney function
- As kidney function declines the body may become overloaded with fluid, which can cause swelling of the face, hands or legs and high blood pressure
- Fluids include anything that is liquid at room temperature such as water, soup, juice, milk, popsicles and gelatin
- Limit salty foods as salt can increase thirst

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5. Potassium

- Is a mineral which helps the nerves and muscles function properly
- If the potassium level is too high or low it can affect the heart rhythms
- If lab values are consistently high for potassium then potassium containing foods need to be restricted
- Salt substitutes should be avoided as they contain potassium and may cause potassium levels to increase

6. Phosphorus

- Is a mineral that is involved in bone development and maintenance
- Too much phosphorus can cause itchy skin, painful joints and calcium loss from the bones
- If phosphorus levels are consistently high then phosphorus containing foods need to be limited
- Phosphate binders may be needed to reduce phosphorus levels
- In order for phosphate binders to work best they need to be taken with a meal or snack. They should not be taken with iron supplements.
- Phosphate binders can lead to constipation. If a client has constipation they may need to see a dietitian. Usually the increase of high fibre foods can help relieve constipation. However, high fibre foods containing potassium and phosphorus may need to be limited.

7. Calcium and Vitamin D

- Renal osteodystrophy is a complex bone disease that results from mineral (calcium, vitamin D, phosphorus) and hormonal (parathyroid hormone) imbalance in chronic kidney disease

- There are 3 main events that occur in the body that lead to renal osteodystrophy:

1. As renal function declines the kidney's production of the active form of vitamin D (D3) decreases. This leads to a decline in calcium absorption from the intestine leading to decreased serum blood calcium levels. Lower serum blood calcium leads to the release of parathyroid hormone (PTH). This increase in PTH causes calcium to be released from the bone to restore serum blood calcium levels.

2. As renal function declines the kidney is unable to excrete excess phosphorus, which leads to increased serum blood phosphorus. An increase in serum blood phosphorus

leads to the release of PTH. This increase in PTH causes calcium to be released from the bone to restore serum blood calcium levels.

3. As serum blood calcium increases from the bone this causes PTH to be secreted. This causes the cycle to start over. As calcium is released from the bone so is phosphorus, which also causes PTH to be secreted.

    - This continuous cycle of releasing calcium from the bone to maintain serum blood calcium can lead to weak bones which increases the risk of bone pain, deformities and fractures

Nutrition Implications:

- If phosphorus is high a dietary restriction of phosphorus will be needed (see above). A phosphate binder may be needed to help decrease phosphorus levels.
- Supplementation of vitamin D3 may be needed, however vitamin D increases the absorption of both calcium and phosphorus therefore the phosphate binder may need to be adjusted
- Some people who are unable to consume dietary calcium may need a calcium supplement. However, the serum calcium needs to be monitored as high serum blood calcium can lead to vascular and soft tissue calcification throughout the body.
- Supplementation in renal disease should be discussed with a Nephrologist

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10.1 Diabetes and Pregnancy

- At conception and during the first trimester, hyperglycemia increases the risk of fetal malformations. Later in pregnancy hyperglycemia increases the risk of macrosomia and metabolic complications at birth.

Nutrition Goals

- To achieve optimal blood glucose levels through healthy eating and exercise in order to provide the best outcome for mother and baby

10.2 Preconception

- The best start to a healthy pregnancy is to have good blood glucose control before becoming pregnant
- Before becoming pregnant women should check with their doctor as their medications may need to be changed
- For good blood glucose control, women with diabetes need to follow a healthy eating pattern as outlined above and be physically active
- It is best to have blood glucose in control 3 - 6 months before pregnancy
- All women of child bearing age should be on a folic acid supplement:

    - Supplement with multivitamins containing 5 mg of folic acid for at least 3 months preconception and continue until at least 12 weeks postconception
    - Supplementation should continue with a multivitamin containing 0.4–1.0 mg folic acid from 12 weeks postconception to 6 weeks postpartum or as long as breastfeeding continues

- If you need more information on specific nutrients that are important during pregnancy such as iron, folate, calcium, vitamin D and vitamin A then refer to the handout *"Healthy Pregnancy"*

10.3 Types of Diabetes in Pregnancy

- Gestational Diabetes – this type of diabetes develops during pregnancy and usually goes away after the baby is born. Women who have had gestational diabetes are at increased risk of developing type 2 diabetes.
- Diabetes before pregnancy – when a women has been diagnosed with diabetes before becoming pregnant

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10.4 Insulin Levels and Hormones

- During pregnancy there is an increase in hormone production
- This increase in hormones causes an increased need for insulin to be able to move glucose out of the bloodstream
- During pregnancy the pancreas must produce 2 - 3 times more insulin to keep blood glucose levels in range
- Some people's bodies are not able to make enough insulin during this time and may have to take insulin
- If the client already has diabetes and is on insulin they may have to increase their insulin dose during pregnancy. However, during the first trimester some women experience lower blood sugars and are at risk for a low blood sugar.
- The hormone levels continue to increase throughout pregnancy making it more difficult to control blood glucose levels
- It is important to be testing blood glucose levels frequently as the need for insulin can change on a weekly basis
- Regular follow up with a health care provider is necessary
- Once the baby is delivered the hormones levels decrease and insulin levels will need to be adjusted

10.5 Healthy Eating for Diabetes and Pregnancy

- Eat 3 meals and snacks as needed each day. Try to make breakfast the smallest meal as blood glucose tends to be highest in the morning. Adding protein to breakfast can help regulate blood sugars.
- Follow Eating Well with Canada's Food Guide. See above for detailed explanation.
- Take prenatal vitamins
- Avoid eating high sugar and high fat foods
- Control portion sizes to prevent excess weight gain and to help control blood glucose levels
- Limit caffeine from coffee, strong tea and pop to 300 mg per day. Use only herbal teas considered safe in pregnancy such as citrus peel, ginger, lemon balm and rosehip.
- Satisfy thirst with water
- Most artificial sweeteners are safe in moderate amounts. Avoid cyclamate (Sucaryl®, Sugar Twin®, Sweet'N Low®) and saccharin (Hermesetas®) sweeteners as these have not been proven to be safe in pregnancy.
- Follow healthy eating guidelines outlined above for type 2 diabetes

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- Refer to the booklet *"Diabetes in Pregnancy: Gestational Diabetes"* published by the Saskatchewan Ministry of Health. Available at: http://www.health.gov.sk.ca/diabetes-in-pregnancy

10.6 Physical Activity

- It is important to control blood glucose levels, maintain a healthy weight and help the body prepare for childbirth
- Refer to the Physical Activity section above

10.7 Ketones

- Ketone testing may be necessary when there is unexpected weight loss, dehydration, the client has been sick or has had high blood glucose levels
- Ketones can be produced when blood glucose levels are >14 mmol/L
- An evening snack may help prevent ketones from being produced overnight

10.8 After Pregnancy

- Breastfeeding can help to prevent the baby from becoming overweight and developing diabetes later in life
- Breastfeeding helps the mother to return to her pre-pregnancy weight faster
- If a woman had gestational diabetes she will need to be screened for type 2 diabetes between 6 weeks and 6 months after birth
- Before the next pregnancy, the client should have her blood glucose screened
- It is important to continue to eat healthy and be active to reduce the risk of developing type 2 diabetes
- If the client has a subsequent pregnancy, screening for gestational diabetes should occur in the first trimester. If the client is not found to have gestational diabetes repeat screening should occur in the second and third trimester.

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11.1 Diabetes and Vitamin D

- Vitamin D is synthesized in the skin when exposed to ultraviolet B (UVB) radiation. However, this synthesis is affected by latitude, season, time of day, age, sunscreen use, and skin pigmentation. In Canada, we can not synthesize vitamin D during the winter months (October to March). During the winter months we must rely on dietary intake of vitamin D to maintain adequate levels of vitamin D in the body.
- Vitamin D is used in the body to help absorb and use calcium for strong bones and teeth
- Most body tissues have vitamin D receptors and the enzyme required for converting vitamin D into its active form.
- Hypovitaminosis D has been suspected as a risk factor for glucose intolerance and has been associated with impaired insulin secretion in populations at high risk for diabetes
- Interest remains in the potential role vitamin D may play to aid in the prevention of diabetes and the scientific community continues to investigate this area of research

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13.1 Resources

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Diabetes and Healthy Eating

Easy meal planning tips to help you manage your diabetes

WHAT YOU EAT AFFECTS YOUR BLOOD SUGARS. Carbohydrate is the main part of food that affects your blood sugar levels. Foods that contain carbohydrate raise your blood sugar. Foods that contain little or no carbohydrate do not affect blood sugar very much.

FOODS THAT AFFECT BLOOD SUGAR

- *Grains & Starches*
- *Fruits*
- *Milk & Alternatives*
- *Sugars & Sweet Foods*

FOODS THAT DO NOT AFFECT BLOOD SUGAR VERY MUCH

- *Vegetables*
- *Meat & Alternatives*
- *Fats*
- *Extras*

FOODS THAT CONTAIN CARBOHYDRATE

Each serving from a food that contains carbohydrate from the list below has about 15 g of carbohydrate. At meals, women should try to eat 45-60 g of carbohydrate (3 or 4 choices from the list below) and men 60-75 g (4 or 5 choices from the list below). For snacks, try to eat 0-30 g of carbohydrate (0-2 choices from the list below).

GRAINS & STARCHES

Choose whole-grains, such as whole-wheat bread and brown rice, to increase your fibre intake. Choose an amount up to the size of your fist at each meal. A portion (15g) is about the size of your fist.

- *Bread = 1 slice*
- *Bun (hamburger, hotdog) = ½ bun*
- *Bannock = the size of ½ deck of cards*
- *Cold cereal = ½ cup*
- *Hot cereal = ¾ cup*
- *Potato = ½ medium*
- *Corn = ½ cup*
- *Rice (cooked) = ⅓ cup*
- *Macaroni, spaghetti noodles (cooked) = ½ cup*
- *Pancake, waffle = 1 (the size of a CD)*
- *Crackers, soda type = 7*
- *Muffin = ½ small*
- *Popcorn, low-fat = 3 cups*
- *Bagel = ½ small*
- *Soup = 1½ cups*

FRUITS

Fruits are high in fibre and a good source of vitamins and minerals. Choose an amount up to the size of your fist at each meal. A portion (15g) is about the size of your fist.

- *Apple or Orange = 1 medium (the size of a baseball)*
- *Banana = 1 small or ½ large*
- *Grapes = ½ cup*
- *Canned fruit, in juice = ½ cup*
- *Unsweetened fruit juice = ½ cup*
- *Dried fruit = ¼ cup*
- *Cranberries, strawberries, raspberries = 2 cups*
- *Blueberries = 1 cup*

MILK & ALTERNATIVES

Milk and alternatives are excellent sources of calcium and vitamin D, which are important for healthy bones and teeth. Enjoy a glass of milk with a meal.

- *Milk (2%, 1%, skim) = 1 cup*
- *Chocolate milk (1%) = ½ cup*
- *Canned milk (evaporated) = ½ cup*
- *Fortified soy beverage = 1 cup*
- *Yogourt (flavored, artificially sweetened) = ¾ cup*
- *Diet milk pudding = ½ cup*

SUGAR & SWEET FOODS

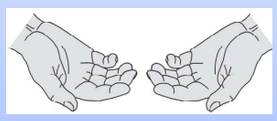
These foods are often high in calories and fat and should be eaten only occasionally.

- *Sugar, honey, jam, jelly = 1 Tbsp*
- *Chocolate bar = ½ bar*
- *Chips = 6 chips*
- *Candy = 2 pieces of licorice, 5 jellybeans*
- *Cake, unfrosted = the size of 4 dominoes*
- *Ice cream, regular pop = ½ cup*
- *Fruit punch, fruit beverage, fruit cocktail = ½ cup*
- *Fruit crystals, Kool Aid = ½ cup*
- *Gatorade/Powerade = 1 cup*
- *Iced tea = ¾ cup*
- *Cookies = 2*
- *Donuts = ½*
- *Pie = □ of pie*

FOODS THAT CONTAIN LITTLE OR NO CARBOHYDRATE

VEGETABLES

Fresh, frozen, or canned, vegetables are low in carbohydrate, calories, and fat. Eat vegetables freely throughout the day. Choose as much as you can hold in both hands at each meal.



- *Broccoli*
- *Carrots*
- *Celery*
- *Cucumber*
- *Lettuce (salad)*
- *Beans, green or yellow*
- *Tomato*
- *Peas*
- *Cabbage*
- *Onions*
- *Frozen vegetables*
- *Canned vegetables*

MEAT & ALTERNATIVES

Foods in this group are excellent sources of protein. Choose an amount the size of your palm and the thickness of your little finger.

- *Low fat Cheese (<20% MF) = the size of two dominoes*
- *Cottage cheese (1-2 % MF) = ¼ cup*
- *Eggs = 1 medium*
- *Dried or canned beans, such as chickpeas, kidney beans, lentils, split peas, black beans = ½ cup*
- *Peanut butter = 2 Tbsp*
- *Beef, chicken, turkey, caribou, deer, elk, duck, moose, fish = the size of a deck of cards*

FATS

Choose unsaturated fats such as olive and canola oils and non-hydrogenated margarines. Limit saturated fat, such as lard, butter, shortening and "hard" margarines. Limit fat to an amount the size of the tip of your thumb at each meal.

- *Cream, half & half = 3 Tbsp*
- *Sour cream = 2 Tbsp*
- *Olive or canola oil = 1 tsp*
- *Salad dressing, low-fat = 2 Tbsp*
- *Salad dressing, regular = 1 tsp*
- *Mayonnaise, light = 1 Tbsp*
- *Mayonnaise, regular = 1 tsp*
- *Margarine, non-hydrogenated = 1 tsp*
- *Gravy = 2 Tbsp*
- *Almonds, peanuts, sunflower seeds = 1 Tbsp*

EXTRAS

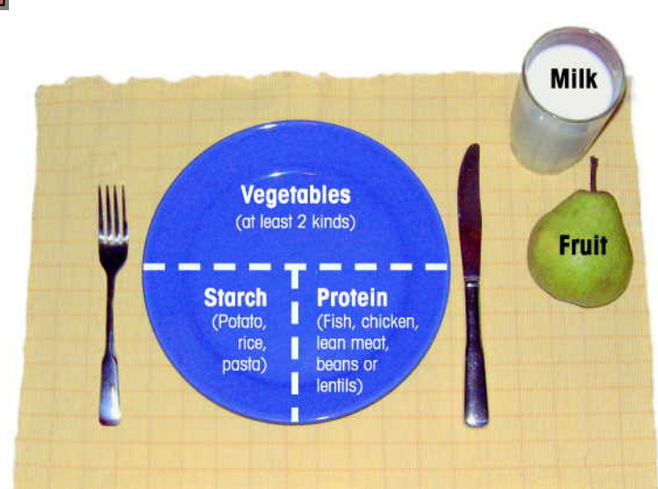
Extras are foods low in carbohydrate and other nutrients. Some extras are so low in carbohydrate that they do not need to be counted. These foods include:

Water, coffee, tea, diet soft drinks, Crystal Light, Sugar-free Jell-O, Equal, Splenda, herbs and spices, salt, pepper, vinegar, soya sauce, lemon juice, and mustard

Other foods contain a small amount of carbohydrate:
No sugar added jam or jelly, ketchup, and salsa

Putting it all together…

* *Fill half of your plate with vegetables*
* *Fill one quarter of your plate with Grains & Starches choices*
* *Fill the other quarter of your plate with food from the Meat & Alternatives group*
* *Enjoy a glass of milk and a piece of fruit with your meal*



This handout is not to replace medical advice. Contact your local dietitian or diabetes educator for more information on Diabetes Management. Handout adapted from *Beyond the Basics* and Sanofi Aventis *Health Food Guide for People with Diabetes*. Developed by Dawn Herauf, University of Saskatchewan Nutrition student. [2008]

Available on the Chronic Disease Network and Access Program website at: www.ehealth-north.sk.ca

Foods that Turn into Sugar

Starches:

Select 1-2 of these at each meal

- 1 slice of bread
- Half a bun
- Bannock the size of a small deck of cards
- Half a cup of potatoes, corn, rice, or noodles
- 7 crackers
- Half a cup of cold cereal
- 3/4 cup of hot cereal

A healthy portion size is about the size of a tennis ball

Fruit:

Select one of these at each meal

- Half a cup of cut up fruit
- Small fruit the size of a tennis ball
- 1 cup of small berries

Foods that Turn into Sugar

Milk & Alternatives:

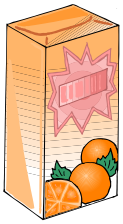
Pick one of these at each meal

- 1 cup of milk (carton or canned)
- Half a cup of chocolate milk
- 3/4 cup of yogurt
- Half a cup of pudding (made with milk)

Sugar & Sweet Foods:

Limit to 0-1 per day

- 1 tbsp of sugar, jam or honey
- Half of a chocolate bar
- 6 chips
- 5 small candies
- Cake the size of 4 dominoes
- Half a cup of ice cream, pop, juice or ice tea
- 2 cookies
- Half a donut
- 1/8 of a small pie



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Treatment of Low Blood Sugar

What is a Low Blood Sugar?

- Low blood sugar happens when your blood sugar level goes below 4 mmol/L

What are the Signs?

- Shaky
- Dizzy
- Sweaty
- Tired or weak
- Blurred vision
- Hungry
- Fast heart rate
- Headache
- Irritable
- Acting or speaking funny

How to Treat a Low Blood Sugar:

1. If you feel that your blood sugar is low then test your blood sugar

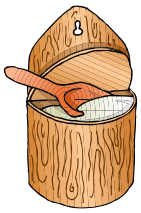
2. If your blood sugar is less than 4 mmol/L you need to take a fast acting sugar. Never treat a blood sugar that is more than 4 mmol/L.

3. Treat with one of the following choices:

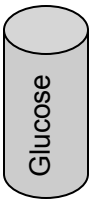
3/4 cup of regular pop

3/4 cup of juice

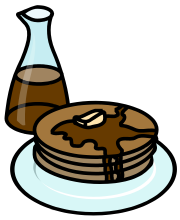
1 tbsp of regular jam



1 tbsp of sugar



3 - 4 glucose tablets



1 tbsp of syrup

1 tbsp of honey

6 -10 jelly beans

2 - 3 hard candies

* chew candies quickly

4. Wait 15 minutes and then retest your blood sugars

5. If your blood sugar is still below 4 mmol/L, treat with a fast acting sugar again

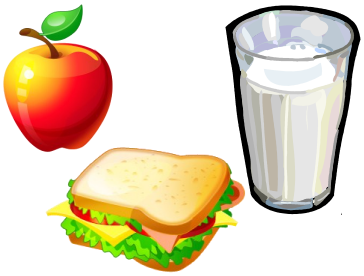
Treatment of Low Blood Sugar

How to Treat a Low Blood Sugar:

6. Continue to retest and retreat as needed until your blood sugar is above 4 mmol/L

7. If your next meal is more than 1 hour away or you are going to be active eat a snack
   - Your snack should have a protein and a starchy food
   - Example of protein foods:
     1 slice of block cheese
     1 yogurt cup
     1 cup of milk
     Lean meat the size of a deck of cards - fish, wild meat, chicken, beef, pork, etc
     3/4 cup of beans
     1 egg
     1 tbsp of peanut butter

   - Examples of starchy foods:
     1 small fruit
     1 slice of brown bread
     4 crackers
     A piece of bannock the size of a deck of cards
     Half a bun
     A bowl of cereal



Important to Know:

- Always carry a fast acting sugar with you to treat a low
- Make sure someone knows your signs of low blood sugar and how to treat it
- If you have several lows you need to contact your healthcare team

What Causes a Low Blood Sugar?

- Doing more activity than usual
- Skipping meals or snacks
- Eating meals or snacks later than usual
- Eating less than usual
- Taking too much diabetes medication
- Drinking alcohol on an empty stomach

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Diabetes and Sick Days

When You are Sick:

- Your body makes stress hormones to help fight the illness
- When there are a lot of stress hormones, insulin may not work as well, which can cause high blood sugar levels
- You may get dehydrated from fluid losses
- Remember to get your yearly flu shot

What to do When You are Sick

1. Continue taking diabetes pills and insulin

- Being sick can make your blood sugar levels go high even if you are not eating much
- People who take insulin may need to change the amount they take

2. Drink plenty of fluids

- When you are sick and have high blood sugar levels this may cause you to go to the bathroom more often
- It is good to drink lots of fluids to stay hydrated
- Drink 1 cup of sugar-free liquids every hour. Avoid coffee, tea and colas as they contain caffeine which may make dehydration worse.
    - Choose from these liquids:
        - Water
        - Broth
        - Caffeine - free tea
        - Artificially sweetened juice
        - Diet caffeine - free pop

Water

Broth

Artificially Sweetened Beverage

Caffeine-free tea

Diet caffeine-free pop

3. Test your blood sugars

- Test your blood sugars at least every 2 –4 hours

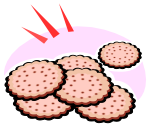
Diabetes and Sick Days

4. Eat at regular meal times

- If you are well enough to eat have your usual meals
- If you are too sick to eat, have a snack or a sugar containing fluid instead

Try to have one of these foods or drinks every hour if you are not able to eat meals

Toast


Crackers

Fruit

- Snack Ideas
  - 1 slice of bread or toast
  - 7 crackers
  - ¾ cup of oatmeal
  - A piece of fruit
  - Half a cup of applesauce
  - Half a cup of regular gelatin

Gelatin

Milk

- Fluids
  - 1 cup of milk (skim, 1% or 2%)
  - Half a cup of 100% juice
  - ¾ cup of regular caffeine free pop
  - 1 cup of caffeine free tea with 1 tbsp of sugar or honey

Juice

Tea with Sugar

5. Not all cold and flu medicines are okay to use

- Many have too much sugar
- Use sugar free cough syrups and cough drops
- May not be safe if you take blood pressure pills

6. When to seek medical help

- If you cannot eat or drink
- If you are vomiting and/or have diarrhea 2 times or more in 4 hours

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Tips for Weight Loss

A healthy weight can:

- Improve breathing ability in people with Lung Disease
- Help to prevent or manage diabetes
- Improve blood sugars, blood pressure and cholesterol
- Reduce the risk of heart attack or stroke
- Improve your overall well-being and energy levels

What is a Healthy Weight Loss?

- Choosing healthy foods more often
- Being aware of the amount of food we eat
- Being physically active everyday

- Healthy weight loss is 1 - 2 pounds or 0.45 - 0.9 kilograms per week
- Even a small weight loss of 5 -10% of your body weight can make a big difference in your health

Tips for Losing Weight:

1. Enjoy a wide variety of foods
- Eat from all 4 food groups

2. Limit high fat and sugar foods
- For example: hotdogs, bologna, chips, candy, chocolate, juice, pop, fast foods, fried foods, chinese food, fries, lard, butter, battered meats, etc.

3. Beware of portion sizes (see back side of handout)

4. Eat more fibre
- Fibre keeps you full longer. Try foods like whole grain breads and cereals, vegetables, fruit, beans, lentils, brown rice, brown pasta, etc.

5. Think about your drink
- Beverages can have a lot of extra calories. Limit how much you drink of juice, pop, coffee with cream and sugar, iced coffee, slush, energy drinks, sport drinks, etc.

6. Eat when you are hungry
- Let your body tell you when you are actually hungry

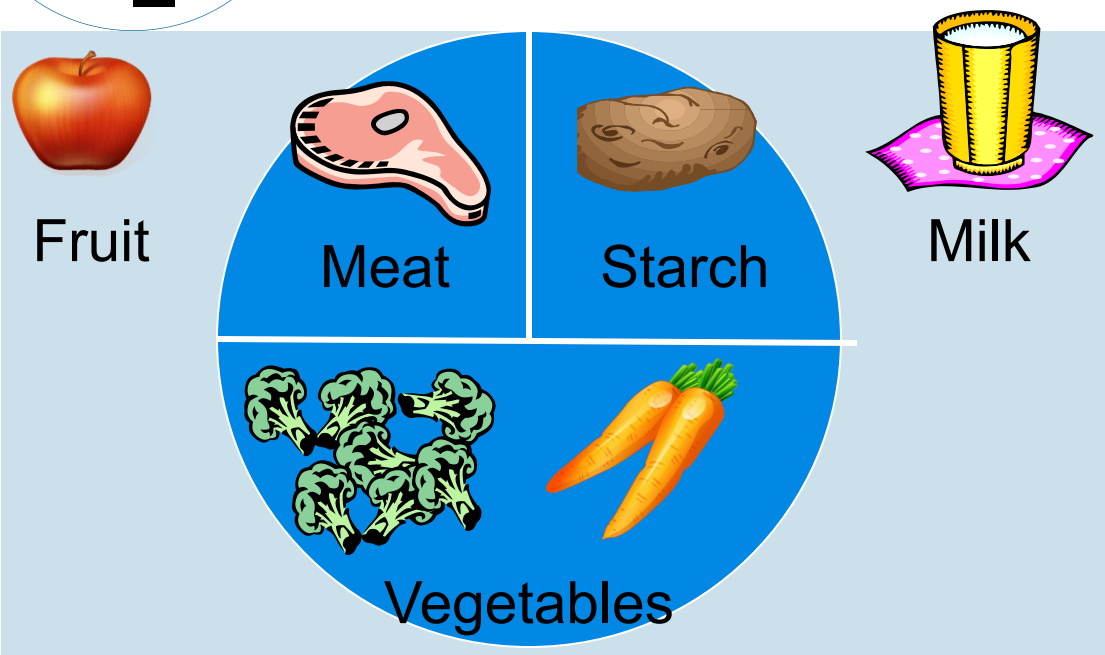
7. Eat regular meals
- Eating 3 meals a day helps to keep your metabolism up

8. Take time to eat
- Eating more slowly helps you to know when you are full

9. Rethink your snack
- Pick foods from the 4 food groups for snacks. Watch out for high calorie snacks like chips, chocolate bars, cookies, donuts, etc.

10. Be physically active
- Aim to be active every day. This means getting your heart rate up and breathing harder

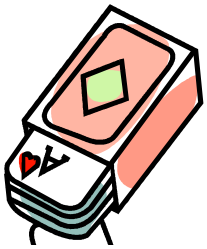
Tips for Weight Loss



This is what your plate should look like!

<u>What should a portion look like?</u>

Fruit should be the size of a tennis ball



Meat should be the size of a deck of cards

Starches should be the size of a light bulb

Added fat should be limited to 1 tablespoon

Aim for half a plate of vegetables. Try to pick 2 kinds of vegetables. If eating a salad aim for the size of a baseball. For other raw and cooked vegetables aim for the size of a computer mouse.

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Foods with Fibre

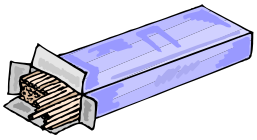
Why is fibre good for you?

High fibre foods:

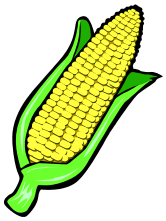
- Help with constipation
- Lower cholesterol levels
- Controls blood sugars
- Helps you feel full so you eat less

How much fibre do I need?

- Aim for a minimum of 25 grams of fibre per day



Fibre Content of Foods		
Food	**Serving**	**Fibre (g)**
Bran Flakes	1 cup	12 g
Kidney Beans	2/3 cup	12 g
Pork and Beans	2/3 cup	10 g
Bran cereal with raisins	1 cup	7 g
Corn bran cereal	3/4 cup	5 g
Wheat biscuit cereal	2 biscuits	6 g
Whole Wheat Pasta	1 cup	5 g
Peas	Half a cup	4 g
Mixed Vegetables	Half a cup	3 g
Whole Wheat Bread	1 slice	2.5 g
Oatmeal (quick oats)	2/3 cup	2.5 g
Apple	1 apple	2.5 g
Orange	1 orange	2.5 g
Broccoli	Half a cup	2 g
Carrots	Half a cup	2 g
Canned Corn	Half a cup	2 g
Potato (no skin)	1 potato	2 g
Blueberries	Half a cup	2 g
Banana	1 banana	2 g
Tomato	1 tomato	1.5 g
Brown Rice	Half a cup	1.5 g



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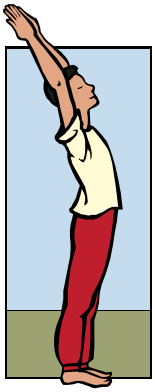
Diabetes and Physical

1. What are the benefits of physical activity?



- Improves blood sugars
- Prevents heart attack and stroke
- Improves blood pressure and cholesterol levels
- Helps you to lose weight
- Makes energy, mood and stress levels better

2. What types of physical activity should I do?

1. **Aerobic Activities**

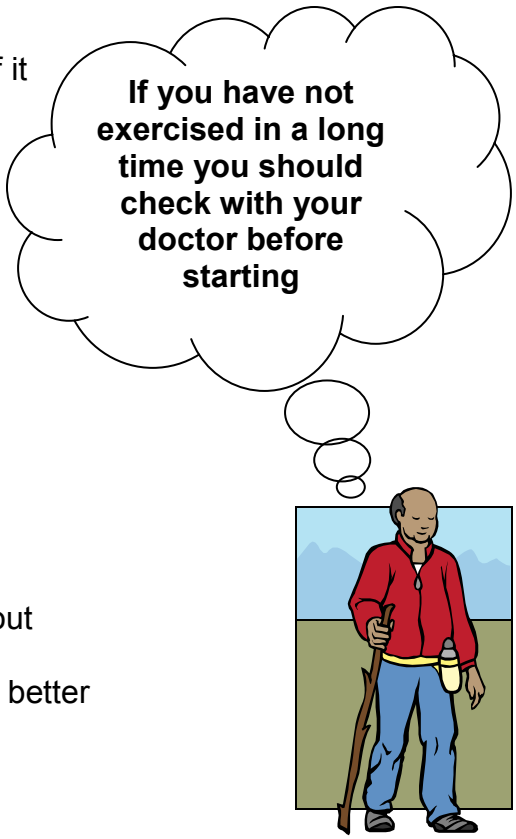
- Helps to keep the heart strong and healthy
- You must do this activity for at least 10 minutes to have a benefit for the heart
- Example: brisk walking, biking, dancing, hockey, soccer, jogging and swimming

2. **Resistance Activities**

- Increases muscle strength and power
- If you have high blood pressure or retinopathy, ask your doctor if it is safe for you to do strength activities
- Example: Lifting weights, hauling wood, using tension bands and push ups

3. **Flexibility Activities**

- Keeps the muscles relaxed and helps the joints move easily
- Example: yoga, stretching, bending and reaching



3. How often do I need to exercise?

- A goal of 150 minutes per week of moderate to vigorous aerobic activity spread over 3 days. Try to not go more then 2 days without activity.
- Aim to do resistance activities at least 2 times a week, 3 times is better

Diabetes and Physical

4. When should I test my blood sugars?

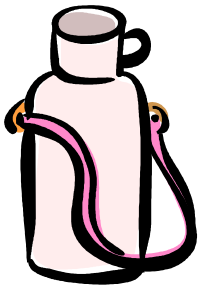
- Testing should be done before the activity starts and after
- If your blood sugar is below 4 mmol/L you must stop the activity and treat with a fast acting sugar

5. Do I need a snack before exercising?

- Talk to your doctor about your insulin or diabetes medications and exercise
- Insulin and some diabetes medications may cause your blood sugar to go too low when you exercise
- If your blood sugar is below 5.5 mmol/L before starting exercise you will need to have a snack

6. What should I drink?

- Water is the best choice
- Sports drinks have a lot of sugar and are not needed for most people
- Drink 8-10 cups of fluid each day
- Avoid caffeine and alcohol
- Do not wait until you are thirsty to have a drink
- Carry a water bottle with you when exercising



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Diabetes Care: Hunting and Fishing

Type 2 Diabetes: Hunting and Fishing

- You need to plan ahead when you are away from home. Be prepared if you will be in an isolated area.

- **Never go alone**. Make sure a family member or friend knows where you are and when you plan to return. Carry a cell phone if there is cell service.

- Take your medications with you

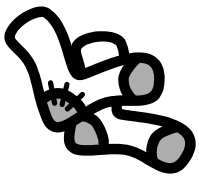
- Remember to test your blood sugars often
    - The increase in activity can affect your blood sugars

- You need to protect testing strips and insulin from the heat and the cold
    - Use thermal bags or cold packs
    - Carry insulin next to your body when is it cold outside. Your body heat will keep it warm in the winter.

- Bring a treatment for low blood sugar (see back from examples)

- If you take insulin you should carry a glucagon kit to treat severe low blood sugars. Anyone going with you should also know how to use the kit.

- Wear proper footwear. Your shoes should be comfortable and not too tight. The shoes should not pinch or rub your feet. Always wear socks and bring an extra pair in case your socks get wet.



- Carry a first aid kit with you
    - Use it to treat cuts, burns, blisters and bites to prevent infection

Diabetes Care: Hunting and Fishing

What to Pack When Hunting and Fishing:

1. You need to pack enough food so you can eat every 4 - 6 hours
   - **Do not rely on eating what you catch**
2. When planning meals they should include foods from each of the 4 food groups
   - It is important to have 3 - 4 servings of sugar containing foods and a protein food at each meal to maintain good blood sugar levels

Examples of healthy foods that have sugar

- 1 slice of bread
- Half a bun
- Bannock the size of a small deck of cards
- Half a cup of potatoes, corn, rice, or noodles
- 7 crackers
- Half a cup of cut up fruit
- Small fruit the size of a tennis ball
- 1 cup of milk (carton or canned)
- 3/4 cup of yogurt

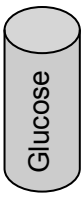
Examples of protein rich foods

- Half a cup of wild meat, fish, birds, etc. (a serving is the size of a deck of cards)
- 2 eggs
- 3/4 cup of beans (brown, kidney, etc.)
- 2 tbsp of peanut butter
- 1/4 cup of unsalted nuts
- Cheese (a serving is the size of two domino pieces)

3. It is important to stay hydrated so remember to pack plenty of fluids
   - Water is the best drink to stay hydrated
4. Carry a quick acting sugar in case you have a low blood sugar (below 4 mmol/L). You must chew candies quickly.

3/4 cup of regular pop

3/4 cup of juice



3-4 glucose tablets

1 tbsp of regular jam

2-3 hard candies

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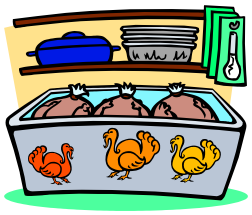
Healthy Eating on a Budget

Tips for Healthy Eating on a Budget:



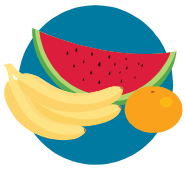
- People with diabetes need to eat foods from all 4 food groups
- When filling your cupboards with foods keep in mind you can stock up over time
- It is important to store foods properly to stop them from spoiling and to keep bugs out
- Try making a list of foods you keep on hand so you can plan meals
- When you use the food, put the item on your grocery list to be replaced

Foods to keep stocked in your house:

1. Grains and Starches:

- Hot cereals (oatmeal, cream of wheat, etc.)
- Cold cereals (try to choose cereals with more than 4 grams of fibre)
- Flour (whole wheat and white flour)
- White or brown rice (limit instant rice)
- Pasta (try to pick whole wheat most often)
- Bread, buns and bannock (can be frozen to last longer)

2. Fruits and Vegetables:



- Canned fruit packed in water or fruit juice
- Canned vegetables (rinse the salt off)
- Fresh and frozen vegetables and fruit
- Dried soup mixes and boxes of soup (try to pick low salt)

3. Meat & Alternatives:

- Canned fish or poultry (packed in water) - limit high fat/salt canned meats
- Canned beans (brown beans, kidney beans or white beans, etc.)
- Peanut butter
- Wild meat, fish, birds, hamburger and pork (can be frozen to last longer)
- Eggs

4. Milk and Alternatives:

- Skim milk powder
- Canned milk (skim, 1 or 2%)
- Carton milk (skim, 1 or 2%)

5. Fats:

- Oil (canola or olive)

Healthy Eating on a Budget

Tips to save money:

- Make a menu plan for the week. Make a list of foods you will need and stick to the list. Check the flyers to see if there are any deals.
- Do not go grocery shopping on an empty stomach
- Choose store brands. They are as healthy as the name brand.
- Buy the food you need from grocery stores not convenience stores. Convenience stores are more expensive and usually do not have a lot of healthy foods.

- If you have adequate storage and money buying in bulk is cheaper
- Plan to buy dry items you use often when they are on sale, such as pasta, rice, cereal, flour, etc.
- Pick hot cereals you cook yourself. Instant cereals are more expensive and not as healthy.
- Buy fruits and vegetables in season. Extra fruit can be frozen to be eaten later. Pick berries and freeze them for later.

- Buy a block of cheese and grate it yourself
- Buy yogurt in a larger tub and portion it out yourself
- Cuts of meat from the shoulder and chuck are cheaper and they make great stews or roasts
- Buy a whole chicken, cut into pieces and remove the skin. Or try buying frozen non-battered chicken pieces. Hunt for your own meat and birds and freeze it for future meals.

- Try canned meats such as salmon, tuna or sardines (packed in water)
- Try eating canned beans (brown, kidney or white beans, etc.). Beans have protein and can be eaten instead of meat.
- Try to make foods from scratch rather than buying pre-made meals. Pre-made meals are more expensive and may have more fat and salt.
- If available get the good food box in your community

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Ways to Lower your Blood Pressure

What is Blood Pressure?

- The amount of pressure in your blood vessels caused from the heart pushing blood to all parts of the body
- Your blood pressure goes up and down during the day

What should my blood pressure be?

Normal	120/80
High - more than	140/90
Target level for people with diabetes	<130/80

What if my blood pressure is too high?

- High blood pressure can damage the blood vessels in your heart, brain, eyes and kidneys

What can I do to lower my blood pressure?

1. Try to eat fruits, vegetables, dairy, whole grain breads, cereals, pasta and rice
2. Choose lean meats such as wild meat and birds
3. Limit your salt to 1 tsp per day
   - Remove the salt shaker from table
   - Use herbs or no-salt spices like pepper, onion powder, garlic powder, oregano, basil, etc.
   - Avoid adding salt to food when cooking
   - Read food labels and aim for foods with less than 150 mg sodium per serving
   - Eat less processed, packaged and fast foods

4. Limit alcohol to no more than 3 drinks for men and 2 drink for women per day. Or do not drink at all
   - You cannot save drinks so you can have them all in one day

5. Try to get 150 minutes of physical activity each week. This means your heart is beating faster and your breathing is heavier.
6. Aim for a healthy weight
   - Even losing 10 pounds can help lower your blood pressure

Ways to Lower your Blood Pressure

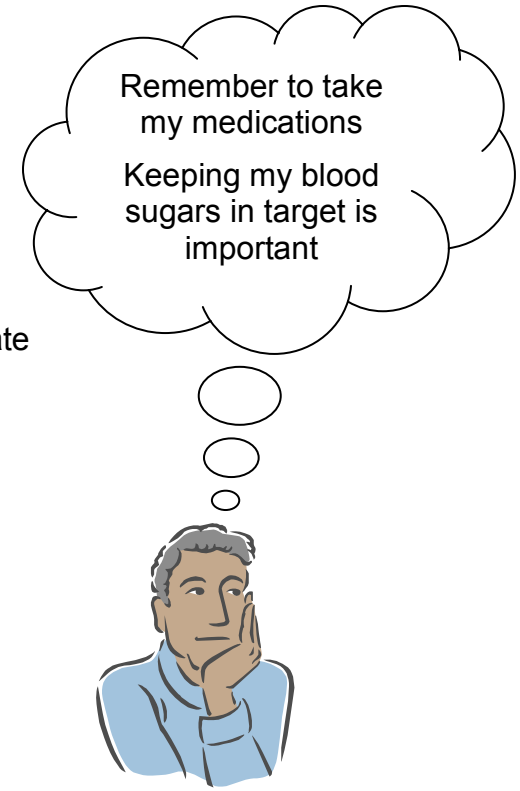
What can I do to lower my blood pressure?

7. If you smoke, try to quit

8. Try to reduce stress in your life
   - Find ways to relax

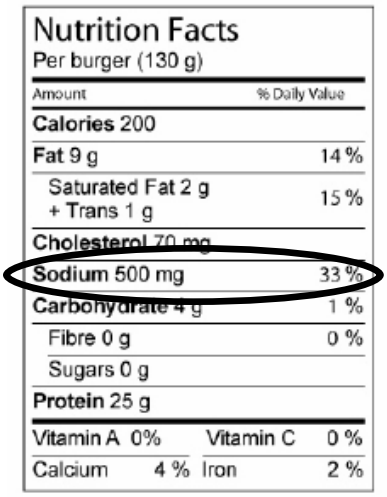
9. Limit caffeine to 400 mg per day
   - Caffeine is found in coffee, most pop, some teas, chocolate and energy drinks

Food or Drink	Caffeine
Brewed Coffee (1 cup)	100 mg
Instant Coffee (1 cup)	66 mg
Decaffeinated Coffee (1 cup)	3 mg
Tea (1cup)	50 mg
Herbal Tea (1 cup)	0 mg
Cola (1 can)	37 mg
Chocolate bar (1)	0 -10 mg
Chocolate chips (1/4 cup)	26 mg



How do I read a label?

- When reading an ingredient list on a food label salt can be called salt, sodium or soda
- Monosodium glutamate also contains salt
- If the term salt, sodium or soda is listed in the first 3 ingredients or listed more than 3 times this food is considered a high salt food
- Choose foods with less than 5% (150 mg) sodium



Nutrition Facts
Per burger (130 g)

Amount	% Daily Value
Calories 200	
Fat 9 g	14 %
Saturated Fat 2 g + Trans 1 g	15 %
Cholesterol 70 mg	
Sodium 500 mg	33 %
Carbohydrate 4 g	1 %
Fibre 0 g	0 %
Sugars 0 g	
Protein 25 g	

Vitamin A	0%	Vitamin C	0 %
Calcium	4 %	Iron	2 %

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Ways to Lower your Cholesterol

What is cholesterol?

- It is fat that is found in the cells that make up our body
- It is made in the liver
- We also get cholesterol from foods we eat

What if my cholesterol is too high?

- When there is too much cholesterol in our blood it sticks to the inside of our vessels
- If there is a lot of cholesterol sticking to your vessels it can block the blood flow
- If a blood vessel is blocked you could have a heart attack or stroke

What makes my bad cholesterol (LDL) go up?

- Eating foods that are high in saturated and trans fats
- Saturated fat is found in foods made from animals such as meat, fats (butter, lard, bacon fat, hard margarine, shortening), dairy products (cheese, milk) and cream
- Saturated fats are also in foods such as chips, chocolate, ice cream, cookies, cakes, donuts and pre-packaged foods
- Trans fat is also called hydrogenated oil. It is found in hard margarine, baking, crackers, chips, deep fried foods, etc.
- Eating too much of saturated and trans fats can cause your bad cholesterol level (LDL) to go up
- Too much bad cholesterol (LDL) will cause more fat build up in the vessels

What fats are better for my heart?

- Try using unsaturated fats. They can help to lower your cholesterol
- Some examples of unsaturated fats are canola oil, olive oil, unsalted nuts, and fish

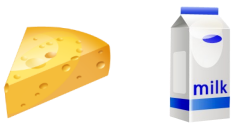
How can I lower my cholesterol?

1. Limit meat to 2 - 3 servings each day (a serving is the size of a deck of cards)
2. Replace meat in your meals with beans, peanut butter or eggs
3. Trim fat off meat and take the skin off birds

Ways to Lower your Cholesterol

4. Try to choose lean hamburger. Always drain the fat off of hamburger.
5. Cook meat in a way that fat drains away such as baking, boiling or roasting. Fry foods less often.
6. Try to have non-battered fish 2 times a week (trout, pickerel, perch, salmon, tuna, sardines, whitefish, pike, etc.)
7. Choose lean meats such as wild meat and birds

8. Limit foods high in bad fat such as bacon, bologna, hotdogs, baking, chips, chocolate, deep fried and packaged foods (frozen pizza, dried noodles, fish sticks, etc.)
9. Try to use oils like canola and olive oil when cooking. Limit lard, butter and bacon fat.
10. Limit fast food and restaurant meals
11. Choose low fat dairy such as skim, 1% or 2% milk, light cheese and low fat yogurt



12. Use carton or canned milk in coffee or tea. Limit cream and coffee whitener.
13. Limit added fats to 3 tbsp each day. For example, oil, margarine, butter, lard, salad dressing, sour cream, mayonnaise, creamers and gravy.
14. Increase fibre in your diet. Try to pick whole grain cereals, breads and pasta. Try to choose vegetables and fruit more often.
15. Limit foods high in sugar such as pop, candy, juice, ice cream, chips, cookies, jam, honey, table sugar, etc. When we eat too much sugar it is stored as fat in the body.

How do I make my good cholesterol (HDL) better?

- Try to be active every day. This means your heart is beating faster and your breathing is heavier.
- If you smoke, try to quit

- Limit bad fats. Try to eat healthy fats more often.
- Eat fish (trout, pickerel, perch, salmon, tuna, sardines, whitefish, pike, etc.) 2 times per week

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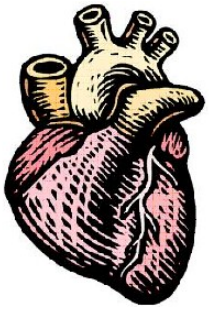
Ways to Lower your Triglycerides

What are Triglycerides?



- Is a type of fat found in your blood
- Triglycerides are affected by what you eat and drink

What if my triglycerides are high?

- If your levels are high you can get more fat sticking in your vessels
- If there is a lot of fat sticking to your vessels it can block the blood flow
- If a blood vessel is blocked you may have a heart attack or stroke

What causes high triglycerides?

- Being overweight
- Drinking too much alcohol
- Having high blood sugars
- Eating sugary and sweet foods
- Eating high fat foods

What can I do to lower my triglycerides?

- Aim for a healthy weight
- Try to get 150 minutes of physical activity each week. This means your heart is beating faster and your breathing is heavier.
- If you have diabetes, try to keep your blood sugars in target
- Eat healthy foods

Ways to Lower your Triglycerides

How can I eat healthy to lower my triglycerides?

1. Limit meat to 2 - 3 servings each day (a serving is the size of a deck of cards)
2. Trim fat off meat and take the skin off birds
3. Try to have non-battered fish 2 times a week (trout, pickerel, perch, salmon, tuna, sardines, whitefish, pike, etc.)

4. Choose lean meats such as wild meat and birds

5. Choose low fat dairy such as skim, 1% or 2% milk, light cheese and low fat yogurt
6. Try to use oils like canola and olive oil when cooking. Limit lard, butter and bacon fat.
7. Cook meat in a way that fat drains away such as baking, boiling, or roasting. Fry foods less often.
8. Drink water instead of juice and pop when you are thirsty

9. Eat the whole fruit instead of juice. Fruit has less sugar and more fibre.
10. Try to use an artificial sweetener (Splenda ®, Equal ®, Sugar Twin ®, etc.) instead of sugar
11. Limit foods high in sugar such as pop, candy, juice, ice cream, chips, cookies, jam, honey, table sugar, coffee whitener, high sugar cereals, etc.
12. Limit alcohol to no more than 3 drinks for men and 2 drinks for women per day. Or do not drink at all.
    - Even one drink can increase triglycerides in some people
    - You cannot save drinks so you can have them all in one day

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Tips to Reduce Salt Intake

Why is it important to reduce your salt intake?

- Eating too much salt can cause your body to retain water making breathing more difficult for people with Lung Disease
- Having too much salt can make your blood pressure go up and increase your risk for heart disease
- Having high blood pressure can damage your kidneys

How much salt do I need?

- Your goal is to keep your salt intake under 2300 mg (1 tsp)

How to cut back on the salt in your diet:

- Remove salt shaker from table
- Use herbs or no-salt spices like pepper, onion powder, garlic powder, oregano, basil, etc.
- Avoid adding salt to food when cooking
- Read food labels and limit foods with more than 300 mg sodium per serving
- Eat less processed, packaged and fast foods

Salt Substitutes:

- Salt substitutes are not for everyone. You should check with you doctor or dietitian before using a salt substitute.

Try this recipe to help season your foods

No-Salt Seasoning

5 tsp	onion powder
1 tbsp	garlic powder
1 tbsp	paprika
1 tbsp	dry mustard
1 tsp	dry thyme
Half a tsp	pepper
Half a tsp	celery seed

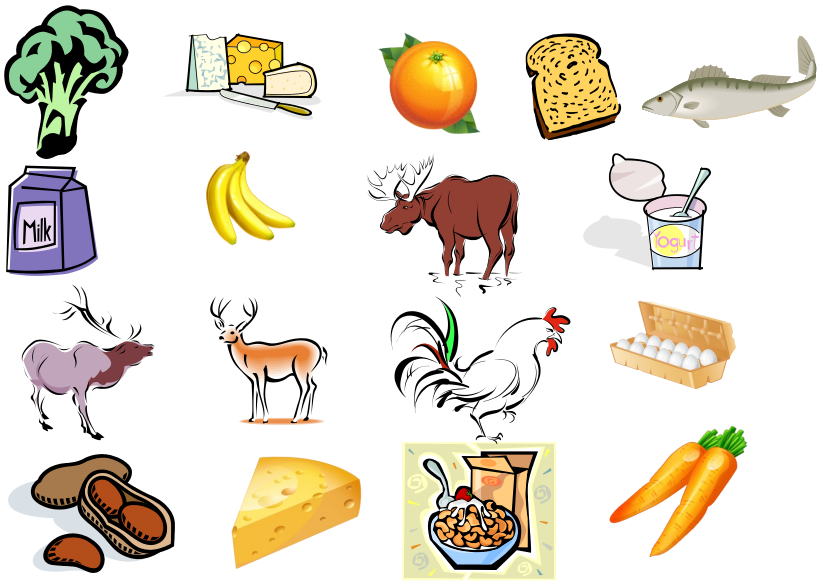
Directions:

1. Combine all ingredients in a small jar with a shaker top
2. Use for seasoning fish, poultry, cooked vegetables, soup and stews or place it on the table to use individually

Tips to Reduce Salt Intake

What foods are lower in salt?

- Fresh or frozen fruits and vegetables
- Whole grain breads, buns, cereals, rice, pasta and bannock
- Lentils, beans and barley
- Milk, yogurt and block cheese
- Fresh or frozen meats, wild meats, fish and chicken
- Eggs
- Peanut butter
- Unsalted nuts



What foods are higher in salt?

- French fries and potato chips
- Vegetable juices
- Canned or dried soups and instant noodles
- Canned vegetables and instant potatoes (try rinsing your canned vegetables with water before eating)
- Pickles, olives and sauerkraut
- Nachos, pretzels, popcorn, salted nuts and crackers
- Canned sauces, instant rice and pasta mixes
- Instant oatmeal
- Cheese slices and cheese spread
- Deli meats like ham, pepperoni, salami, bologna and beef jerky
- Hotdogs, smokies, sausages, bacon and canned ham
- Pickled foods
- Condiments like sea salt, seasoning salt, garlic salt, ketchup, mustard, barbeque sauce, soy sauce, teriyaki and salad dressings

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Tips to Reduce Salt Intake

Reading a Label:

- When reading an ingredient list on a food label salt can be called salt, sodium or soda
- Monosodium glutamate also contains salt
- If the term salt, sodium or soda is listed in the first three ingredients or listed more than 3 times this food is considered a high salt food
- Aim for foods with less than 5% (150 mg) sodium

Nutrition Facts
Per burger (130 g)

Amount	% Daily Value
Calories 200	
Fat 9 g	14 %
Saturated Fat 2 g + Trans 1 g	15 %
Cholesterol 70 mg	
Sodium 500 mg	33 %
Carbohydrate 4 g	1 %
Fibre 0 g	0 %
Sugars 0 g	
Protein 25 g	

Vitamin A	0%	Vitamin C	0 %
Calcium	4 %	Iron	2 %

How much salt do you get in a day?

- 1 cup instant noodles = 730 mg
- Fried Chicken (1 thigh) = 1020 mg
- Egg roll (1) = 250 mg
- Sweet and sour chicken balls (3) = 390 mg
- 1 cup chicken fried rice = 800 mg
- 1 cup chicken chow mein = 982 mg
- 1 slice of pizza (deluxe) = 629 mg
- Hotdog (1) = 670 mg
- Sausage (1) = 400 mg
- 2 slices bologna = 620 mg
- 3 slices of bacon = 550 mg
- 1 tsp of salt = 2300 mg
- 1 tsp sea salt = 2300 mg
- 1 tbsp of soy sauce = 1230 mg
- 1 tsp garlic salt = 1480 mg
- 1 large pickle = 830 mg
- 1 cup tomato juice = 690 mg
- 1 tbsp of ketchup = 170 mg
- 60 ml gravy = 330 mg
- 1 tbsp barbeque sauce = 130 mg
- 1 tbsp teriyaki sauce = 700 mg
- 2 tbsp of cheese spread = 500 mg
- Processed cheese slice (1) = 310 mg

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Label Reading

Why Read a Nutrition Label?

- Helps you to make better food choices
- Helps you to choose foods with less or more of some nutrients
- Helps you compare foods

Reading a Nutrition Label

Percent Daily Value (% Daily Value)

- Puts nutrients on a scale from 0% to 100%. This tells you if there is a little or a lot of that nutrient in the food
  - > 15% is a lot
  - < 5% is a little

1. **Serving Size**

- This is the amount most people eat of the food. The rest of the label is based on this amount. Always compare the serving size to how much you actually eat

2. **Calories**

- Calories tell us how much energy you get from one serving of that food

Nutrition Facts

Per 1/2 cup (125 mL)

Amount	% Daily Value
Calories 70	
Fat 0.5 g	**1** %
Saturated Fat 0 g + Trans Fat 0 g	**0** %
Cholesterol 0 mg	
Sodium 250 mg	**10** %
Carbohydrate 13 g	**4** %
Fibre 2 g	**8** %
Sugars 6 g	
Protein 2 g	

Vitamin A	1 %	Vitamin C	2 %
Calcium	0 %	Iron	4 %

3. **Choose foods with LESS:**

- Fat
- Saturated Fat
- Trans Fat
- Cholesterol
- Sodium (salt)
- Sugar

- Look for low % Daily Values for these nutrients as too much can increase your risk for heart disease and diabetes

4. **Choose foods with MORE:**

- Fibre
- Vitamin A and C
- Calcium and iron

- Look for high % Daily Values of these nutrients.

Label Reading

What to Look for on a Nutrition Label

1. Fat

- Eating too much fat, saturated fat and trans fat can increase your risk for heart disease and cause weight gain
- Saturated and trans fat can cause fat to build up in the blood vessels
- Choose foods with:
  - 10 g or less of total fat (< 15% Daily Value)
  - 2 g or less of saturated fat
  - 0 g or minimal trans fat

Nutrition Facts
Per 1/2 cup (125 mL)

Amount	% Daily Value
Calories 70	
Fat 0.5 g	**1** %
Saturated Fat 0 g + Trans Fat 0 g	**0** %
Cholesterol 0 mg	
Sodium 250 mg	**10** %
Carbohydrate 13 g	**4** %
Fibre 2 g	**8** %
Sugars 6 g	
Protein 2 g	

Vitamin A	1 %	Vitamin C	2 %
Calcium	0 %	Iron	4 %

2. Sodium

- Sodium is another word for salt
- Sodium helps to balance the fluids in our body
- Too much salt can be harmful and may cause high blood pressure
- Aim for foods with:
  - 150 mg or less of sodium (< 5% Daily Value)

3. Fibre

- Fibre helps us to stay full longer, which can help you lose weight
- Fibre helps to control blood sugars and lower cholesterol levels
- Keeps us regular
- Choose foods with:
  - 2 g or more of fibre (8% Daily Value)

4. Sugar

- Too much sugar can cause weight gain and dental cavities
- Being overweight increases your risk for heart disease and diabetes
- Choose foods with:
  - 12 g or less of sugar

If you have diabetes, look at how much carbohydrate is in your foods. Try to pick foods with a lower amount of this nutrient as eating too much can cause blood sugars to go too high.

5. Vitamins

- Vitamin A is important for vision and skin health
- Vitamin C helps your body fight infections

5. Minerals

- Calcium is important for keeping your bones and teeth healthy
- Iron helps your red blood cells carry oxygen throughout your body

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Medication Safety

What can I do to manage my diabetes?

- Eat foods from all 4 food groups
- Pick foods low in fat and high in fibre
- Limit high sugar foods
- Try to exercise for 30 minutes each day
- Test your blood sugars and check your feet every day
- Try not to smoke and limit alcohol intake
- **Take your medications!!**

What are some ways I may be taking my medications incorrectly?

- Not taking your pills at the same time each day
- Taking your pills too often, or not enough
    - For example: Forgetting if you took your pill and then taking another one
- Taking an over-the-counter medicine (medicine you can buy at a drug store) or herbal supplement that is not safe
- Taking your pills the wrong way
    - For example: Taking your pill with food when it is supposed to be taken on an empty stomach
- Taking another person's medication
- Using old or expired medications

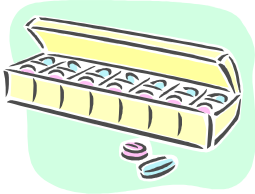
What can happen if I do not take my medications correctly?

- You may not get better
- Your disease or condition could get worse
- You may have to go to the doctor more often
- You may be admitted into the hospital
- Can even lead to death

Medication Safety

What can I do to make sure I take my medications correctly?

1. Learn the names of your medications
2. Learn what your medications are for (ask your pharmacist)
3. Ask what you should do if you miss a pill
4. Ask about how you can prevent or manage side effects
5. Ask your health care provider which over-the-counter medications (medications you can buy at a drug store) are safe for you
6. Tell your health care provider about herbal or natural products that you take
7. Use an alarm, cell phone or watch to remind you when it is time to take your medication(s)
8. Make taking medication a routine (For example – take your pills after brushing your teeth)
9. Ask your pharmacist to package your medication in a pill organizer
   - Pill organizers sort a week's worth of pills into daily slots
   - Some also have spaces for different times of the day



10. Think of taking you medication as something positive you can do to be healthy!

Reference:

Compendium of Pharmaceutical Specialties 2009 published by the Canadian Pharmacists Association Ottawa, ON.

2010 - 2. These materials were developed by the Clinical Subcommittee of the Chronic Disease and Network and Access Program of the Prince Albert Grand Council and its partners and funded by Aboriginal Health Transition Fund.. These materials will expire in 2013 when the Clinical Practice Guidelines for Diabetes Prevention and Management in Canada are updated.
Printed by Campbell Printing Ltd.

Available on the Chronic Disease Network and Access Program website at: www.ehealth-north.sk.ca

[Glitazones]

Includes: Pioglitazone (Actos); Rosiglitazone (Avandia)

What they do:

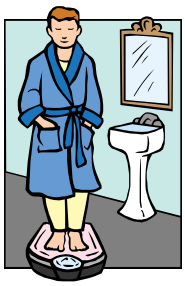
- Make the body's cells more sensitive to insulin
- This helps the cells use the sugar better

How to take them:

- 1 or 2 times a day, as prescribed by your doctor
- It may take 2 or 3 months for this medication to lower blood sugars
- Continue taking the pills even if there is no change in blood sugars at first

What to watch for:

- Glitazones may cause the body to hold onto fluid, which will increase weight. Tell your doctor if this happens.
- Rarely, they may cause vision changes



Who should not take a glitazone:

- People with heart failure
- People taking insulin
- Women who are pregnant or planning to become pregnant

For more information contact your health care provider

[Metformin]

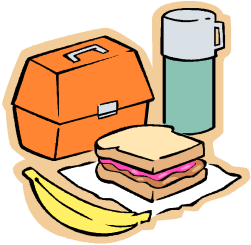
Other Names: Glucophage; Glycon

What it does:

* Lowers blood sugar levels by helping the liver make less sugar
* Helps the muscles use the sugar from the blood stream

How to take it:

- As often as your doctor prescribes and at the same time(s) every day
- Take metformin ***with meals***

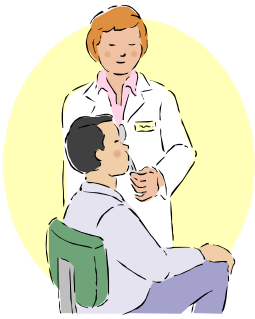


What to watch for:

- Metformin can cause nausea, diarrhea, or gas. Taking your pills with food can help with these symptoms.
- In some people, metformin can decrease absorption of folic acid and vitamin B_{12}
- Ask your doctor if you need to take a folic acid or vitamin B_{12} supplement
- Contact your doctor if you are throwing up and cannot drink enough fluids. You may have to stop taking metformin until you are better

Who should not take metformin:

- People who consume alcohol (ask your doctor how much alcohol is safe to have)
- Women who are pregnant or are planning to become pregnant



For more information contact your health care provider

Healthy Pregnancy

You need to make choices that will help your baby grow to be strong and healthy. One of these choices includes healthy eating. This means eating foods from all four food groups. Eating a wide variety of foods and taking your prenatal supplements everyday will help you to get all of the important nutrients that you and your baby need.

Nutrients are the materials found in food that keep us healthy. The five that are important during pregnancy include:

- Iron
- Folate
- Calcium
- Vitamin D
- Vitamin A

IRON

Why is it important?

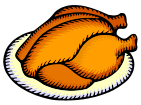
- Iron is needed to make extra blood for you and your baby.
- Iron helps your baby's brain develop.
- The baby stores iron while they are in the mother's belly. A baby cannot get enough iron from breast milk. When a baby is born they use the stored iron until they can eat solid foods.

During pregnancy a woman's need for iron increases by 66% because her body gives some to the baby.

Foods With Iron

Oysters or Clams

Salmon



Chicken

Spinach

Beef

Pork

Traditional Foods With Iron

Bear

Moose

Elk

Beaver

Deer

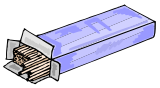
FOLATE

Foods With Folate

100% Orange Juice

Wild Rice

Broccoli


Pasta

Bread

Orange

Banana

Lettuce

Cereal

Traditional Foods With Folate

Strawberry

Dandelion Greens

Raspberry

Why is it important?

- Folate is needed before and during pregnancy.
- Folate is important in the growth of your baby's spine, brain and body tissues.
- Folate decreases the chance of a baby having a Neural Tube Defect (NTD).

Neural Tube Defects

- A NTD occurs when the spinal cord or brain does not grow properly.
- Pregnancies affected by a NTD could lead to a miscarriage or stillbirth.
- Children born with a NTD could have a mild to severe disability or they could die early in life.

CALCIUM & VITAMIN D

Why are they important?

- Calcium and vitamin D work together to make strong bones and teeth.
- If you do not get enough calcium and vitamin D your bones could become weak and break when you get older. This is called osteoporosis.
- Calcium is also needed for healthy nerves, muscles and heart.
- If you are lactose intolerant you should choose other food items that will provide you with calcium. You can also try lactose drops or pills to help with digestion or try lactose-free milk or soy milk.

Did you know?

That when your skin is exposed to the sun your body can make vitamin D.

Foods With Calcium

Milk

Cheese

Almonds

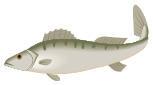
Yogurt

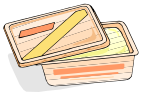
Chocolate Milk

Canned Salmon with Bones

Foods With Vitamin D

Egg Yolk


Fish


Margarine

Milk

VITAMIN A

Foods With Vitamin A

Milk

Cantaloupe

Carrot

Pumpkin

Broccoli

Sweet Potatoes

Spinach

Margarine

Tomato

Do you notice what most of these food have in common?

They are ORANGE !

Why is it important?

- It helps make you and your baby's eyes healthy.
- For the growth of bones, teeth, skin and body tissues.
- It works to help the body fight off infections and diseases.

Traditional Foods With Vitamin A

Salmon

Squash

Dandelion Greens

FLUIDS

Why are they important?

- Water moves important nutrients to you and your baby.
- Water carries waste products away from the body.
- Fluids help keep you cool.

Pregnant women need to drink, at least, *8 cups (2 litres)* of fluid throughout the day.

Tips That Can Help...

- Fluids include a variety of drinks such as water, skim, 1% or 2% milk, vegetable juice, 100% fruit juice and caffeine free teas.
- When a woman is pregnant she holds more water which can make her look swollen. This is normal, but if a woman has a lot of swelling she should go see a doctor or nurse.

HEALTHY WEIGHT GAIN

Weight gain during pregnancy is healthy and normal.

Choose A Healthy Snack...

During your second and third trimester you should have a healthy snack during the day. This will help you get enough energy for healthy weight

Banana & 1 large muffin

1 cup yogurt with peaches and toast

Bagel with 2 Tbsp. peanut butter

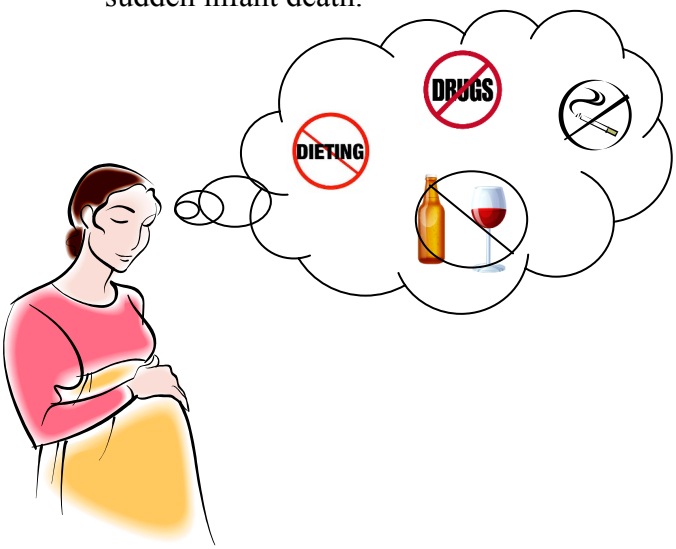
How much weight gain is healthy?

Weight Before Pregnancy	Very thin or underweight	Healthy weight	Overweight	Obese
Recommended Total Weight Gain	28 to 40 lb	25 to 35 lb	15 to 25 lb	11 to 20 lb
Weight Gain per week (2nd & 3rd trimesters)	1 lb	1 lb	0.6 lb	0.5 lb

LIFESTYLE CHOICES

Drugs

- Using drugs such as cocaine, crystal meth or marijuana can effect the baby's growth.
- Use of these drugs can also lead to sudden infant death.



Cigarettes and Chewing Tobacco

- When you smoke your baby does not get enough oxygen or nutrients.
- A mother who smokes could have a difficult pregnancy or a low birth weight baby.

Alcohol

- If a mother drinks alcohol it could cause the baby to have mental or physical retardation.

Caffeine

- A mother who has a high caffeine intake could have a miscarriage.
- It is safe to drink up to 300 mg of caffeine a day. This is equal to about 3 cups (250ml) of coffee.
- Caffeine is also found in chocolate, colas and some teas. These need to be limited as well.