



Moving on... with Diabetes

A Youth in
Transition Handbook



Published by:

Diabetes Care Program of Nova Scotia
1276 South Park Street, Bethune Building, Room 548
Halifax, NS B3H 2Y9
Tel: (902) 473-3219
Fax: (902) 473-3911
E-mail: info@dcpns.nshealth.ca
Website: <http://diabetescare.nshealth.ca>

Moving on... with Diabetes

A Youth in
Transition Handbook

2013

Acknowledgements

A special thank you is extended to Maureen Topley, Diabetes Care Program of Nova Scotia (DCPNS) Transition Project Consultant, for her outstanding dedication and commitment to this work. Her focus on this project since 2011 has allowed us to bring this work to completion. Thanks is also extended to Fran Bowden, former Project Consultant and Bev Harpell, former DCPNS Diabetes Consultant, for their hard work and enthusiasm during the initial development of the DCPNS **Moving on... with Diabetes** Initiative.

We would also like to acknowledge and thank John Lane of Halifax for providing the title for this handbook. John's submission was the winning entry in a contest held during a diabetes camp in 2007.

ADDITIONAL THANKS

The DCPNS acknowledges and thanks the members and medical advisors of the DCPNS Adolescent Transition Working Group and, specifically, the IWK Pediatric Diabetes Program team (educators and pediatric endocrinologists) for providing valuable feedback throughout the course of this project.

Additional thanks is also extended to the many external reviewers (diabetes educators, pediatricians, young adults with diabetes, and families of children with diabetes) across the province and Canada for volunteering their time to review the handbook and provide valuable input during its development.

The successful completion of this handbook reflects many hours of hard work and commitment to quality diabetes care in Nova Scotia.

ADOLESCENT TRANSITION WORKING GROUP (2011-2012)

- Maureen Topley, Diabetes Nurse Educator and DCPNS Transition Project Consultant (Chair)
- Barby Brushett, Volunteer Coordinator, Canadian Diabetes Association - Nova Scotia Region
- Paula Canning and Joline Medynski, Diabetes Dietitian Educators, IWK Health Centre
- Sheilagh Crowley, Diabetes Nurse Educator, IWK Health Centre
- Peggy Dunbar, Provincial Program Manager, DCPNS
- Rebecca D'Entremont and Marnie Reynolds, Social Workers, IWK Health Centre
- Lisa Galvez and Tara Jones, Diabetes Dietitian Educators, Endocrinology Clinic, QEII Health Sciences Centre
- Darlene Miller-Cash, Diabetes Nurse Educator, Endocrinology Clinic, QEII Health Sciences Centre
- Linda Scott, Diabetes Dietitian Educator, Diabetes Management Centre, QEII Health Sciences Centre
- Heather Smith, Social Worker, Diabetes Management Centre, QEII Health Sciences Centre
- Sarah Venedam, Diabetes Nurse Educator, St. Martha's Regional Hospital

MEDICAL ADVISORS FOR THE WORKING GROUP (2011-2012)

- Minoli Amit, MD FRCPC, and Oliva Ortiz, MD FRCPC, Pediatricians, Guysborough Antigonish Strait Health Authority
- Beth Cummings, MD FRCPC, Pediatric Diabetes Program, IWK Health Centre, and Medical Advisor, DCPNS
- Arati Mokashi, MD FRCPC, Pediatric Diabetes Program, IWK Health Centre
- Tom Ransom, MD FRCPC, Adult Division of Endocrinology, QEII Health Sciences Centre

EDITING AND LAYOUT

A heartfelt thanks to Barb Patterson, DCPNS Coordinator of Administrative Services, for the layout and editorial contributions.

Table of Contents

Letter of Introduction

This Handbook Belongs To	2
Taking Responsibility for Your Own Health	3
What to Expect in an Adult Diabetes Centre	4
Diabetes Team and/or Physician Appointment Checklist.....	6

1 Chapter 1: Taking Responsibility for My Health Care

Routine Follow Up	9
Making and Keeping Appointments	10
How to Talk to Your Family Doctor and Diabetes Health Care Team	11
Immunizations	12
Filling Prescriptions	13
Ordering Diabetes Supplies.....	15
Drug Plans & Tax Credits	17
Insurance	23

2 Chapter 2: Living On My Own

University & College Life	29
Apartment/Residence Living	32
Jobs and Diabetes	34
Finances/Budgeting	36
Grocery Shopping and Meal Preparation.....	40

3 Chapter 3: Living With Diabetes

Dating and Diabetes.....	45
Sexuality and Birth Control.....	46
Planned Pregnancy	49
Driving and Diabetes	50
Alcohol and Diabetes.....	51
Drug Use and Diabetes.....	54
Smoking and Diabetes	56
Eating Disorders and Diabetes	57
Distress, Stress, Anxiety, Depression, and Diabetes	61
Travel and Diabetes.....	64

4 Chapter 4: Complications: Acute & Chronic - A Focus on Prevention

Preventing Diabetes Complications.....	69
Hypoglycemia (Acute Complication)	71
Glucagon.....	74
Diabetic Ketoacidosis (Acute Complication).....	76
Chronic Complications.....	78

Table of Contents

5 Chapter 5: Diabetes Management

Blood Glucose Monitoring	83
Pattern Management.....	85
Insulin Management.....	86
Intensive Diabetes Management.....	87
Insulin Pump Failure or Temporary Interruption.....	92
Insulin Dose Adjustment	93
Correction Factor/Insulin Sensitivity Factor	96
Nutrition: Healthy Meals and Snacks	98
Carbohydrate Counting/Label Reading.....	100
Insulin-to-Carb Ratio	103
Physical Activity and Exercise.....	105
Complementary/Alternative Therapies	108
Sick Day Management	109
Insulin Adjustment Guidelines for Sick Days	111

6 Chapter 6: Odds & Ends

To Tell or Not to Tell.	117
Know Your Rights	119
Diabetes Services in Nova Scotia	121
How to Find Credible Diabetes Information.....	123
Glossary of Terms	125
Recommended Web Sites.....	127
Appendix A: My Present Treatment Plan.....	131
Appendix B: Meal Plan Sheet	132
Appendix C: Adolescent Knowledge & Skills Checklist.....	133
Appendix D: Wallet Card	139
Appendix E: Sample Letter to Roommate.....	141
Appendix F: Shopping List of Healthy Food Choices.....	143
Appendix G: Ideas for Healthy Meals & Snacks.....	145
Appendix H: DKA Prevention When On An Insulin Pump	147
Appendix I: Insulin Pump Failure or Temporary Interruption	149
Appendix J: Transitioning Out of Province	151
Reference List	153
Notes	160

Letter of Introduction



Dear Young Adult,

You are entering an exciting period of life—full of challenges for everyone, but particularly for young adults with type 1 diabetes. During these coming years, you will experience many changes—graduate from high school, move away from home, pursue college or university studies, or start a new job. While a truly exciting time, it can also be overwhelming. We have prepared this handbook to help you successfully transition from pediatric to adult diabetes care.

We know from experience that this changing time in your life can move diabetes to the back burner. As a result, you may miss your appointments, lose contact with your diabetes health care team, or experience changes in your diabetes control that increase the risk of developing diabetes complications. We also know that keeping focused on your diabetes will help you live a long, healthy, and fulfilling life.

This handbook addresses many of the issues you will encounter and will help you to anticipate and plan for these challenges. The handbook is a companion resource to the information and education your diabetes health care team has been providing in preparation for the transition to adult care. The mobile app that has also been developed provides you with quick access to key diabetes information that is also found in this handbook. We hope that you will find the tools helpful and useful.

As you move into adult care, remember your health is the most important thing in your life. Take responsibility, and do your best to make good health care decisions.

Keep the first appointment with your adult diabetes health care team, and stay connected. Get to know them and build a strong relationship where you can ask questions freely and participate in all the decisions related to your diabetes. Being part of the team, means being present, engaged, and open.

Stay well. Stay connected!

Your Diabetes Health Care Team

This handbook belongs to...

Name:	
Address:	
Home Phone:	Cell:
Email:	
Next of Kin:	
Home Phone:	Cell:
Email:	

IMPORTANT CONTACT INFORMATION	
PEDIATRIC DIABETES HEALTH CARE TEAM	
Pediatric Designate*:	Phone:
Email:	
Pediatrician:	Phone:
ADULT DIABETES HEALTH CARE TEAM	
Adult Designate*:	Phone:
Email:	
First Appointment Date:	
Endocrinologist/Internist:	Phone:
First Appointment Date:	
Family Physician:	Phone:

***Designate.** A member of the diabetes care team who has been assigned to be responsible for the coordination and completion of transition education/care of a particular adolescent(s) - in essence, a transition coordinator or case manager role.

Taking responsibility for **your** own health

One of the biggest changes as you transition from pediatric to adult care is that you will be taking responsibility for your own diabetes management. It's no longer up to the doctor or your parent(s)/guardian(s) to take care of your diabetes. As an adult, you make your own decisions, and your diabetes health care team supports you.

THE IMPORTANCE OF BEING IN CHARGE

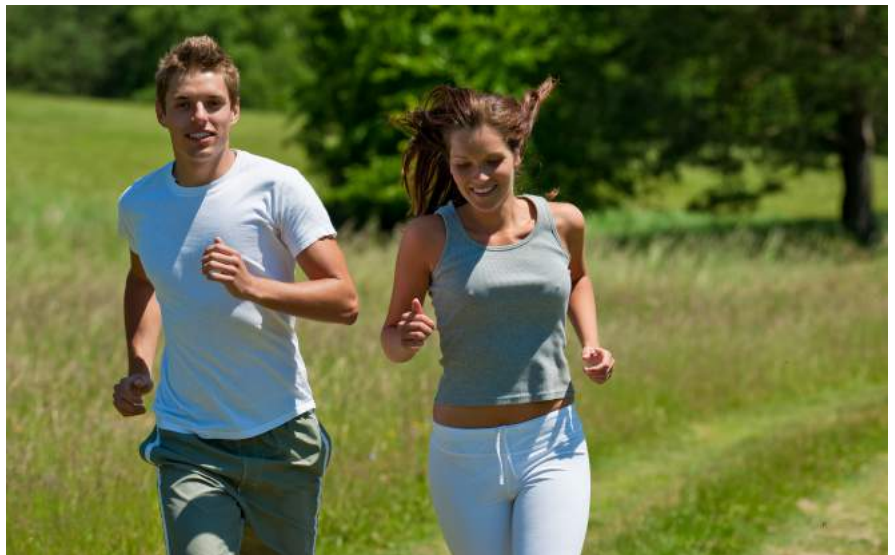
Despite how busy you might be, your health is the most important thing in your life!

Taking responsibility to keep good diabetes control can protect you from both the short- and long-term consequences of poorly managed diabetes. The more you participate in your own care, the more confident and healthier you will be.

WHAT IT MEANS TO BE IN CHARGE

Your diabetes is unique to you and no one person's diabetes is the same as another. You know your diabetes best.

Being responsible for your own diabetes management doesn't mean that you're completely on your own. It just means that it's up to you to work with your diabetes health care team to manage your diabetes.



What to expect in an adult Diabetes Centre

Attending an adult Diabetes Centre for the first time can be a little overwhelming if you don't know what to expect. Give the new diabetes health care team the time to get to know you. Be open about the challenges you face - school, work, sports, parties, stress, etc. - so they can help you manage your diabetes.

WHAT YOU SHOULD KNOW BEFORE YOU GO

- **YOU** are in charge of your diabetes care. Responsibility has gradually shifted from your parent(s)/guardian(s) to you, and you are now the main decision maker.
- Being responsible for your own diabetes management doesn't mean that you are completely on your own. Your adult diabetes health care team can help. They are there to provide support and tools to help you with self-management and to achieve targets through a flexible plan that meets your lifestyle.
- It is your responsibility to show up for your appointment. Unlike many pediatric Diabetes Centres, **you may not be called and reminded of appointments**. If you cannot make the appointment, call the Centre/office to arrange another date/time.
- Typically, you will see the diabetes health care team by yourself. However, if you wish, your parent(s)/guardian(s), a friend, or a partner may attend.
- In the adult setting, you may see the diabetes specialist (doctor) at a separate appointment from the Diabetes Centre team.
- Everything you talk about with the doctor and other members of the team is confidential. In other words, they won't be discussing your care with anyone else unless it's with your permission.
- The focus at the adult appointments will be on your well-being and staying healthy with diabetes.
- During each visit, the team will answer any questions or concerns you have as well as discuss recent blood glucose (BG) levels, food intake, weight, blood pressure, and any recent lab results that have been done.
- The diabetes health care team will review your diabetes care plan and assist you with goal setting, action plans, and problem solving.

What to expect in an adult Diabetes Centre

WHAT YOU SHOULD KNOW BEFORE YOU GO (cont)

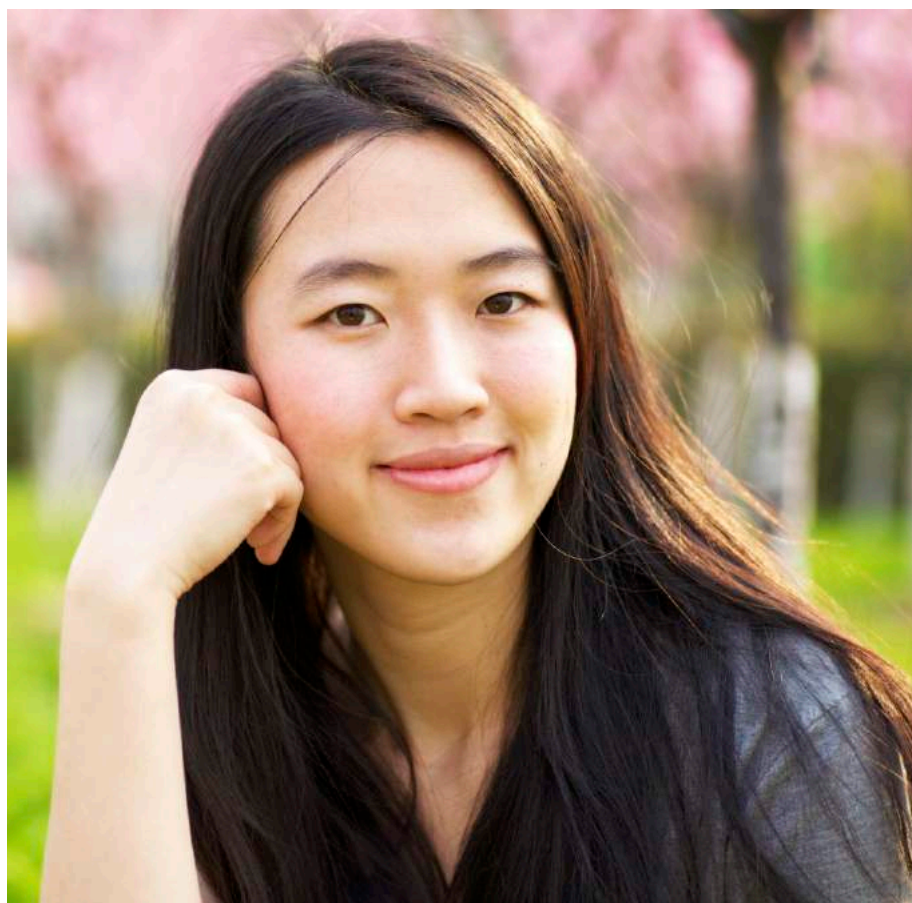
- You will have your feet checked at least yearly to help you learn healthy foot care practices and to look for any early signs of foot problems.
- You will be asked to have your **eyes examined every 1 to 2 years** by an eye doctor (optometrist or ophthalmologist). More frequent testing may be needed based on exam results.
- Your family doctor will continue to be your main doctor. You should see your doctor at least once a year and more often when needed. He/she will continue to provide on-going medical support for all of your health care concerns such as renewing your prescriptions, flu shots, and any general health issues.



Diabetes team and/or physician appointment checklist:

- ☐ Have any blood/lab tests done before your appointment. The diabetes health care team can then share and discuss the results with you at your appointment.
- ☐ Think about any specific questions/issues you want to discuss. Write them down before you go.
- ☐ Take your blood glucose meter(s) to the appointment.
- ☐ If you are on an insulin pump, upload your pump data a day or two before your appointment.
- ☐ Check supplies to see if you need to ask for any new prescriptions.
- ☐ Know what drug coverage you have – is it a private plan or through a provincial Pharmacare Program. If you do not have coverage, talk to your diabetes health care team.
- ☐ If you need to cancel your appointment, contact the Diabetes Centre/office as soon as possible to schedule a new date and time.





CHAPTER

1

Taking Responsibility for My Health Care



Routine follow up

Regular visits to your doctor and diabetes health care team are an important part of caring for your diabetes. These visits can help detect problems early; before they become serious. They also provide an opportunity for you to ask questions and learn about what is new in diabetes management.



A GUIDELINE FOR GOOD DIABETES FOLLOW-UP

☐ Approximately **every 3 to 6 months** have:

- Your **A1C** measured. This is a measure of your average blood glucose (BG) over the previous 3 months (goal: less than 7.5% for teens; less than 7.0% for adults [\geq age 19]).
- A **blood pressure** test (goal: below 130/80 mm Hg).
- Your **blood glucose record, insulin doses, and meal plan/eating habits reviewed** by a member of your diabetes health care team.

☐ **Every 6-12 months** have:

- The **protein in your urine** measured to see how well your kidneys are working.
- Your **feet inspected** by a member of your diabetes health care team.
- Your **meter checked** for accuracy against the results of a blood test at the lab (lab/meter comparison).

☐ **Every 1 to 2 years** have:

- Your **eyes examined** by an eye doctor (optometrist or ophthalmologist). More frequent testing may be needed based on exam results.

☐ **Every 1-3 years** have:

- A blood test to check your lipid level (cholesterol, HDL-C, triglyceride, and LDL-C).
- A blood test to check your thyroid level.

☐ **At any time** you can ask questions about:

- Any area of your diabetes care.
- Sexual health.
- Stress, anxiety, depression, or any other feelings that you have about your diabetes.

Making and keeping appointments



When you have diabetes, it's very important to keep your appointments with your doctor and other members of your diabetes health care team. These visits are your opportunity to talk about your diabetes and to make sure that you are managing your diabetes well.

When it's time for you to move to adult care, a referral will be made to a new adult doctor (endocrinologist/internist) and adult Diabetes Centre. This referral will include information on your present diabetes management to help the adult diabetes health care team get to know you.

AS A PERSON IN CHARGE OF YOUR OWN HEALTH, IT'S IMPORTANT THAT YOU:

- Make regular appointments with your diabetes health care team and other specialists as needed (eye doctor, kidney doctor, etc.).
- Note on your calendar, in your agenda, or in your phone the dates of any upcoming appointments.
- Attend the scheduled appointments, arrive on time, and bring the necessary documentation (health card, blood glucose record book, meter, etc.).

IF YOU ARE UNABLE TO KEEP A SCHEDULED APPOINTMENT WITH YOUR DIABETES HEALTH CARE TEAM OR OTHER HEALTH CARE PROFESSIONAL:

- Call to tell them that you cannot make the appointment.
- Reschedule the appointment for another day.
- Be sure to have the **names and contact information** for everyone on your diabetes health care team so that you can easily call them to schedule or re-schedule appointments (*see **Appendix D: Wallet Card, page 139***).

How to talk to your family doctor and diabetes health care team



You are in control of your diabetes, so it's your job to make sure everyone is working together to give you the best possible health care. Start by letting your diabetes health care team know that you are serious about managing your diabetes. Let them know that you want to be an active partner in your diabetes management.

HOW TO GET THE MOST OUT OF YOUR VISITS

- Sit down and think about your upcoming visit – the reason for the visit and any change in your diabetes or other illnesses you may have had since your last appointment.
- Prepare a list of questions and concerns beforehand. Make sure to list your most pressing concerns first.
- Ask for, and listen to, advice in dealing with the frustrations of diabetes.
- If you don't understand an answer, ask again.
- Be honest about how well you stick to your meal, exercise, and medication plans. Your diabetes health care team is there to help you, not judge you.
- Ask for an explanation of any tests and their results.
- Make notes of what your health care provider says. You can do this during the visit or in the waiting room after the appointment.
- Keep a record of your visits, tests, and medications.
- Make a list of addresses and contact numbers of all members of your health care team.
- Find out how the health care team members want you to contact them (phone, e-mail, etc.).

Immunizations



You may remember getting immunizations (shots) as a little kid, but shots aren't just for kids! Immunizations are also important for adolescents and adults because they can help protect you against certain illnesses and infections. Having your immunizations on schedule can help you to stay healthy.

TWO IMMUNIZATIONS PARTICULARLY IMPORTANT FOR PEOPLE WITH DIABETES

1. Influenza (flu) Shot

- A yearly flu shot is very important for people with diabetes. If you get the flu, you can get sicker than people without diabetes and may develop diabetic ketoacidosis (DKA).

2. Pneumonia Vaccine (called PPV)

- The PPV shot is important for people with diabetes to prevent pneumonia and meningitis.
- Most children receive this vaccine as a routine immunization. However, revaccination may be recommended as an adult. This should be discussed with your doctor.

The Nova Scotia Department of Health and Wellness offers the two immunizations free-of-charge to people with diabetes. The Province also pays for other routine immunizations.

Refer to the Nova Scotia Immunization Schedule to learn about the routine shots that are needed during different stages of your life. It is available on the Nova Scotia Department of Health and Wellness website.

If you have any questions about immunizations, contact your doctor or your local Public Health Services office. Additional information can also be found on the following websites:

- Nova Scotia Department of Health and Wellness: www.gov.ns.ca/DHW/
- Public Health Agency of Canada: www.phac-aspc.gc.ca

Filling prescriptions



Once a prescription has been written by your diabetes specialist physician or family doctor, you will have to have the prescription filled by a pharmacist. It is your responsibility to ask your diabetes specialist physician or family doctor for new prescriptions for your diabetes medications/supplies **before** you run out.

CHOOSING A LOCATION TO FILL PRESCRIPTIONS

- The most common place to get your prescriptions filled is at the local pharmacy.
- You can use a local community pharmacy or a chain drug store (e.g., Shoppers Drug Mart, Lawtons, Pharmasave). Pharmacies are also located in grocery stores (e.g., Sobeys, Superstore) as well as some larger stores such as Walmart and Costco.
- Once you choose a pharmacy, it is best to fill all your prescriptions at that pharmacy. This way an accurate drug history can be maintained, and the pharmacist can more easily check for drug interactions that should be avoided.
- Pharmacies charge varying rates for the same prescriptions. Shop around for the most competitive prices.

QUESTIONS TO CONSIDER WHEN CHOOSING A PHARMACY

- Is the location convenient to home, school, or work?
- Does the pharmacy maintain patient records (preferably on computer) and check for drug interactions?
- Is the staff helpful?

FILLING THE PRESCRIPTION AT THE PHARMACY

- If you are going away to school, you may need a second prescription for a pharmacy close to your school. Sometimes pharmacies will not take a prescription from another province. If you are at university/college, doctors at Student Health Services can help with this.
- When the pharmacist hands you the medication, check to make sure that it is the medication that you were prescribed.
- Let the pharmacist know about any drug plan you have, and ask what your cost will be. If you cannot afford your prescription, ask them for suggestions.

Filling prescriptions

GETTING PRESCRIPTION REFILLS

- A pharmacist may not refill a prescription unless the doctor has authorized it to be refilled. A doctor may authorize several refills, one refill, or no refills on the original prescription. After all of the refills authorized on the original prescription have been used, a pharmacist must obtain authorization from the doctor before the prescription can be refilled.
- Make a habit of checking the prescription label to see how many refills you have left.
- Even though your doctor may want you to take the prescription medication for a long time, he/she may monitor your drug therapy by requiring the pharmacist to call each time the prescription is refilled.
- You can assist your pharmacist and avoid delays by calling your pharmacy a few days before you run out of your medication. This will give your pharmacist time to contact your doctor for authorization to refill your prescription if all refills have been used.
- When phoning the pharmacy for a refill, the following information is helpful: your name, the prescription number, and the name of the medication.



Ordering diabetes supplies

Managing diabetes requires the use of many supplies. From blood glucose (BG) meters and strips to insulin pump supplies, the list can seem endless! It is important that you are aware of all the supplies that you use and how to order more when needed.

TIPS TO MAINTAIN A STEADY SUPPLY OF YOUR DIABETES SUPPLIES



1. **Make a list of all the diabetes supplies that you use. Things that might appear on your supplies list include** *(refer to page 32 for additional suggestions)*:
 - Blood glucose meter
 - Lancets
 - Glucose test strips
 - Insulin(s)
 - Insulin pens and pen needles
 - Insulin syringes
 - Pump insertion/infusion sets/cartridges/reservoirs/tape
 - Ketone test strips
 - Glugagon kit (check expiry date)

2. **Find out where you get your diabetes supplies.**
 - Ask your parent(s)/guardian(s) where they order your supplies.
 - Mark beside each item on your “Supplies List” how and where to order more supplies when needed. For example, write the name of any websites next to supplies that you normally get from an internet-based supplier; or mark down the name and number of your local pharmacy next to any supplies that you must order through your pharmacy, such as insulin.
 - Ask how long it generally takes to receive the order and record this information next to each item on your list. It is important to know whether you will get your supplies within a day or two of ordering them or if it will take several weeks for them to arrive.

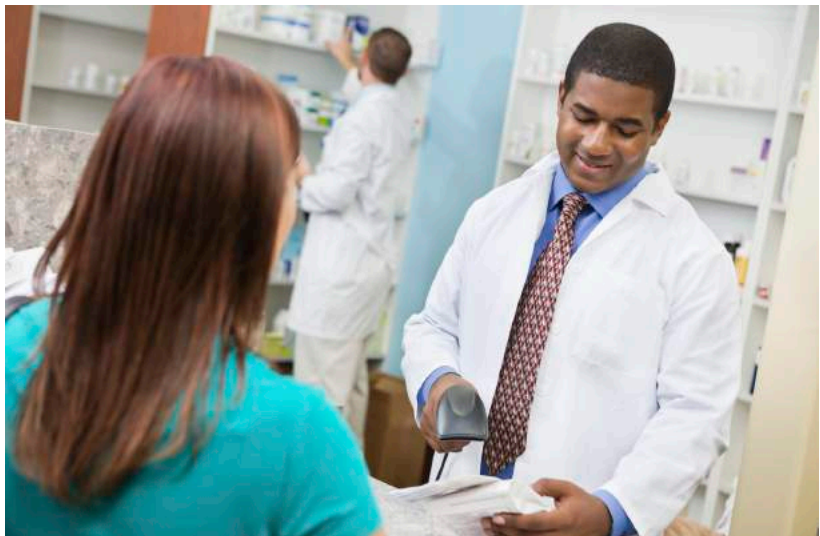
Ordering diabetes supplies

3. Keep an inventory of diabetes supplies that you have on hand.

- Always be aware of how much you have on hand and when you are running low on a particular item.
- Order more diabetes supplies before you run out of them! You don't want to run out of glucose testing strips, pen needles, insulin, etc.

4. Important Facts to Know

- Annual prescription renewals can be obtained from your family doctor as well as your specialist doctor.
- Nova Scotia pharmacies will often allow a **one time**, short-term supply if your prescription is passed its renewal date (allowing you time to get your prescription from your doctor).
- Insulin can be purchased at your pharmacy without a prescription.



Drug plans & tax credits

It can be a challenge paying for all the medications, devices, and supplies that are needed to manage diabetes. In Canada, provincial and private drug plans and federal tax credits can help you afford the supplies that you need. The Canadian Diabetes Association office nearest you can help you decide which options you qualify for and how to access them.

PROVINCIAL DRUG PLANS/PROGRAMS

The **Nova Scotia Insulin Pump Program (NSIPP)** is a government-funded program designed to help with the costs of insulin pumps and pump supplies.

Who is the NSIPP for?

- Children and young adults (less than age 25) with type 1 diabetes who have financial needs, meet the Medical Eligibility Criteria, and also have a valid Nova Scotia Health Card.

What is covered?

- If you are less than age 19 years, help with insulin pump and pump supplies.
- If you are between the ages of 19 to 24 years, help with pump supplies only (insertion sets, skin prep, and reservoirs).

What do I need to do to be medically eligible for the NSIPP?

- You must meet the following criteria, among others, to become a safe and successful pumper:
 - Attend (ed) the Diabetes Centre's insulin pump therapy education program.
 - Have had two or more visits to an NSIPP-approved Diabetes Centre (including your diabetes specialist physician) **AND** 2 or more A1C tests in the past 12-months.
 - Test and record your blood glucose 4 or more times a day **AND** act on the results.
 - Have a personalized A1C goal (set by you and your team) and are trying to achieve this.
 - Demonstrate good knowledge and practice of carbohydrate counting, sick day management, and insulin dose adjustment.
 - Have had no more than 2 DKA episodes in the past year.

Drug plans & tax credits

Nova Scotia Insulin Pump Program (cont)

How do I get started?

- Talk to your diabetes health care team and your physician, and let them know you are interested in the new Insulin Pump Program. If you need a referral to a NSIPP diabetes health care team, this can be made at any time.
- Review the Medical Eligibility Criteria and start preparing now.
- Visit the Department of Health and Wellness website (<http://novascotia.ca/DHW/nsipp>) and review the information about the program and the financial calculator to see if the NSIPP will be of benefit to you. Then begin the application process.

Contact Information:

Nova Scotia Insulin Pump Program (NSIPP)
P.O. Box 9700,
Halifax, NS B3K 6R8
Toll Free: 1-855-306-6360
Fax: 902-420-0491
E-mail: NSIPP@nshealth.ca

Nova Scotia's provincial drug plan is offered through the Department of Health and Wellness and is called **Pharmacare**. Pharmacare offers the following drug plans and programs to Nova Scotians:

Family Pharmacare Program

- This program helps cover the costs of certain prescribed medications.
- There is no charge for the Family Pharmacare Program, but there is a co-payment (partial amount you must pay). The co-payment is set based on a family's annual income and family size.

Drug plans & tax credits

Family Pharmacare Program (cont)

You may register if you:

- Are a permanent Nova Scotia resident.
- Have a valid Nova Scotia Health Card.

You are not eligible if you are receiving drug coverage through:

- The Department of Community Services Pharmacare Benefits.

How to enroll:

- Enrollment is by family. If you live alone and are 18 years of age or older, you can register as a family. Each family is required to complete one registration form. Visit the Pharmacare website at www.nspharmacare.ca, or call (902) 496-5667 or 1-877-330-0323 for additional copies of the form.
- You must enroll as a “family” on your own when you turn 18, even if you are still living with your parents.

A family could be:

- A single adult (age 18 years or older)
- An adult and spouse
- An adult and all children under 18 years of age
- An adult, spouse, and all children under 18 years of age

Mail/fax the completed registration form to:

Nova Scotia Family Pharmacare Program
P.O. Box 500, Halifax, NS B3J 2S1
Fax: 902-468-9402

Drug plans & tax credits

Department of Community Services Pharmacare Program

Provides drug coverage to:

- Income Assistance clients
- Services for Persons with Disabilities clients
- Extended Pharmacare clients
- Transitional Pharmacare clients
- Children in the care of Child Welfare through either a District Office of the Department of Community Services or a Children's Aid Society/Family and Children's Services Agency

Eligibility:

- Contact the Department of Community Services toll-free at 1-877-424-1177 to find out if you are eligible for any of these programs.



Drug plans & tax credits



PRIVATE DRUG PLANS

- If you are still in school or living with your parents, you may be covered under their benefits. For example, you may be covered while you attend a post-secondary institution or until a certain age (usually 25).
- If you are working, you should find out what benefits your employer offers. Larger companies often offer private drug plans.
- If you are attending college or university, check with the school to find out what health plan is available.
- Before you purchase a private drug plan through your place of employment, post-secondary institution, or through a private company, be sure to find out if your diabetes supplies are covered.
- Before purchasing a private plan, check to ensure that your prescription and supply costs are **more than** the premiums and co-payment fee you will be charged for coverage.
- Nova Scotia Family Pharmacare may be able to help you offset a portion of your prescriptions not covered by your private drug plan.

TAX CREDITS

- The cost of diabetes-related medications and devices can also be helped by federal and provincial government tax credits.

Federal Tax Credits:

- **The Disability Tax Credit** compensates Canadians for time taken (minimum of 14 hours per week) from daily activities to administer "life-sustaining" therapy, like insulin.
- The **Medical Expenses Tax Credit** applies when the total medical expenses are more than 3% of your net income or a designated amount, whichever is less.
- A **Refundable Medical Expense Supplement** is available to working Canadians earning \$36,663.00 or less.
- A **Child Disability Benefit** may apply to parents with an insulin-dependent child.

Drug plans & tax credits

Provincial (Nova Scotia) Tax Credits:

- A provincial **Disability Tax Benefit** is available if you meet the eligibility criteria.
 - **Provincial tuition and education** amounts can also be claimed for income tax purposes (tuition, books, and transportation).
-

Note: It is important to keep all of your supporting documents throughout the year such as prescription and diabetes supplies receipts, dates of diabetes-related appointments, travel mileage, etc., so that you are prepared to calculate your medical expenses when it is time to file your income tax.

It is also important to note that tax credit amounts will change each year.

There are qualifying criteria and applicable forms to complete for these tax credits. For more information, contact Revenue Canada Agency (www.cra-arc.gc.ca/menu-eng.html or 1-800-959-8281).



Insurance



Like most people your age, insurance is probably the last thing that you're thinking about; but it's a good idea to start learning about how insurance works and, if possible, begin planning early. For example, the younger you are when you apply for life insurance, the lower the premiums (payments) tend to be due to age and lack of diabetes-related complications.

THERE ARE SEVERAL TYPES OF INSURANCE AVAILABLE TO YOU

Health Insurance. There are two types of health insurance – basic Medical Service Insurance (MSI), available to all Nova Scotia residents, and extended health insurance.

1. MSI:

- The province pays for MSI. You don't have to pay anything to use the insured hospital or physician services. You do have to carry your signed Nova Scotia Health Card with you at all times.
- You must present your health card to the physician and/or hospital each time you need hospital or physician services. If you don't have a health card, contact the MSI office; and you will be mailed the appropriate forms to fill out.
- Your Nova Scotia Health Card has an expiry date. Three months before it expires, you will receive a "Health Card Renewal" form. You must complete, sign, and return the form to MSI. If no additional information is required, coverage will be renewed; and you will be sent a new card with a new expiry date.
- If you are a student in another province but still have an address (parent/guardian) in Nova Scotia, MSI will still cover your basic health care.
- If your card is lost, stolen, or damaged, there is a \$10 fee to replace the card. Contact the MSI office if you require a new card or to report changes such as new address, marriage, etc.

MSI Contact Information:

Phone: (902) 496-7008 or toll free 1-800-563-8880 in Nova Scotia

Hours: Monday through Friday (8:00 a.m. to 5:00 p.m.)

Mail: P.O. Box 500, Halifax, NS B3J 2S1

Location: 230 Brownlow Avenue, Dartmouth, NS

E-mail: msienquiry@medavie.bluecross.ca

Insurance

2. Extended Health Insurance

- Extended health insurance can cover the cost of services not covered by MSI.
- If you do not have extended health insurance and would like to purchase it independently, it is likely that the cost will be very high with limited coverage on supplies needed for diabetes.
- If you are still in school or living with your parent(s)/guardian(s), find out if you are covered under their benefits and what the conditions are.
- When you start working, you should find out what kind of benefits your employer offers. Larger companies often offer extended medical coverage.
- If you are planning to attend a post-secondary institution in another province or out of the country, check with the school to find out what health insurance is available. Remember to look specifically for a “pre-existing” clause in the contract. This will tell you whether an emergency with your diabetes will be covered or whether you would have to pay for this.

Insurance

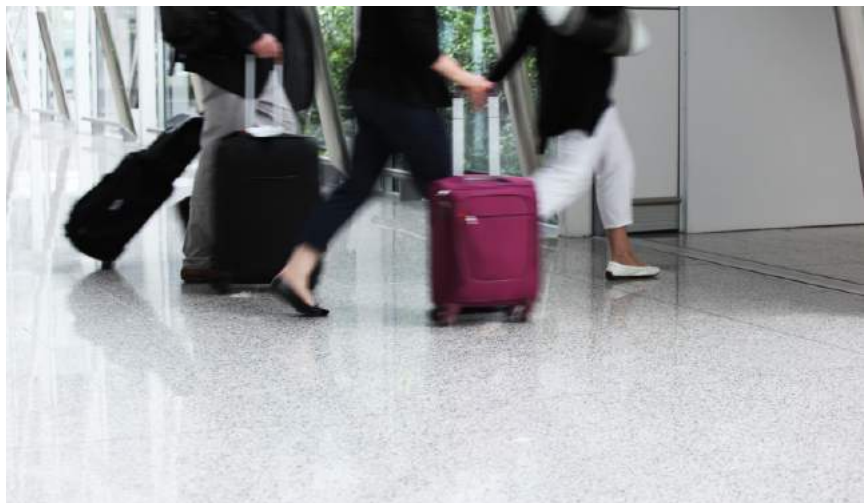
LIFE INSURANCE

- Life insurance provides for a lump sum payout to a policyholder's heir, estate, or designated individual or charity when the policyholder dies.
- Life insurance can be useful if you want to get a mortgage to purchase a home. Other forms of mortgage insurance can often be difficult to obtain if you have a chronic illness like diabetes.
- If you have type 1 diabetes and you're under the age of 19, it may not be possible for you to get life insurance coverage; the options will be limited, and most companies will not provide coverage. Once you reach the age of 19, however, more options become available, and it may be possible for you to get life insurance.
- The good news for anyone with type 1 diabetes is that once a personal (guaranteed renewable) life insurance contract is issued, it cannot be modified or taken away due to a change in health. Contact a life insurance broker who can help you understand your risk and choose the appropriate product and company. Brokers can also find travel, extended health, and disability programs, and assist in understanding existing group plans.
- If you have type 2 diabetes and it is well managed, you should not have a problem getting life insurance, though sometimes the cost will be higher.
- Check into any "group plan" life insurance policies you may be offered. For example, if you are alumni from a university, a member of a professional association, or are part of an employer-sponsored plan, you can often be part of this group plan without needing to provide your medical history.
- Also, be aware that if you leave your place of employment, you have the right to transfer your group life insurance to an individual plan without providing medical information.

Insurance

TRAVEL INSURANCE

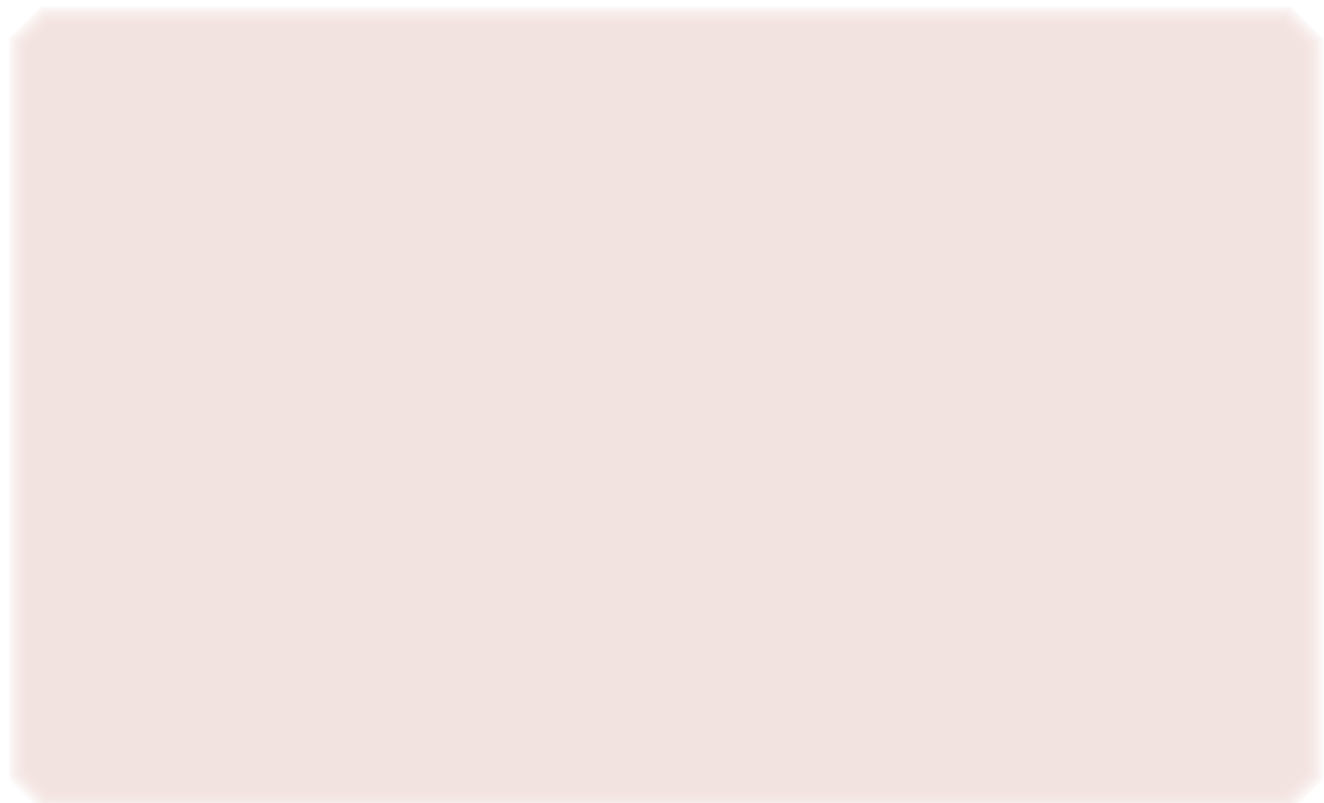
- If you are planning a trip out of the country, it is important to look into travel insurance in case of a medical emergency. There are various companies that offer travel insurance; however, many do not cover pre-existing conditions such as diabetes.
- Regardless of what company you use, it is important that you read the policy before traveling and be aware of the wording, especially those pertaining to pre-existing medical conditions. You want to know whether an emergency with your diabetes will be covered or whether you would have to pay for this.
- The Canadian Diabetes Association has been able to offer special travel insurance in which diabetes is not treated as a pre-existing condition. Call 1-800-BANTING.





CHAPTER 2

Living on my own



University & college life

Pursuing post-secondary education is a big decision and an exciting step in your life, especially if it's also your first time living away from home. Before you head off to college or university, you should contact the school's Health Centre to set up an introductory appointment.

AT YOUR FIRST APPOINTMENT, ASK THE FOLLOWING:

- What services are available and the cost (if any); for example, laboratory tests such as quarterly A1C, dietitian visits, etc.
- How to communicate with the Health Centre about health care issues and the type of messages that are best handled by each method of communication (e.g., e-mail, phone, letters).
- The location of pharmacies in town.
- Where night, weekend, and emergency services are available and how to access them.
- Information about any support groups on campus or in the area.
- If health insurance is offered through the school and what services it covers.



University & college life

Once school begins, you will face many new situations. Here are some tips that will provide you with some realistic expectations concerning life on campus.

MEETING PEOPLE

- The first few weeks on campus can be a lonely period. When you look around, it may seem that everyone else is self-confident and has already made a ton of friends. The reality is that everyone is having the same concerns as you about whether or not they will make new friends.
- Allow yourself enough time to meet new people. Meaningful, new friendships and relationships do not develop overnight. Just as it may have taken you some time to make great friends in high school, the same is true in community college or university.
- Participate in orientation activities – a great way to meet new friends!

IRREGULAR SCHEDULES

- Your life as a post-secondary student can be very unpredictable. On some days, you might have to get up early to make it to an 8:00 a.m. class, while on other days you might be able to sleep in because you don't have class until the afternoon.
- With irregular class schedules, regular meals and snacks become challenging to manage. Unplanned late-night snacks can become a reality as well.
- Because of this day-to-day variability in schedule and time of meals/snacks, your choice of insulin regime and frequency of monitoring blood glucose (BG) becomes extremely important.
- Changes to your insulin regime should be in place for a few months before heading off to school so that you can get comfortable with it in different situations.



University & college life

PARTIES, PARTIES, AND MORE PARTIES

- Alcohol and illegal drugs aren't good for anyone's health, but can also be challenging for someone with diabetes. *Refer to pages 51 to 55 for information on how to reduce the risks associated with alcohol and drug use.*



Apartment/ residence living

The time has come for you to start life on your own. Now that you are living independently, there are lots of things to consider when managing your diabetes.

CHECKLIST TO ENSURE THAT YOU HAVE ALL THE DIABETES SUPPLIES THAT YOU NEED WHEN YOU'RE LIVING ON YOUR OWN



- ☐ Glucose meter, extra batteries, record book, and pen
- ☐ Lancets and test strips
- ☐ Sharps disposal container
- ☐ Insulin vials/cartridges
- ☐ Insulin syringes/pens/pen needles
- ☐ Glucagon kit
- ☐ Ketone test strips
- ☐ Alcohol swabs, tissues
- ☐ Quick sources of sugar (glucose tablets/juice packs/hard candy)
- ☐ Medical ID
- ☐ Sick day guidelines

If using an **insulin pump**, you will also need:

- ☐ Insertion/infusion sets
- ☐ Skin preps, tape
- ☐ Cartridges/reservoirs
- ☐ Extra pump batteries
- ☐ Directions for switching back to insulin injections
- ☐ Current records of your:
 - Basal and bolus rates
 - Insulin sensitivity factor
 - Insulin-to-carb ratios

Be sure to check your supplies periodically. Visit your doctor or pharmacist before your supplies start to run low. As a safeguard against running out of insulin, make sure your prescriptions are on file at a local pharmacy. You can talk to your pharmacist about getting an advance on supplies if needed.

Apartment/ residence living

You should also consider the following:

- Request to have a meeting with the resident assistant (RA) to go over emergency procedures. Offer to give the RA a glucagon kit (including directions on how to use it) in case you have a severe “low.”
- If you have a roommate, it is important for them to know you have diabetes and what that means. A simple explanation of what diabetes is and how you take care of it – checking blood glucose (BG), taking insulin, eating healthy foods, etc. – will be helpful for them to understand. You will want to tell them about hypoglycemia and what they should do if you need assistance and where you keep your hypoglycemia supplies. *See Appendix E: Sample Letter to Roommate, page 141.*
- The more people that know about your diabetes and how to assist you if needed, the safer you will be.
- Arrange to have a small refrigerator in your room for supplies and snacks. Let roommates know that the snacks in the fridge are important for your diabetes management.
- If you don’t have relatives or friends nearby, have your parent(s)/guardian(s) network through their friends or colleagues to find someone who can act as an emergency contact if needed. Have a list of emergency contact numbers in an easy to find location; for example, in cell phone, on your bulletin board, etc. *See Appendix D: Wallet Card, page 139.*



Jobs and diabetes



One of the big questions when applying for a job is “Should I tell them I have diabetes?” Asserting yourself with your employer is not about asking for special treatment. Instead, it’s about letting him or her know what things you need to manage your diabetes well so that you can be a productive worker. Your employer has a duty to provide a safe work environment, but equally, you have a duty to be responsible and manage your diabetes.

IT’S A GOOD IDEA TO DISCUSS THE FOLLOWING WITH YOUR EMPLOYER:

- Your need for regular meal/snack breaks.
- Having access to your blood glucose (BG) meter.
- Having somewhere private to test your BG and inject insulin.
- Having time to treat low BG, if needed.

TIPS TO HELP MANAGE YOUR DIABETES AT WORK

- If you’re working shifts, you may not see your employer, so your peers should know you have diabetes too. Everybody needs to know where your hypoglycemia supplies are; so if you have a low, you can treat it and go back to work.
- Consider having a written plan in place that spells out what constitutes a medical emergency and describes in detail what your co-workers need to do.
- Make sure you wear some form of personal health identification so that people who don’t know you can respond if there’s a need.
- You may need to adjust your insulin (dose and/or timing) depending on the type of work you do (e.g., active, on-your-feet type jobs). You may want to discuss this with your doctor or diabetes health care team.
- If you do shift work, talk to your diabetes health care team about changes you might need to make to your diabetes routine (e.g., injection times, meals, etc.).

Jobs and diabetes

TIPS TO HELP MANAGE YOUR DIABETES AT WORK (cont)

- Keep a well-stocked “treatment for low BG kit” handy at all times.
- Don't skip meals – stop when you need to eat.
- Avoid leaving sharps lying around.
- Don't ignore a low – treat it immediately and re-treat if necessary.
- If you have any problems or you feel you are being discriminated against, contact your diabetes health care team, the Canadian Diabetes Association, or the appropriate Human Rights Commission (*for more information refer to the “Know Your Rights” section on pages 119 & 120*).

TIMES WHEN YOU HAVE TO DISCLOSE YOUR DIABETES

- If you are applying for a safety-sensitive position (i.e., airline pilot, railway engineer, police officer, paramedic, etc.), you are required to disclose any medical condition, including diabetes, which could jeopardize the safety of your coworkers, clients, or the public. Not disclosing could be grounds for dismissal when your condition is discovered.
- If you are thinking of a career that requires a commercial drivers license, there are specific criteria you must meet. For more information, visit the following website: www.diabetes.ca/diabetes-and-you/living/guidelines/commercial-driving.
- If you are using insulin, you cannot serve in the Canadian Armed Forces. All Canadian soldiers must meet specific employment criteria; and, unlike other employers, the military does not have a duty to accommodate those who do not meet those criteria.



Finances/ budgeting

You may think that coming up with a budget is difficult and somewhat unnecessary (if not completely boring). However, budgeting actually plays a very important role in your diabetes management. Simply put, you need money to buy food and diabetes supplies. So having a realistic budget in hand is crucial in ensuring that you don't run into money problems.



TWO GENERAL PRINCIPLES FOR COMING UP WITH A BUDGET

1. Assessing Your Finances

- Save all your financial documents, such as pay stubs and receipts, for about a month, so you can make note of your cash inflow and outflow.

- **Organize** your finances **into 3 categories:**

Income

Any money coming in from jobs, scholarships, bursaries, student loans, savings, parents, etc.

Fixed Costs

Items that are paid for/bought on a regular basis (i.e., monthly bills).

Variable Costs

Items that you do not pay for/purchase on a regular basis.

- It is also helpful to organize your fixed and variable costs by priority. This will allow you to determine where your money needs to be directed first. For example:

Fixed Costs:

- Rent = High priority (you need a place to live)
- Cable Bill = Low priority (you don't need to watch all the reality TV shows)

Variable Costs:

- Groceries = High priority (you have to eat)
- Clothes = Low priority (you don't need all the latest fashions)

Finances/ budgeting

1. Assessing Your Finances (cont)

- Now, do a bit of math and figure out if your income is enough to cover all of your costs. If you discover that your income is not enough to cover all of your necessary costs, you may want to look for alternative sources of funding such as scholarships, bursaries, awards, and student loans.
- When you find yourself in a situation where your total expenses are equal to or less than your income, then you can start planning a budget.

2. Planning with Your Available Resources

- For most students, it is recommended you have a fairly simple and flexible budget. This will allow you to use your budget as a guideline for how you should be spending your money.
- A budget chart should have two general sections – income and costs. In your income section, note where your money is coming from on either a semester (4 months) or a monthly basis.
- Here's an example of what a student's income chart might look like for a single student **for one semester**.

INCOME	ONE SEMESTER
Summer Job	\$3,000.00
Student Loans	\$5,440.00
Parents	\$1,500.00
Part-time Job	\$2,500.00
Scholarship/Bursary	\$500.00
TOTAL	\$12,940.00

- Now that you've noted what funds you have coming in, it's time to figure out where it's going (costs). Prioritizing allows you to easily see which costs are low priorities; so you'll know where to cut back should you find that your income is not sufficient to cover your costs.

Finances/ budgeting



2. Planning with Your Available Resources (cont)

- One method is that you prioritize your costs in the following order:
 - Fixed Costs - High Priority (FH)
 - Variable Costs - High Priority (VH)
 - Fixed Costs - Low Priority (FL)
 - Variable Costs - Low Priority (VL)
- Expenses vary depending on factors such as your program/ number of courses, living accommodations, meals, transportation, entertainment, and lifestyle expenses. Here's an example of what a student's costs **per semester** might look like based on a full-time student living in residence.

COSTS/EXPENSES	ONE SEMESTER
Tuition and Fees (FH)	\$3,630.00
Residence/Rent (FH)	\$2,500.00
Medical Insurance (FH)	\$216.00
Books & Supplies (VH)	\$570.00
Meal Plan/Food (VH)	\$2,000.00
Incidentals/Student Union/Bus (FL)	\$400.00
Personal (VL)	\$525.00
Clothing (VL)	\$315.00
Entertainment/Going out (VL)	\$420.00
Cell Phone (VL)	\$300.00
Miscellaneous (VL)	\$420.00
TOTAL	\$11,296.00

Income (\$12,940) minus expenses (\$11,296) = \$1,644
(Potential Savings/Emergency Funds)

Finances/ budgeting

MONEY-SAVING TIPS

- It's always better to overestimate your costs rather than underestimate them. You never know when prices for necessities will increase or when unexpected costs may arise.
- Join a club! There is a wide-range of clubs covering a variety of interests ranging from movies to sports to writing poetry. Clubs are usually an inexpensive way for you to find things to do when you're not studying and a great way to make new friends.
- If you need a long distance telephone plan, definitely shop around to compare rates; and if you're unhappy with your current provider's service/ rates, don't be afraid to let them know about it. You may get a better deal that way.
- Try to buy used text books. Usually, you'll save at least 20% off the cost of buying new.
- Lastly, don't play around when it comes to your studies. Repeating a course is not only an academic burden, but a financial one as well.



Grocery shopping and meal preparation



It can be tough to eat well once you're living away from home, especially if it's the first time that you've ever had to think about grocery shopping and cooking. But, eating well is definitely worth the effort and can result in better health and more energy for school, work, and social events.

TIPS FOR GROCERY SHOPPING

- Try not to go grocery shopping when you're hungry; you're more likely to impulse shop because you feel like you could eat anything (or everything) in the store.
- Plan your meals and make a shopping list (*see **Appendix F: Shopping List of Healthy Food Choices, pages 143 & 144***). Look through your cupboards, fridge, and freezer to see what items you already have so that you don't end up buying duplicate items. Jot down the items that you do want to buy and then stick to that list once you're at the store.
- Store brands and generic products are often cheaper than brand name products and taste just as good. They're often made by the same manufacturer but can be less expensive because no advertising costs are built into the price.
- Check the "best before date" on packaged meats, dairy, bakery, and pantry products; and buy the product with the latest date. Also, be sure that seals are secure, that cans aren't dented or leaking, and that packaging is not ripped, torn, or missing.
- If you're trying to save money, avoid convenience foods. You are better off grating cheese, cutting fruit and vegetables, or preparing that macaroni salad yourself rather than buying the ready-to-eat versions.
- If you have roommates, consider splitting the cost on large, bulk items and then sharing. Buying food (and even things like toilet paper, cleaning supplies, and personal care items) in large quantities is cheaper than buying the regular size item.
- Always keep food safety in mind when grocery shopping. Bag fresh meats and seafood to avoid cross-contamination with fresh produce in your cart or basket. Don't put raw foods on top of foods that are eaten "as is." Also, try to plan your shopping trip so cold and frozen foods are some of the last items you grab, so they stay chilled all the way home.

Grocery shopping and meal preparation

TIPS FOR GROCERY SHOPPING (cont)

- If you don't have a vehicle and are not within walking distance of the store, consider grocery shopping with roommates or friends and splitting the cost of a cab home.
- Many grocery stores offer students a discount certain days of the week.

SOME BASIC TIPS FOR GETTING OFF ON THE RIGHT FOOT IN THE KITCHEN

- Choose recipes that aren't too complicated. You don't want to be overwhelmed by a recipe that has unusual ingredients, difficult steps, or is time consuming.
- Make sure you have all the right ingredients, utensils, and appliances before you start.
- Do you have enough time to make the recipe? Most recipe instructions include the amount of time it takes to prepare the dish.
- Assemble all your ingredients in one place before you start.
- Wash your hands several times as you cook, especially if using raw meats, poultry, and eggs.
- Refer to ***Appendix G: Ideas for Healthy Meals & Snacks, pages 145 & 146***, for more ideas/tips on managing meals.

Grocery shopping and meal preparation



GETTING CREATIVE IN THE KITCHEN

Once you get the hang of reading recipes and mastering some meals, you can get creative in the kitchen. Let loose!

- Try experimenting with different ingredients. Substitute beans for meat or crunchy green beans for carrots. Learn to use herbs and spices.
- Bring out your artistic side. Experiment with different colors and textures in meals.
- Focus on one type of dish and learn lots of variations.
- Try recipes from cultures or ethnicities other than your own.
- Invent your own recipes and try them out on family members and friends.
- Most of all, don't be afraid to fail a few times. Cooking is like anything else – it takes practice.
- Sign up for cooking classes offered at Sobeys, Superstore, or Community Centres.
- For more information and ideas on healthy eating, refer to ***Appendix G: Ideas for Healthy Meals & Snacks, pages 145 & 146.***
- Check out the following websites for recipes that have nutritional information noted:
 - www.dietitians.ca
 - www.eatrightontario.ca
 - www.healthyalberta.com
 - www.presidentschoice.ca
 - www.sobeys.com
 - www.kraftcanada.com
 - www.allrecipes.ca



CHAPTER
3

Living with
Diabetes



Dating and diabetes



As if dating wasn't stressful enough, you also have to decide how to handle the issue of diabetes while you're out with someone. You will have to decide whether to tell your date about your diabetes. And to make sure you have a great date, you will also have to plan ahead to ensure your diabetes is well managed while you're out.

THINKING THROUGH THE FOLLOWING QUESTIONS MIGHT HELP YOU DECIDE WHETHER TO TELL YOUR DATE ABOUT YOUR DIABETES:

- Will it be easier to stick to your meal plan if your date knows about your diabetes? Will your date wonder why you need a snack at a certain time?
- What happens if your blood glucose (BG) takes a nosedive while you're with your date? Would you want them to understand ahead of time what a low is, how it affects you, and how you treat it?
- How long will the date last? Will you need to check your BG or take an injection or bolus while you're out?
- Will your date involve physical activity (e.g., playing sports or rollerblading), which could mean extra BG checks, snacks, or a higher chance of lows?

Telling your date ahead of time about your diabetes can be a good option. That way, you don't have to worry about explaining your diabetes during the actual date. Instead, you can concentrate on having fun. You can keep the explanation short and sweet – don't feel you have to turn into a diabetes educator every time you go on a date! Just remember, it's up to you to decide what you share and don't share about your diabetes.

PLANNING AHEAD

- If you are wearing an insulin pump, set it to vibrate.
- Remember to carry snacks in case of a low blood glucose. "Quiet" snacks such as raisins or glucose tablets work well in a movie theatre setting.
- For dates that involve physical activity, keep hydrated, check often, and adjust for low BG. You may want to reduce your insulin beforehand. Pump users may decide to switch to a temporary basal setting.

Sexuality and birth control

When you find yourself thinking about having sex, the most important thing is to make sure it's the right thing for you. Many of the risks of having sex are the same for young people that have diabetes as for those who don't - big risks such as having an unplanned pregnancy or contracting a sexually transmitted infection (STI).

THINGS TO CONSIDER IF YOU HAVE DIABETES AND CHOOSE TO HAVE SEX

Hypoglycemia

- Sex is a form of physical activity; and when you have diabetes, this means you can be at risk for hypoglycemia.
- Checking your blood glucose (BG) prior to having sex and having some extra carbohydrate (carb) either before or just afterwards, if needed, can help prevent low BG.

Birth Control

- Birth control is important for females with diabetes to avoid an unplanned pregnancy. Birth control can be **hormonal** (such as birth control pills, patches, and injections) or **non-hormonal** (such as condoms).
- Birth control options for women with diabetes are the same as for any woman, and they work equally well for women with or without diabetes. The form of birth control that you use is a decision made between you and your doctor.
- Birth control was developed to prevent pregnancy, but some birth control methods also help protect against STIs. Although sex is never risk-free, it can be safer. Condoms offer the best protection against STIs. Birth control pills, patches, and other hormonal methods do not protect you against STIs.
- Some useful websites include:
 - Society of Obstetricians and Gynecologists of Canada
www.sexualityandu.ca
 - Halifax Sexual Health Centre
(902) 455-9656 or www.halifaxsexualhealth.ca

Sexuality and birth control



Pregnancy

- Diabetes doesn't make it harder for you to become pregnant, but it does increase the risks of the pregnancy. High BG early in the pregnancy can lead to birth defects in the baby.
- It's important that BG levels are well managed both before and during pregnancy in order to reduce the potential dangers to mother and baby.
- Pregnancy in **all** women who have diabetes **should be planned** to avoid potential complications (*read more about Planned Pregnancy on page 49*).
- Women with diabetes who become pregnant should be seen as early in the pregnancy as possible and closely monitored by their diabetes health care team and obstetrician.

SEXUAL HEALTH CAN BE INFLUENCED BY DIABETES

Vaginal & Urinary Tract Infections

- Vaginal infections and urinary tract infections (UTIs) are more common in women with diabetes, especially among women who have high BG levels.
- Vaginal infections, such as yeast infections, can lead to itching, unusual discharge, and pain during sex. The good news is that they are easily treated with medication. Talk with your doctor right away if you think that you have a vaginal infection.
- A bladder infection can lead to cloudy or bloody urine, a burning sensation, and/or a constant feeling that you need to urinate. Talk to your doctor right away if you think that you have a bladder infection, so it can be treated with antibiotics. If not treated, it can lead to kidney infection.

Sexuality and birth control

Decreased Vaginal Lubrication

- A complication of diabetes called neuropathy (nerve damage) can reduce vaginal lubrication in some women, leading to vaginal dryness. This can make a woman uncomfortable during sex.
- Using a water-based lubricant (which you can find at the drug store) during sex can help to improve dryness and sensitivity to touch. It's important to choose a water-based lubricant when using condoms so that it won't damage the condom. Oil-based lubricants can cause tiny holes to form in the condom, increasing the risk for unplanned pregnancy or STI.

Erectile Dysfunction

- Most men will experience some erectile problems during their life; but if the problem lasts for 3 months or longer, it is called Erectile Dysfunction (ED). This problem can occur in adults who have had diabetes for a long time.
- ED is more common among men who have diabetes because diabetes can cause damage to the walls of the blood vessels. This affects circulation and blood flow to the penis. In addition, nerve damage caused by diabetes can affect erection quality. ED can also be a side effect of drugs that are often prescribed to men with diabetes (e.g., some drugs to lower blood pressure and antidepressants).
- Good diabetes management is the best way to reduce the risk of developing ED in the future; however, there are a number of ways to treat ED in men who have it.



Planned pregnancy



A planned pregnancy is just that – a pregnancy that has been planned – often many months before the woman actually becomes pregnant. Planning a pregnancy not only allows you to get ready for the baby's arrival, but also helps the woman prepare her body for the pregnancy and give her time to develop healthy lifestyle habits.

PLANNING A PREGNANCY IS ESPECIALLY IMPORTANT FOR WOMEN WHO HAVE DIABETES

- Women with diabetes **who control their blood glucose (BG)**, before they become pregnant and during their pregnancy, have about the same chance of having a healthy baby as women without diabetes.
- A woman who has high BG during her pregnancy is at increased risk for miscarriage or having a baby born with birth defects. These problems start happening early on in the pregnancy, often before the woman even finds out that she's pregnant.
- Planning a pregnancy gives a woman with diabetes time to achieve BG in her target range before becoming pregnant. This is very important to prevent those problems that can happen very early in the pregnancy.
- To plan a pregnancy, you need to see your doctor and diabetes health care team for preconception (pre-pregnancy) counseling. Preconception counseling will help you be physically and emotionally prepared – and healthy – for pregnancy.
 - The goal of preconception care is to achieve near normal BG levels 2 to 3 months before you become pregnant.
 - Folic acid supplementation in the form of a multivitamin in the preconception period is recommended.
 - For more information on preconception care, visit the Diabetes Care Program of Nova Scotia website (<http://diabetescare.nshealth.ca>) to access the pamphlet **I have Diabetes...and I can have a healthy baby!**

Driving and diabetes

Driving is an important responsibility and a privilege. When you have diabetes, there are extra precautions you must take to make sure that you drive safely for yourself, passengers, and other drivers.



TIPS FOR SAFE DRIVING

- **Check your blood glucose (BG):**
 - Before driving.
 - Every 4 hours if you are on a long trip.
 - If you have any symptoms of low BG.
 - If your BG is between 4 and 5 mmol/L, eat at least 15 g carbohydrate (carb) (starch or fruit) before driving.
- **"Don't drive below 5!"**
- **Always carry a source of fast-acting glucose** (glucose tablets, juice, or glucose gel) and have it within easy reach such as on the sun visor.
- **Stop driving immediately if you feel any low BG symptoms.**
- Treat your low BG immediately with a fast-acting glucose and follow this with a longer acting carb; for example, a granola bar.
- **Do not start driving again for 45 to 60 minutes after the low**, even if symptoms have gone.
- See your diabetes health care team on a regular basis to make sure your diabetes is in good control.
- Report any episode of severe low BG (i.e., needing assistance to treat) to your diabetes health care team.
- Always wear your medical ID.
- For more information, check out www.diabetes.ca/diabetes-and-you/living/guidelines/commercial-driving/.

Alcohol and diabetes



Alcohol can affect your diabetes management. The more you know about the effects of alcohol, the better off you will be if you choose to drink.

IMPORTANT INFORMATION THAT PEOPLE WITH DIABETES NEED TO KNOW ABOUT DRINKING

Lows

- Alcohol on its own can actually lower blood glucose (BG) - in a bad way. You might experience delayed hypoglycemia, where your BG drops several hours after drinking (most likely overnight). Alcohol also lowers your body's ability to recover from a low.
- How does alcohol add to your chances of having low BG? It has to do with your liver. Normally, when your BG level starts to drop, your liver steps in. It goes to work changing stored carbohydrate (carb) into glucose. Then it sends the glucose out into the blood, which helps avoid or slow down a low BG reaction. But when alcohol enters your system, your liver acts differently. Your body reacts to alcohol like a poison and the liver wants to clear it from the blood quickly. In fact, the liver won't put out glucose again until it has taken care of the alcohol. If your BG level is falling, you can quickly wind up with very low BG.
- Drinking as little as 2 ounces of alcohol (about 2 drinks) on an empty stomach can lead to very low BG.
- When people with diabetes drink alcohol, it can also be difficult to distinguish between the signs of hypoglycemia and the effects of alcohol. Someone having a low might appear drowsy, be stumbling, and have slurred speech, which is similar to how a person who is drunk might look! Even if your friends know that you have diabetes, they may think that you're acting a little strange because you've been drinking, not because you're having a low.

Highs

- While pure alcohol doesn't raise your BG, there are carbs in the pop or juice that is used to mix with the alcohol. Beer and wine also contain carbs that can raise BG levels.
- Counting carbs and checking BG are not usually high on the list of things to do when someone is drinking, so it's easy to end up with very high BG levels!

Alcohol and diabetes

Getting Sick

- Drinking too much can make you sick and, as a result, put you at risk for diabetic ketoacidosis (DKA), which is a serious condition that requires immediate medical attention.
- Make sure to do extra BG and ketone checks if you start vomiting after drinking alcohol.

SOME THINGS TO CONSIDER SHOULD YOU DECIDE TO DRINK:

Before Drinking

- Make sure to eat regular meals.
- Don't skip your insulin – your doctor or diabetes health care team can help you plan for changes that you might need to make to your dose if you're staying out late or dancing all night.
- Check your BG levels and treat any lows before you go out.
- Consider having a “buddy system” with someone you can rely on. It's important not to be alone over night after drinking or at least have someone who will check on you to make sure you check your BG.

While You're Drinking

- Pace yourself – don't drink too quickly. Have a non-alcoholic drink in between alcoholic ones. Drinking the odd bottle of water while you're out will also help keep you hydrated and reduce the chances of an unpleasant hangover.
- Getting drunk will make it hard for you to recognize the signs of a low, and you'll probably forget to check your BG and look after your diabetes. Getting really drunk also makes it hard for you to make smart decisions.
- Make sure that you eat some foods containing carbs before and while you're drinking. Regular pop or juice can give you some extra carbs if there's no food available.
- As much as possible, try to check your BG while you are drinking. This is important if you are dancing or being active in some other way.
- Have something with you to treat a low; especially important if there's a long wait at the bar for regular pop or juice.
- Make sure that at least one of the friends you're with (one who isn't drinking) knows about your diabetes and knows what to do if you have a low.
- Wear diabetes medical ID so that if something does happen to you the ambulance or hospital will know that you have diabetes.

Alcohol and diabetes



After Drinking

- Check your BG before going to bed. If you're low, treat it; and have some extra carb to keep your BG levels up (to prevent alcohol-induced lows while you sleep). Even if you're not low, some extra carb before bed can stop a delayed overnight low.
- Don't forget to take your long-acting insulin before bed, if you are on it. If you're late getting home, you may need to take less insulin or put a lower temporary basal in your pump. Your diabetes health care team can help you plan for a night out.

The Morning After

- You may not be feeling great the next morning, but it's still important to drag yourself out of bed, check your BG, take your insulin, and have something to eat. You might find that you're more prone to lows after a night out, so make sure that you eat enough the next day (even if you can only stomach dry toast).
- If you've been vomiting, or if your BG is higher than 14 mmol/L, you need to check your ketones. If your BG is high and you have ketones, treat it like you would a sick day. *See the Sick Day Management section on pages 109 & 110.* Ask for help if you need it!

If you would like to talk to someone about alcohol addiction, contact Addiction Services toll-free at 1-866-340-6700.

Drug use and diabetes

Drugs can be harmful to anyone's health, but especially to the health of someone who has diabetes. The actual effect of a particular drug can be very different from person-to-person, and the strength of illegal drugs varies widely because they are made without controls or standards.



WHEN YOU'VE GOT DIABETES, DRUGS CAN INFLUENCE YOU IN THE FOLLOWING WAYS:

- Some drugs lower blood glucose (BG) levels; others raise it.
- Changes in awareness, consciousness, and understanding can make it hard for you to recognize when you are having a low. This can also make you forget about routines, injections, meal times, and all the other things you need to do to look after your diabetes.
- Some drugs cause lack of appetite and poor interest in food, increasing your risk for lows. Other drugs, like marijuana, can give you “the munchies,” which can lead to overeating and high BG levels.
- Changes in the way you feel, like a faster heartbeat or sweating, can be mistaken for a low.
- “Hangover” effects after the drugs have worn off, like depression or sleep problems, can make you lose interest in looking after your diabetes.
- Many drugs can have long-term effects on your health such as damage to the liver, heart, and brain. Combined with diabetes, the damage can be even worse. The risk of overdose and bad reactions to drugs can make you very sick or even kill you! Mixing drugs or combining them with alcohol can further increase these risks.
- If you choose to use drugs, there are some guidelines you should follow to decrease your chances of ending up in the hospital.
 - Set a limit for yourself ahead of time.
 - Set a time to check your BG, and then do it!
 - Ask a friend who's not on drugs to watch you for signs of hypoglycemia. Agree that as soon as she or he notices symptoms, you will check your BG and treat, if needed.
 - Always wear your diabetes medical ID.

Drug use and diabetes

SAYING NO!

- Sometimes people end up doing something they don't really want to do because they're afraid to say no or just don't know how to say no.

Tips About How to Say No

- "No, but thanks anyway."
- "No thanks, my diabetes doesn't mix well with that stuff."
- "No thanks. I can't tell if my BG is low when I do that, and I don't think you want to spend the rest of the night in the Emergency Room with me."
- "No thanks, I've decided not to do that."

.....

If you would like to talk to someone about drug addiction, contact Addiction Services toll-free at 1-866-340-6700.

Smoking and diabetes

Every day thousands of teenagers try their first cigarette. That means a lot of people your age are increasing their risk of lung, mouth, or nose cancer as well as heart disease.



INFORMATION TO HELP YOU DECIDE WHETHER TO SMOKE OR NOT

- Smoking or chewing tobacco has little or no effect on blood glucose (BG). However, tobacco does mess up your circulation and damages blood vessels which can contribute to heart disease.
- Smoking compounds many of the complications caused by diabetes.
- The damage that is done to your blood vessels can also increase the risk of other long-term diabetes complications, like damage to your kidneys, eyes, and feet. It can even contribute to men having problems with erections (Erectile Dysfunction) later in life.

Tips for Quitting the Habit

- If you're not a smoker, don't start! If you choose, you can tell your peers that you can't smoke because you have diabetes.
- If you do smoke, quitting now will protect you from further damage. Quitting is not easy; but if you talk to your doctor or diabetes health care team, they can help you figure out the best way for you to break the habit. Check out the websites below.
 - Visit Health Canada's Quit4Life website at: www.quit4life.com. The site is an interactive and personalized 4-week web program that can help you quit smoking.
 - Contact the Canadian Cancer Society's Smokers' Helpline at 1-877-513-5333 or online at: www.smokershelpline.ca
- If your first attempt at quitting doesn't work, try again. Most people who have kicked the habit have tried more than once.

Eating disorders and diabetes

Eating healthy and staying active are important parts of managing diabetes. People with an eating disorder are often more concerned with being thin than with being healthy. The combination of diabetes and an eating disorder is very bad news for your body and your diabetes management. Eating disorders can be overcome with the right help and support – but you have to reach out for it.



ABOUT EATING DISORDERS

- An eating disorder happens when someone gets obsessed with food, their weight, and how their body looks.
- It's okay to want to look your best and maintain a healthy body weight, but people with an eating disorder go to extremes to keep from gaining weight or to lose weight.
- Anyone can develop an eating disorder. Eating disorders can happen to both girls and guys of any age – kids, teens, and adults can have them. People with diabetes can develop eating disorders too.
- Two main eating disorders are anorexia and bulimia.
 - People with anorexia are so obsessed with being skinny that they eat very little food – or no food at all – for days at a time. They may also exercise a lot to try to lose even more weight. Someone with anorexia may think that they look fat, even though they might be at a weight that is way below what is healthy for their height.
 - People with bulimia will eat a lot of food all at once (called bingeing). But they will then feel so guilty about the binge that they will try to get rid of the food and calories from their body by purging, either by throwing up or taking laxatives. You usually can't tell by looking at someone if they have bulimia because they can be at a healthy weight for their height. They could also be underweight or overweight.
- People with diabetes may manipulate insulin to lose weight instead of restricting food or purging.

Eating disorders and diabetes

THE RISKS OF EATING DISORDERS

- Anorexia can cause:
 - Stomach problems
 - Irregular periods
 - Production of fine hair over much of your body
 - Very dry, scaly skin and brittle hair and nails
 - Electrolyte imbalance, leading to heart and muscle problems
- Bulimia can cause:
 - Dental problems
 - Stomach and throat problems and heartburn
- Eating disorders such as anorexia and bulimia lead to poor blood glucose (BG) control. People with eating disorders and diabetes are more likely to have diabetes complications like eye and kidney disease.

DISORDERED EATING

- “Disordered eating” occurs when someone obsesses about food and/or their weight, but does not fit the exact description of having an eating disorder.
- Someone experiencing disordered eating may constantly worry about the type and amount of food that they eat, feel guilty about eating certain foods, or eat when they are not hungry. Constantly dieting to lose weight is a type of disordered eating.
- Disordered eating can lead to eating disorders and all the associated risks. Even if it doesn’t lead to an eating disorder, disordered eating is unhealthy for your body and your mind (who wants to constantly worry about food).

Eating disorders and diabetes

INSULIN MANIPULATION

- Some people with diabetes lower the dose of insulin they take, or skip doses entirely, to help them lose weight.
- While skipping insulin will lead to weight loss, it is at a price. Insulin manipulation has serious short- and long-term complications that impact on your health.
- Short-term complications include very high BG levels and a high risk of diabetic ketoacidosis (DKA). DKA is a life-threatening condition that must be treated in the hospital.
- Long-term complications include a higher risk of developing eye, kidney, and nerve damage. It can even lead to organ failure and death.



Eating disorders and diabetes

GETTING HELP

- It is usually very difficult for people with eating disorders to get better on their own. It is important to find help and support to overcome an eating disorder.
- People with disordered eating or who manipulate insulin to lose weight also need support to overcome it and to develop positive self-esteem and healthy behaviors.
- The first step in getting help for any of these concerns is to tell someone. It can be a friend, a parent or guardian, a teacher, or a member of your diabetes health care team.
- Treatment of an eating disorder may involve individual and/or family counseling (talking about your feelings, weight, and food). It can involve learning about making healthy food choices and understanding what a healthy body weight looks like. For people who have lost a lot of weight, treatment might involve being admitted into the hospital.
- Disordered eating and insulin manipulation can also be addressed through counseling. It is important to talk about your feelings and how you view your body.

You may want to discuss a referral to the Eating Disorders Program in Capital Health with your doctor or diabetes health care team. Information about the program can be found at www.cdha.nshealth.ca/mental-health-program/programs-services/eating-disorders-clinic.



Distress, stress, anxiety, depression, and diabetes



Most people feel anxious or worried at times. We all have good and bad days—this is normal. In fact, some stress can be good; but if you find you are anxious, stressed, or overwhelmed more often than not, and it is disrupting your daily life, this may indicate a bigger problem. Knowing what causes these feelings and when to seek help as well as who to talk to are all important in helping you cope.

Diabetes, similar to other chronic conditions, can make feelings of loneliness and frustration worse. The day-to-day demands of diabetes management may add extra burden and stress to people living with diabetes. Mild symptoms of sadness, moodiness, and/or anxiety can progress and affect your ability to perform tasks, communicate, and think clearly. These can interfere with your ability to successfully manage your diabetes. We also know that managing your stress and the environments that cause stress, whether they be at home, school, or work, starts with taking time for yourself. **Act early! If in doubt about your symptoms, ask for help.**

HOW DO YOU TELL IF IT'S DEPRESSION OR JUST A BAD DAY?

- Whether you are newly diagnosed with diabetes or have had it for years, feelings of sadness, anger, fear, and frustration are very common.
- Diabetes is demanding and often unpredictable. It requires daily discipline to balance blood glucose (BG) with diet, activity, and insulin. This can be very stressful.
- While fluctuating emotions are normal with diabetes, the risk of depression is also very real. Depression is more common in people who have diabetes.
- It is important that you communicate regularly with your diabetes health care team and other supports, not only about your diabetes, but about your feelings.
- Swings in BG can cause swings in mood, which can mimic signs of depression. So, it can be hard to tell if your irritability, anger, or exhaustion is caused by changes in your BG or by depression.
- You should contact your family doctor and/or a mental health care professional if the following symptoms become persistent or make a sudden and disruptive appearance in your life:
 - Depressed mood
 - Marked loss of interest in activities that used to give you pleasure
 - Significant weight loss or gain
 - Difficulty falling or staying asleep or sleeping too much
 - Feelings of either apathy or agitation

Distress, stress, anxiety, depression, and diabetes

HOW DO YOU TELL IF IT'S DEPRESSION OR JUST A BAD DAY? (cont)

- Loss of energy
- Feelings of worthlessness or guilt
- Inability to concentrate or make decisions
- Recurrent thoughts of death or suicide. **If you think you may hurt yourself or attempt suicide, call 911 or your local emergency number immediately.**

ANXIETY

- Sometimes we worry more and become anxious. Anxiety signs and symptoms can vary in combination or severity. Some examples include:
 - Restlessness
 - Muscle tension
 - Feeling of being keyed up or on edge
 - Impatience
 - Irritability
 - Excessive sweating
 - Shortness of breath
- To reduce and manage symptoms of stress and anxiety:
 - Remember, you are only human; set realistic expectations.
 - Leave major changes until things are less stressful.
 - Resolve personal conflicts.
 - Set aside time to do something you enjoy.
 - Keep work/studies under control - avoid long hours and additional responsibilities. Create more of a balance in your life by saying "no."
 - Talk to a trusted friend, parent/family member, doctor, or mental health therapist.
 - Practice relaxation techniques.
 - Do some research to understand anxiety and how to cope with it.
 - Establish good sleeping habits.
 - Keep active and eat well.

Distress, stress, anxiety, depression, and diabetes



DIABETES BURNOUT

- This is often a state of mind that is reached after years of dealing with diabetes. It can be marked by lack of caring about your BG values and neglecting other aspects of your diabetes care plan such as diet, exercise/activity, and even insulin. While it may seem like an attempt to get free of diabetes, the results will increase the risk of poor control and complications.
- There are a number of steps that can be taken to avoid or help combat diabetes burnout.
 - Use your network of family and friends—talk it out; they will listen.
 - Celebrate the things you do well and build on these. Try to maintain a positive outlook.
 - Make a plan. Get back into a routine of taking care of you—monitor and act on BG. This can help with both the physical and emotional symptoms.
 - Tackle one thing at a time.
 - Try some new recipes; add a new activity.
 - Volunteer to help others with diabetes. It helps you gain a feeling of control over your own health and well-being. The Juvenile Diabetes Research Foundation (JDRF) may provide these types of activities.
 - Try group support. A self-management program may help. In Nova Scotia, a peer-led program called “Your Way to Wellness” (<http://yourway2wellness.gov.ns.ca/>) is offered free-of-charge to people living with chronic conditions. Family members or loved ones are also invited to attend.
 - If needed, find a counselor or mental health therapist familiar with problems associated with diabetes.

MEDICATION TO MANAGE MENTAL HEALTH ISSUES

- If treatment is required for depression, anxiety, or burnout, make sure it is managed by a mental health care professional who is in close communication with the physician providing your diabetes care.

.....

Mental Health Crisis Line: Nova Scotians dealing with mental health concerns can call a single number from anywhere in the province at any time to get help - 1-888-429-8167.

Travel and diabetes

Diabetes shouldn't stop you from doing the things you want to do. Don't let your diabetes prevent you from traveling around the province, across the country, or even around the world! Careful planning will help you travel safely and smoothly.



TIPS TO CONSIDER BEFORE YOU BEGIN YOUR TRAVELS

Visit Your Health Care Team

- It's a good idea to visit your doctor for a checkup several weeks before you leave. Try not to leave it to the last minute.
- Show your itinerary to your diabetes health care team and work out plans for your meals and medication (insulin dose changes), especially if you are traveling through different time zones.
- Be sure to get any required vaccinations at least four weeks before you travel so you have time to deal with any possible side effects. The Public Health Agency of Canada (www.phac-aspc.gc.ca/index-eng.php) and the Centre for Disease Control in Atlanta (www.cdc.gov/) have great information on what vaccinations are recommended for travel to different areas.

Know Your Medication

- Ask for a list of your medications (including the generic names and their dosages) from your pharmacist, particularly insulin and any pills for diabetes.
- It's very important to record the type(s) of insulin you take and whether the insulin is rapid, intermediate, or long-acting. Photocopy the list and carry one copy with you at all times.
- Some countries require you to have a letter from your doctor stating that you are allowed to carry medicines or supplies. Syringes and needles in particular can present a problem when entering some countries.

Identification

- Take identification with you that explains you have diabetes in case you are unable to give instructions yourself.
- Consider getting a MedicAlert™ bracelet or necklace that states you have diabetes. You could also create an emergency medical ID wallet card online at www.my-healthkey.com/.

Travel and diabetes

Travel Insurance

- Some insurance plans do not cover pre-existing medical conditions like diabetes.
- However, the Canadian Diabetes Association (CDA) offers its members medical travel insurance that includes world-wide 24-hour protection. Costs vary according to age, type of diabetes, and the length of your stay. Coverage is for health care only and does not include theft or other concerns.
- It is a good idea to buy insurance even for travel between provinces within Canada. Not all out-of-province expenses will be covered by Nova Scotia MSI.
- For more information on the CDA travel insurance program, call 1-800-BANTING.

Packing

- Divide your medications and diabetes supplies and pack them in more than one place in case you lose one of your bags. Most importantly, make sure that you have a portion of medications and supplies in your carry-on luggage.
- Always carry your insulin and other essential supplies in your carry-on bags. The baggage hold of an airplane is subject to extreme temperatures and your insulin might freeze.
- Take extra supplies and medication in case they get lost, stolen, or somehow destroyed. Pack food and snacks for regular meals and unexpected delays.
- For more information on traveling with diabetes, visit the following website: www.diabetes.ca/diabetes-and-you/living/guidelines/travel.





Travel and diabetes

The Traveler's Checklist

Before you leave, remember to get:

- ☐ A medical check-up
- ☐ Travel health insurance
- ☐ Medical identification
- ☐ Any needed vaccinations
- ☐ A list of your medications
- ☐ A letter from your doctor
- ☐ Information on local foods and drinking water
- ☐ Information on local medical facilities or organizations

Ask your doctor or diabetes health care team about:

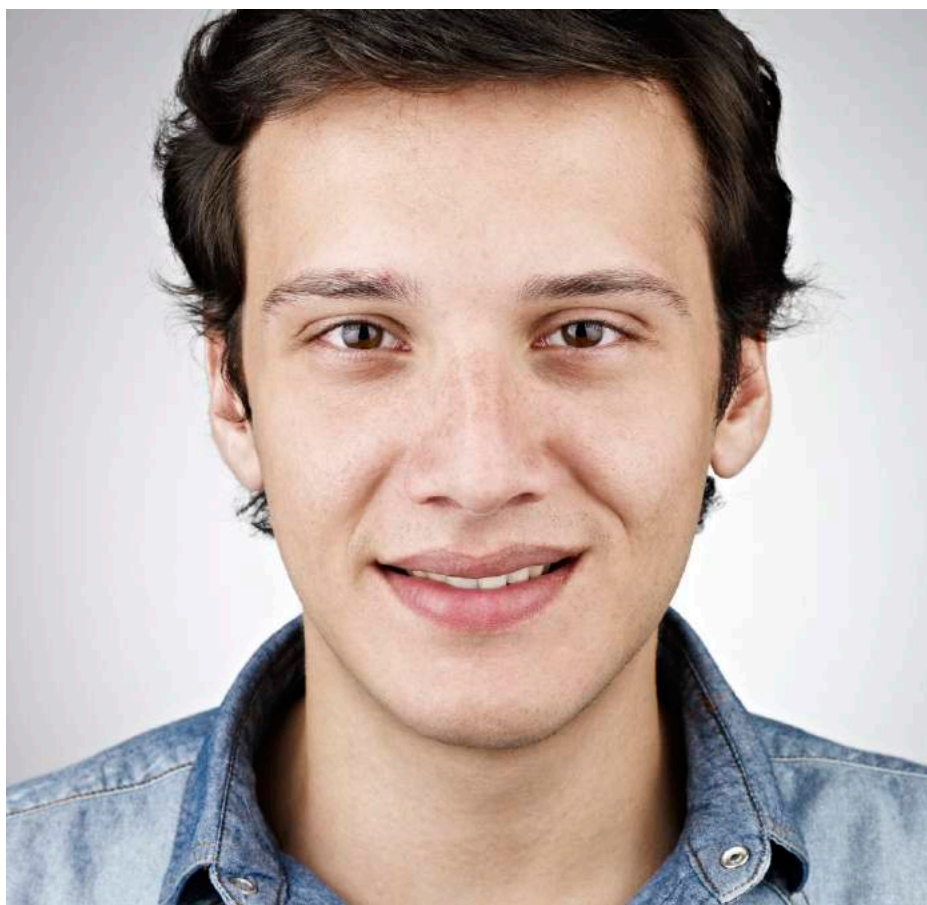
- ☐ Illness management
- ☐ Hypoglycemia management (glucagon for insulin users)
- ☐ Adjustments for meals, insulin, and medications in different time zones
- ☐ Avoiding illness caused by contaminated food and water
- ☐ Tips for adjusting your medication if required

Packing List:

- ☐ Extra supply of insulin or oral agents for diabetes
- ☐ Extra supply of syringes, needles, or insulin pen if used
- ☐ Extra insulin pump for travel. If on insulin pump, consider a loaner from your company
- ☐ Blood glucose (BG) testing kit and record book
- ☐ Fast-acting insulin for high BG and ketones
- ☐ Fast-acting sugar to treat low BG
- ☐ Extra food to cover delayed meals such as a box of cookies or crackers
- ☐ Urine or blood ketone-testing strips
- ☐ Glucagon
- ☐ Telephone/contact information of your doctor and diabetes educator

Remember – it's important to keep your insulin cool. An insulated bag/pack is a good option. Check out Frio Paks at www.diabetesandmore.com.

Also remember that it may be difficult to purchase extra supplies, especially if you are traveling in a country where language/local resources may be a barrier.



CHAPTER 4

Complications: Acute & Chronic

A Focus on
Prevention

Preventing diabetes complications



Diabetes can lead to serious acute (short-term) and chronic (long-term) health problems. However, you can do many things to stay well. Learning as much as possible about potential complications, working hard to prevent them, and having regular check-ups are important first steps in the prevention of complications.

ACUTE (SHORT-TERM) COMPLICATIONS

- These are usually described as those complications that develop quickly, and the results are felt immediately. This includes hypoglycemia and diabetic ketoacidosis (DKA).

CHRONIC (LONG-TERM) COMPLICATIONS

- These usually develop over time, and the signs and symptoms may be missed without regular blood/laboratory testing or examinations by a doctor or eye specialist. These include microvascular complications, such as eye, kidney, and nerve disease as well as macrovascular complications, such as heart and large vessel disease, that can impair circulation, lead to foot problems, and even stroke.

TIPS TO PREVENT DIABETES COMPLICATIONS

- **Visit your doctor and diabetes health care team regularly.** Because your health care team knows that you have diabetes, they will be looking for any diabetes-related problems such as frequent or unexplained hypoglycemia and eye, kidney, or heart disease.
- **Monitor, interpret, and act on results of your blood glucose (BG).** This is the most important thing you can do to feel your best and prevent both short- and long-term complications of diabetes. By monitoring your BG and keeping it within your target range, you'll reduce risks such as eye, kidney, blood vessel, and nerve damage. Have your A1C measured every 3 to 6 months.
- **Learn the signs and symptoms of diabetes complications.** If you notice any, report them to your diabetes health care team so that they can be treated early.
- **Avoid smoking.** Smoking increases the risk for diabetes complications - heart disease, stroke, kidney disease, nerve damage, foot problems, eye disease, erectile dysfunction, etc.

Preventing diabetes complications



TIPS TO PREVENT DIABETES COMPLICATIONS (cont)

- **Monitor your blood pressure and cholesterol.** Like diabetes, high blood pressure can damage your blood vessels. High cholesterol can raise your risk for heart disease. Know your blood pressure and cholesterol targets. Have your blood pressure measured every 3 to 6 months. Have your cholesterol measured every 1 to 3 years, or more frequently if abnormal.
- **Maintain a healthy lifestyle.** Eat healthy foods and get regular physical activity. Limit sedentary recreational activities (screen time) and maintain a healthy weight. Your diabetes health care team can help you determine what a healthy weight is for your height.
- **In the case of the acute complications such as hypoglycemia and DKA, prevention is key.**
 - Plan for and anticipate activities that increase your risk of hypoglycemia, and take appropriate steps to keep BG in a healthy range.
 - Always take your insulin as recommended. In the case of pump failure or when feeling unwell with symptoms of a cold or flu, check your BG frequently and monitor for the presence of ketones. Appropriate sick day management will reduce the risk of DKA (*see pages 109 & 110 for sick day management tips*).

Hypoglycemia (acute complication)



Hypoglycemia (low blood glucose) occurs when your blood glucose (BG) drops below 4.0 mmol/L. It is important for you to know the causes and symptoms of hypoglycemia and what to do if this happens to you.

CAUSES OF HYPOGLYCEMIA

Food

- Eating too little carbohydrate (carb)
- Skipping meals or snacks
- Being late for a meal or snack

Insulin

- Your dose of insulin may be too high

Physical Activity or Exercise

- Unplanned activity (without anticipated changes to insulin and/or nutrition)
- Increase in duration and/or intensity

Alcohol

- See pages 51 to 53 for an explanation of this one!

SYMPTOMS OF HYPOGLYCEMIA

- | | |
|------------------|----------------------------|
| • Trembling | • Difficulty concentrating |
| • Nausea | • Difficulty speaking |
| • Heart pounding | • Anxiousness |
| • Tingling | • Drowsiness |
| • Confusion | • Headache |
| • Sweating | • Hunger |
| • Weakness | • Vision changes |

If you experience any of the above symptoms, you should STOP, CHECK, and then TREAT your BG right away! If you can't check your BG level, go ahead and treat for low BG anyway.

Always treat low BG of < 4 mmol/L with or without symptoms.

Hypoglycemia (acute complication)

TREATMENT

Mild Hypoglycemia (recognizes symptoms; able to self-treat)	Moderate Hypoglycemia (confused; unable to self-treat)
15 grams of fast-acting carb	20 grams of fast-acting carb
3 Glucose™ (BD) or 4 Dextrose™ Tablets	4 Glucose™ (BD) or 5 Dextrose™ Tablets
3 packets (3 teaspoons) of table sugar dissolved in water	4 packets (4 teaspoons) of table sugar dissolved in water
175 ml (3/4 cup) of juice or regular soft drink	250 ml (1 cup) of juice or regular soft drink
6 Life Savers™	8 Life Savers™
15 ml (1 tablespoon) of honey	22 ml (1.5 tablespoons) of honey

Note: If unresponsive, use glucagon or call 911 (*see pages 74 & 75 for more information about glucagon*)

- **Take one of the above carb choices; wait 15 minutes; re-test your BG.**
- If your BG remains below 4.0, treat with another 15 grams of carb, wait 15 minutes, and re-test your BG.
- Repeat until your BG is greater than 4.0.
- If your next meal is more than one hour away or if you are going to exercise, do housework, or yard work that requires moderate to vigorous activity, **eat 15 grams of starch with some protein such as half of a sandwich or some cheese and crackers. This carb and protein snack will help prevent another occurrence of hypoglycemia.**



Hypoglycemia (acute complication)

HYPOGLYCEMIA UNAWARENESS

- Some people with diabetes lose their ability to recognize early signs and symptoms of hypoglycemia. This can happen if you have had diabetes for a long time and/or if you experience frequent low BG. Talk to your diabetes health care team if this is happening to you.
- Be sure to tell your friends and family about your diabetes and what to do if you require help in recognizing and treating a low BG. They may notice something such as changes in your behaviour (confusion or irritability) that alerts them that you may be having a low.
- Always wear or carry medical identification and have easy access to a fast-acting sugar source (*see page 72*).

SEVERE HYPOGLYCEMIA

- Occurs when you are unresponsive, unconscious, or having a seizure; and it is not safe to give you sugar or juice by mouth. **This is a medical emergency.**
- Always have a Glucagon Emergency Kit available. *Refer to pages 74 & 75 for more information on glucagon.*
- **If glucagon is not available, call 911.**



Glucagon

Glucagon is a hormone that stimulates the liver to release stores of glucose into the blood. Glucagon is used to treat severe hypoglycemia, when you are unable to treat yourself. Be sure to review the guidelines for glucagon administration with your close friends, family, and/or roommate.

GLUCAGON

- Glucagon is packaged as a kit and includes:
 - A pre-loaded syringe containing 1cc of sterile diluent.
 - A vial of powdered glucagon (1 milligram).

DIRECTIONS FOR USE:

- Remove the flip top from the vial.
- Inject the entire contents of the syringe into the vial.
- Roll the vial gently until all of the contents are dissolved and the solution is clear.
- Withdraw all of the solution back into the syringe or a 100 u insulin syringe.
- Pinch the skin of the chosen site (e.g., thigh, buttocks, arm) and inject the glucagon at a 90° angle.
- Turn person on their side (in case they vomit).
- It may take them 10 to 20 minutes to respond fully.
- Check BG.
- Once alert and able to swallow, give a fast-acting sugar (juice or regular soft drink) followed by a long-acting carb source (crackers or cookies) with protein.
- Nausea, vomiting, or headaches may last for up to 24 hours.
- **Glucagon should be given immediately after preparing the injection. Directions can be found in the glucagon kit.**
- If Glucagon has been prepared but not used, do not throw it out, as it could still be used if required within the next 24 hours.
- **If not improving, call 911 or go to the local Emergency Department.**

Glucagon

ADDITIONAL TIPS

- **The risk for repeat severe hypoglycemia is high in the next 48 to 72 hours following a severe low.** So, it is important for the BG to be between 8 and 12 mmol/L for the next 24 hours.
- **Glucagon kits expire. Be sure to check the date on the package!** A new kit can last up to 2 years.
- Use the expired kits to practice with before an emergency occurs. Do not administer - just practice the mixing.
- **Make sure your friends and family know where to find your glucagon kit!**
- Reassure your family and friends that they cannot harm you by giving you the glucagon.
- Contact your diabetes health care team following severe hypoglycemia, as your insulin doses may need to be adjusted.

If you are intoxicated with alcohol, glucagon may not work. Call 911.



Diabetic ketoacidosis (acute complication)

Diabetic ketoacidosis (DKA) is an acute and severe complication of diabetes that is the result of high levels of blood glucose (BG) and ketones. When the cells do not get the glucose they need (in the case of insufficient insulin to transport the glucose), the body will start to burn fat for energy, which produces ketones. Ketones are acids that build up in the blood and appear in the blood and urine causing acidosis. Ketones are the warning sign that your diabetes is out of control and that you are getting sick. High levels of ketones can lead to diabetic coma or death.

SIGNS AND SYMPTOMS OF DKA

- DKA can develop during periods of illness such as the flu or when insulin has been missed or omitted. **It can be life threatening and requires emergency treatment.** Symptoms include:
 - Nausea
 - Vomiting
 - Stomach cramps/pain
 - Flushed, hot, dry skin
 - Blurred vision
 - Drowsiness or difficulty waking up
 - Rapid, deep breathing
 - A strong, fruity breath odor (similar to nail polish remover or acetone)
 - Loss of appetite
 - Confusion
- Be aware of the early warning signs of DKA - increased urination, increased thirst, and fatigue.
- Seek immediate treatment.

PREVENTING DKA DURING ILLNESS

- BG often gets high during illness (whether it be the flu, a cold, or an infection like pneumonia) due to the production of certain hormones such as adrenaline or cortisol. Unfortunately, these hormones work against insulin. If your BG remains high while you are sick, you could develop **DKA**. Because of this, you will often require more insulin during an illness even if you are not eating. **Remember, DKA is life-threatening and must be treated in hospital.**
- **Always take your insulin doses as scheduled.** Even if you are eating poorly or feeling really lousy, it is important to take your insulin as usual (plus extra, if needed).

Diabetic ketoacidosis (acute complication)

PREVENTING DKA DURING ILLNESS (cont)

- **Take extra rapid-acting insulin if needed.** The extra amount that you might need is based on your BG level and the amount of ketones that are in your blood (or urine). *Refer to pages 111 to 113 for insulin adjustment guidelines for sick days.*
- Follow your sick day management guidelines (*see pages 109 & 110 for sick day management information*).
- Check for urine or blood ketones.

DKA WHEN ON A PUMP

- Insulin pumps use only rapid-acting insulin. If the pump or pump site fails or the insertion set becomes dislodged, there is **no** insulin delivery and the BG **will** rise quickly. Ketones can develop within 4 to 6 hours. As ketones rise, there is a risk of diabetic ketoacidosis (DKA). **By testing for ketones as soon as the BG rises, extra insulin can be given to avoid DKA.**

PREVENTING DKA ON AN INSULIN PUMP

- Change the infusion site at least every 3 days. If there is an increase in the BG before each scheduled site change, then change the site sooner.
- If you are correcting BG using the pump and the BG does not decrease as you would expect, this may mean that the site is failing. Give the next correction using a pen or syringe (*see pages 96 & 97 for correction dose information*). The pump site should then be changed.
- If BG is above 14 mmol/L, always re-test BG after 2 hours to ensure that the correction has worked.
- Never go to bed with an elevated BG without testing for ketones or a plan for re-testing during the night.
- Make sure that you have current basal, insulin-to-carbohydrate ratios, correction factor (ISF), and target BG along with average total daily insulin dose recorded in a safe place. These are needed to calculate the dose of basal insulin while off the pump.
- *See **Appendix H: DKA Prevention When on an Insulin Pump**, page 147.*

NOTE: Elevated BG with vomiting can be a sign of impending DKA.

For high ketones with vomiting or fast breathing, call your diabetes healthcare team or go to the hospital.

Chronic complications



POTENTIAL CHRONIC DIABETES COMPLICATIONS

Complications that develop over time can affect the small (microvascular) and large (macrovascular) vessels in the body. Every effort should be made to prevent the development and progression of these complications.

Microvascular Complications

Eyes (Diabetic Retinopathy)

- Diabetes can damage the tiny blood vessels that lead to the retina (the light sensitive tissue at the back of your eyes).
- In the early stages of diabetic retinopathy, vision may be normal with few or no signs and symptoms. When retinopathy advances, it can lead to vision loss or blindness.
- **Have your eyes checked** by an optometrist or ophthalmologist every year if you have type 1 diabetes and every 1 to 2 years if you have type 2 diabetes. It is important to follow the specialist's instructions regarding return visits, as you may need to be seen more frequently based on exam results.
- Your eye doctor will need to **dilate your pupils** or take a photograph with a special camera to examine the lining of your eye (your retina).
- Remember, eye problems are easier to treat when they are caught early!

Kidneys (Diabetic Nephropathy)

- Diabetes can damage the tiny blood vessels in the kidneys that filter waste from your blood. Over time, the kidney may eventually stop working completely, which is called kidney failure.
- There are no symptoms in the early stages of nephropathy.
- The first sign of kidney damage is a small amount of protein in the urine, or microalbumin. This can be found by a simple urine test.
- **Have your urine checked for microalbumin using an albumin to creatinine ratio (ACR) at least once a year.** This can help detect kidney damage early, and it can be treated with medication if needed. A blood test for serum creatinine should also be done annually to calculate renal function.
- Sometimes early kidney damage can be reversed, so regular screening to catch it early is important.

Chronic complications



Nerves (Diabetic Neuropathy)

- Diabetes can damage the vessels that carry blood and nutrients to the nerves. Nerve damage can lead to the loss of feeling, tingling, or pain in the feet, legs, and hands. Be sure to tell your doctor if this happens to you.
- Nerve damage can lead to problems with feet, sexual health, blood pressure, digestion, and bladder function later in life.

Foot Problems

- Foot problems can develop as a result of both nerve and large blood vessel problems.
- Foot problems are very common in people with diabetes. Over time, diabetes can damage the nerves in the feet. As a result, people with diabetes may not feel it when they get a blister or cut on their feet. If you don't feel it, you won't be able to treat it, which means that even a small foot injury can turn into a big problem.
- Looking after your feet now, while you are young, may help prevent foot problems later in life. Inspect your feet daily. Be sure to check the tops and bottoms of your feet (as well as between the toes) for any cuts, sores, corns, or calluses.
- Choose footwear that fits properly to prevent blisters and other sores to your feet. Avoid going barefoot.
- Report any swelling, warmth, or redness in your feet to your diabetes health care team or family doctor.
- **Have your feet inspected at least once a year** by a member of your diabetes health care team. A monofilament should be used to help identify nerve damage.

Chronic complications

Macrovascular Complications

Cardiovascular

- Diabetes can damage the blood vessels leading to your heart, putting you at increased risk for heart disease later in life. Blood vessel damage also increases the risk for stroke and poor circulation to the feet. Have your **blood pressure measured every 3 to 6 months** and your **cholesterol checked every 1 to 3 years**.
- If you smoke, be aware that this may be the biggest risk factor for heart disease.
- Keep your BG, blood cholesterol, and blood pressure in the target ranges set by you and your diabetes health care team.
- Avoid heavy or binge drinking. Alcohol increases blood pressure; thereby, increasing your risk of stroke or heart attack.
- Drugs such as diet pills and recreational drugs (cocaine and LSD) can increase blood pressure and increase your risk of stroke or heart attack.

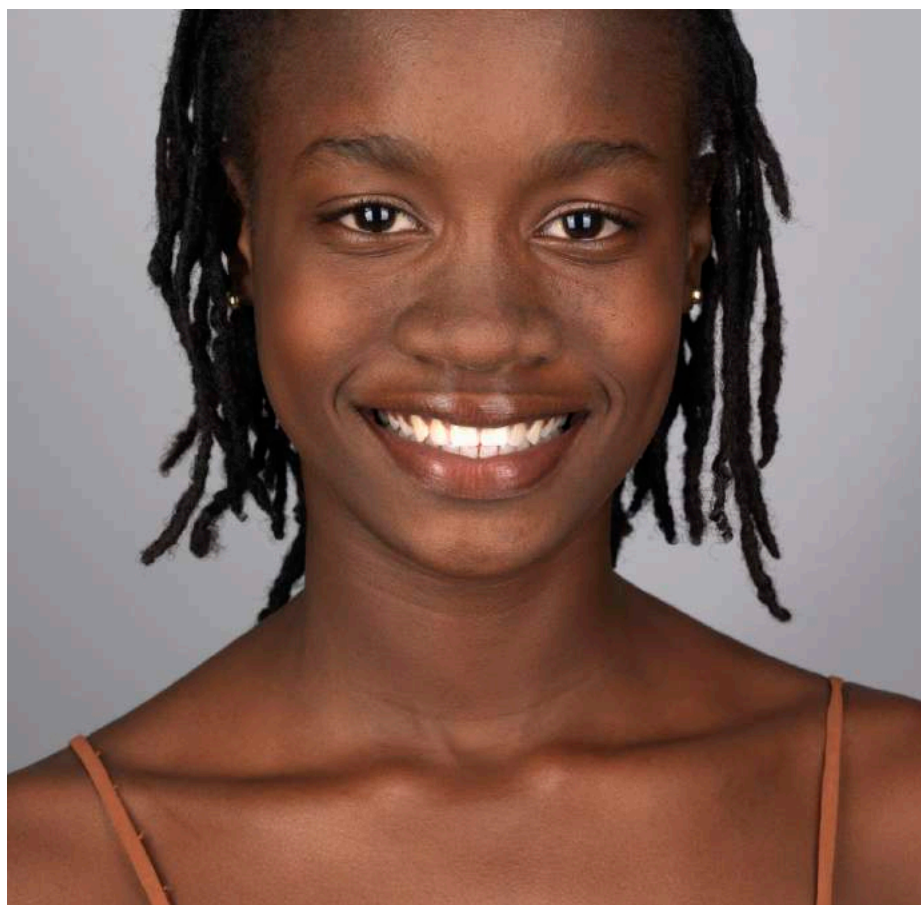
Other Considerations

Dental Care

- Dental health is important for everyone; however, if you have diabetes, it is especially important to take care of your teeth and gums.
- Managing your BG level is key. The higher your BG, the higher the risk of tooth decay (cavities), early gum disease (gingivitis), and advanced gum disease (periodontitis). This is because your saliva has extra sugar in it, just like your blood.

Tips for Good Dental Care

- Manage your diabetes.
- Brush your teeth at least twice/day.
- Floss at least once/day.
- Schedule regular dental cleanings/dental appointments.
- Make sure your dentist knows you have diabetes.
- If you suspect a problem, call your dental office as soon as possible.
- For more information on any of the complications of diabetes, check out the Recommended Websites found on pages 127 & 128 as well as the Reference List found on pages 153 to 157.



CHAPTER
5

**Diabetes
Management**



Blood glucose monitoring

Checking your blood glucose (BG) will give you important information that can help you manage your diabetes. It is important to keep your BG as close to your target range as possible. This will help to delay or prevent the complications of diabetes. Now that you're moving on to adult care, you may be advised to aim for lower target values for BG and A1C.

TARGETS

- **Recommended targets for people with diabetes over the age of 12 are:**
 - BG before eating (fasting): 4.0 to 7.0 mmol/L
 - BG 2 hours after eating: 5.0 to 10.0 mmol/L
 - A1C: $\leq 7.0\%$ - 7.5% for teens
 - A1C: $\leq 7.0\%$ for adults (\geq age 19). If this can be safely achieved without too much hypoglycemia.

MONITORING

- BG test results represent the level of glucose in the blood at that moment in time.
- Although monitoring times may vary depending on your treatment plan, typical times to monitor BG include before each meal and before your bedtime snack (if you have one) or before bedtime. There are times you will need to check more often such as when you are ill, adjusting for strenuous physical activity, or when changing your treatment plan.

RECORDING

- Record your BG readings after checking by writing them in a logbook or by uploading your meter readings to your computer.
- If using an insulin pump, your meter readings, along with your pump information, can be uploaded to your computer using the pump company's specific software program.

INTERPRETING

- Use your daily BG results to look for trends and patterns. Try to problem solve reasons for low/highs and make necessary adjustments (*see Pattern Management on page 85*). Take a copy of your logbook or printout with you when you visit your diabetes health care team.

Blood glucose monitoring

A1C

- The Hemoglobin A1C test done on a blood sample provides a measure of your average glucose control for the past three months. Hemoglobin is the part of the red blood cell that carries oxygen from the lungs to the rest of the body. Glucose sticks to the hemoglobin and stays there for the lifespan of the red blood cell – about 3 months. The number of red blood cells that have glucose attached to the hemoglobin determines the A1C. **This test should be measured every 3 to 6 months.**
- Any **increase** in A1C increases the risk of diabetes-related complications.
- Any **decrease** in A1C decreases the risk of diabetes-related complications.

eAG

- The eAG (“estimated average glucose”) is a relatively new term for describing diabetes control. You may have noticed that your A1C is measured in percentage points (e.g., 7.0%), and your meter BG readings are measured in different units (e.g., 8.2 mmol/L). The eAG represents an average of your BG 24 hours a day and includes periods of time when you are not routinely testing and is derived from your A1C values. The eAG is another way of looking at your A1C and is reported in the same units you see on your BG meter.
- Using eAG may help you to better understand the importance of daily BG control and can help both you and your diabetes health care team make the necessary treatment changes to improve your overall diabetes management.
- The following chart provides a conversion from A1C values to eAG levels (e.g., if your A1C is 8.5%, your average BG is 10.9 mmol/L over the course of a day):

A1C %	eAG (mmol/L)
6.0 %	7.0
6.5 %	7.8
7.0 %	8.6
7.5 %	9.4
8.0 %	10.1
8.5 %	10.9
9.0 %	11.8
9.5%	12.6
10.0 %	13.4
11.0 %	14.9
12.0 %	16.5
13.0 %	18.1

NOTE: eAG reporting may not be available in your area.

Pattern management



Once you have checked your blood glucose (BG) and have recorded/uploaded the results, don't stop there! Take a close look at your readings to see if there are any developing patterns of lows or highs; adjust your insulin to fix any problems you may find.

WHAT IS PATTERN MANAGEMENT?

- Pattern management involves adjusting insulin doses by looking at patterns in BG readings.
- A pattern occurs when your BG is either too low or too high at the same time of day for several days in a row or on most days of the week.
- Know your BG targets for each time of the day. For example, if your BG is within target each day before supper but is above target for three days in a row before the bedtime snack, you can say you have a pattern of high BG before bed.
- To change a pattern, it is important to think about which insulin is having the greatest effect at the time the BG is too low or too high.
- Look for patterns in BG (trends in BG over 2 to 3 days).

GUIDELINES FOR PATTERN MANAGEMENT

- Consider the reasons why your BG is too low or too high.
 - Does the insulin dose need to be changed, or would it be better to make changes to your food or activity?
 - Did you engage in physical activity that might be causing your BG to go low several hours after the activity ended (delayed low)?
- Decide which insulin has the greatest effect on the BG during patterns of low or high BG (*see Chart A, page 93*). If changes in insulin dose are needed, should the insulin be increased or decreased? (*See Chart B, page 94.*)
- If both low and high BG patterns are present, **adjust for low BG first**.
- If all your BG readings (before breakfast, lunch, supper, and bedtime) are above target, you would start by adjusting for the before breakfast BG reading first, followed by the before lunch BG, and so on.
- Remember, if you are adjusting for the BG before the bedtime snack, it is important to think about what the safe range for your BG is at bedtime.
- Change only one insulin at a time. Leave the change for 2 to 3 days to see if it works. Talk to your diabetes health care team about exceptions to this rule such as days where you have planned physical activity.
- Call your diabetes health care team when you need help.
- For more information on insulin dose adjustment, see pages 93 to 95.

Insulin management

There are a number of different types of insulin available, offering more flexibility in the number and timing of injections you may need in order to achieve and maintain your target blood glucose (BG) levels. Discuss which insulin regime will work best for you with your diabetes health care team.

INSULIN (TYPES, ACTIONS & USES)

Basal (background) Insulin

- Basal insulin is the continuous, background insulin your body uses to keep BG in control even when you're not eating. Basal insulin works throughout the day and while you're sleeping.
- Basal insulin is taken only once or twice a day or with an insulin pump, infused in small amounts throughout the day. Rates often vary throughout the day.
- Basal insulin usually makes up about half (50%) of the total daily amount of insulin that a person with diabetes takes each day.
- **Long-acting insulin** (Lantus®, Levemir®) is most commonly used as basal insulin. It starts working in about 90 minutes and can last in your body up to 24 hours. This type of insulin does not have a "peak" or point at which it is working the strongest in your body.
- **Intermediate-acting insulin** (NPH, Humulin® N) can also be used as basal insulin. It starts working in about 1 to 3 hours, works the strongest ("peaks") about 5 to 8 hours after taking it, and can last in your body for up to 18 hours. Usually, two injections of NPH a day are required to meet basal needs.

Bolus (mealtime or prandial) Insulin

- Bolus insulin is the insulin that you take to cover the carbohydrate (carb) in the food that you eat.
- **Rapid-acting insulin** (Humalog®, NovoRapid®, Apidra®) is most commonly used as bolus insulin. It starts working in about 10 to 15 minutes, works the strongest ("peaks") about 1 to 1½ hours after taking it, and can last for up to 4 to 5 hours.
- **Short-acting insulin** (Humulin® R, Novolin® Toronto) can also be used for mealtime insulin at breakfast and supper. It starts working in about 30 minutes, peaks in 2 to 3 hours, and can last up to 6 to 7 hours. For people with type 1 diabetes, rapid-acting insulin is preferred.

Bolus (correction) Insulin

- Rapid-acting insulin can be used to bring down (or correct) BG that is above your target range.

Intensive diabetes management

An intensive insulin management approach uses an insulin regimen that tries to copy or imitate what happens in the body of a person who does not have diabetes. This is important for feeling well, achieving target blood glucose (BG), and for preventing future health problems. Discuss this option with your diabetes health care team.



INTENSIVE DIABETES MANAGEMENT

- Most people with type 1 diabetes attending an adult Diabetes Centre will be encouraged to use intensive management.
- Intensive insulin management is also called a “basal-bolus approach” because it involves taking a combination of background (basal) insulin plus a mealtime (bolus) insulin with meals and snacks as well as correction doses to keep BG in target range.
- Carbohydrate (carb)-counting and insulin-to-carb ratios are two essential tools for people on intensive management. These tools help to match the bolus insulin to the amount of carbs eaten.
- Regular review of BG patterns and insulin adjustments are recommended to get the most benefit from intensive management.
- Intensive diabetes management involves either multiple daily injections (3 or more a day) or insulin pump therapy.
- Intensive diabetes management can be done well with either a pump or multiple daily injections.

Multiple Daily Injections

- Lantus[®], Levemir[®], Humulin[®] N, or NPH is used as the background basal insulin and is usually taken once a day (at bedtime). Humalog[®], NovoRapid[®], or Apidra[®] is used as the bolus insulin and is taken with meals and occasionally with snacks. The amount of rapid-acting insulin taken depends on the BG reading and how much carb is eaten and activity planned.

Note: As another option, short-acting insulin (Humulin[®] R, Novolin[®] Toronto) can be used in place of rapid-acting insulin for people who do not wish to bolus for lunch or between meal snacks. Talk to your diabetes health care team about this.

Intensive diabetes management

Insulin Pump Therapy

- This requires a battery-operated pump that you wear outside of your body. The pump is about the size of a cell phone. It continuously delivers **rapid-acting insulin** under the skin through tubing called a catheter or an insulin pod. This continuous delivery of insulin is the basal insulin. The pump user can bolus additional amounts of the same insulin to cover the carb eaten at meals and snacks. *For more information on pump therapy, see pages 91 & 92.*

Intensive Management Can Be Especially Useful If You:

- Want to achieve better BG control.
- Want more flexibility with meal and snacks.
- Like to sleep in sometimes.
- Are having problems with low BG (especially during the night).
- Plan to travel across time zones.
- Plan to do shift work.
- Are planning to have a baby.

To Benefit Fully From Intensive Management You Must Be Willing To:

- Inject insulin at least 3 to 4 times each day or use an insulin pump.
- Check BG at least 4 to 6 times a day and act on results.
- Record or upload and review your BG readings regularly.
- Make informed decisions about insulin, activity, and food.
- Communicate with your health care team.

Benefits (the up side) of Intensive Management

- Feel better
- Be healthier
- Prevent or slow progression of diabetes complications
- Allow more flexibility with meals/snacks
- Improve overall diabetes control
- Better preparation in the planning for a healthy baby

Adverse Effects (the down side) of Intensive Management

- Because intensive management helps you maintain your BG close to your target, you may have an increase in hypoglycemia (lows).
- Weight gain can occur if food, insulin, and activity are not carefully matched.
- More of your personal time is spent on diabetes care.

Intensive diabetes management

MULTIPLE DAILY INJECTIONS (EXAMPLES)

Four Injections a Day

Breakfast

Rapid-acting insulin (Humalog®, NovoRapid®, or Apidra®)

- Will “cover” the carbs eaten at breakfast
- Will most likely affect before lunch BG reading

Lunch

Rapid-acting insulin (Humalog®, NovoRapid®, or Apidra®)

- Will “cover” the carbs eaten at lunch
- Will most likely affect before supper BG reading

Supper

Rapid-acting insulin (Humalog®, NovoRapid®, or Apidra®)

- Will “cover” the carbs eaten at supper
- Will most likely affect before bedtime BG reading

Bedtime

Long-acting insulin (Lantus® or Levemir®) **or intermediate-acting insulin** (Humulin® N or NPH)

- Will work as “basal” insulin to lower BG for 24 hours.
- Often given at bedtime, but can be given in the morning or at supper. Sometimes it is needed twice a day.

Intensive diabetes management

Three Injections a Day

Breakfast

Rapid-acting insulin (Humalog®, NovoRapid®, or Apidra®) or **short-acting insulin** (Humulin® R or Novolin® Toronto)

- Will “cover” the carbs eaten at breakfast, possibly the morning snack
- Will most likely affect the before lunch BG reading

Intermediate-acting insulin (Humulin® N or NPH)

- Will “cover” the carbs eaten at lunch and afternoon snack.
- Will most likely affect the before supper BG reading

Supper

Rapid-acting insulin (Humalog®, NovoRapid®, or Apidra®) or **short-acting insulin** (Humulin® R or Novolin® Toronto)

- Will “cover” the carbs eaten at supper and possibly a bedtime snack
- Will most likely affect the before bedtime BG reading

Bedtime

Intermediate-acting insulin (Humulin® N or NPH)

- Will work to lower BG overnight
- Will mostly affect the before breakfast BG reading

Intensive diabetes management



INSULIN PUMP THERAPY

- An insulin pump is designed to deliver both continuous basal and intermittent bolus insulin, similar to a pancreas. The pump is programmed to deliver small amounts of rapid-acting insulin known as basal or background insulin 24 hours a day through an infusion site. Additional insulin is given in response to the BG value, the amount of food eaten, and activity planned.
- The insulin pump is not able to predict the insulin dose - the pump user needs to program the required amount of insulin (basal and bolus) to be delivered based on the BG values, carbs to be eaten, and activity levels.
- While there are advantages to pump therapy, there are also potential disadvantages.
- **Advantages include:**
 - More flexibility
 - Precise insulin dosing, as insulin can be matched more closely to an individual's needs
 - Easier to manage sleeping in, illness, and picky eaters
 - Fewer needles/injections
- **Potential disadvantages include:**
 - Increased risk of DKA if interruptions in the insulin delivery are not responded to quickly
 - Ongoing commitment to daily management and BG testing
 - Deterioration in diabetes control if care is not closely monitored or boluses forgotten
 - Risk of infection at insertion site
 - Cost of the insulin pump and supplies
 - A constant reminder of your diabetes
 - Weight gain

The insulin pump cannot work on its own - it needs a good operator!

Source: Diabetes Care Program of Nova Scotia. *Is An Insulin Pump for Me? Answer to Some Common Questions*; 2012. Available at: <http://diabetescare.nshealth.ca>.

Insulin pump failure or temporary interruption

If your insulin pump fails or you choose to switch to injections for a day or more, it is important to have a plan in place to manage your diabetes injections.

Pump failure or loss of the pump can happen at any time and having a plan in place will prevent interruption in your diabetes management. Your plan for pump interruption or failure is as follows:

1. If the pump fails, you must **call the 1-800 number on the back of your insulin pump to arrange for a replacement pump.**
2. **You must have your current basal rates, insulin-to-carbohydrate (carb) ratios, correction factor (ISF), and target blood glucose (BG) recorded in a safe place.**
3. Remember to **check for ketones if your BG is 14.0 mmol/L or higher.**
4. Determine your insulin doses off the pump (*see Appendix I: Insulin Pump Failure or Temporary Interruption, page 149*).

Insulin dose adjustment

Insulin doses need adjustment (change) for many reasons. In people without diabetes, the pancreas changes the amount of insulin it produces based on how much the body needs (for example, we need less insulin when we are very active and more insulin when we are sick). It is important you understand how to adjust your insulin to make the best decisions for your diabetes control.

TIPS TO ADJUST YOUR INSULIN DOSE SAFELY

- Monitor and record blood glucose (BG) at least 4 times a day (before meals and before bedtime) to determine a BG pattern. It is often helpful to check BG 1 to 2 hours after meals as well.
- Record daily insulin doses, and calculate your total daily dose (TDD) (*refer to page 95*). These records can be in a record book or electronic, using a smart meter, a pump, or an app.
- Record physical activity or any unusual events.
- Understand the action time of your insulins.
- Know your BG targets.
- Eat within your carbohydrate (carb) amounts for meals/snacks.
- Check 3 a.m. BG for 2 to 3 nights when making a change to the bedtime insulin.
- Know which insulin is having the greatest effect on the BG that needs to be fixed (*refer to Chart A*).

Chart A: Indicates which insulin has the greatest effect on BG at various times of the day

Insulin	Most Affects	Blood Glucose (BG)
Morning long-acting or intermediate-acting insulin	————→	<ul style="list-style-type: none"> • Before supper
Morning rapid-acting or short-acting insulin	————→	<ul style="list-style-type: none"> • 2 hours after breakfast • Before lunch
Lunch rapid-acting insulin	————→	<ul style="list-style-type: none"> • 2 hours after lunch • Before supper
Supper rapid-acting or short-acting insulin	————→	<ul style="list-style-type: none"> • 2 hours after supper • Before bedtime
Bedtime (or supper) long-acting or intermediate-acting insulin	————→	<ul style="list-style-type: none"> • Overnight • Before breakfast

Adopted from:

IWK Pediatric Diabetes Program. *Insulin Dose Adjustment*. Halifax, NS: Author; 2013.
 BC Children's Hospital. *An Introduction to Basal and Bolus Insulin with Multiple Daily Injections*. Vancouver, BC: Author; 2009.

Insulin dose adjustment

Chart B: Shows you which insulin to adjust based your BG patterns

If BG is low (under target) for 2 days in a row at any of the following times:	Decrease the following insulin :
Before Breakfast or overnight	Bedtime (or supper) long-acting or intermediate-acting insulin
Before Lunch	Morning rapid-acting or short-acting insulin
Before Supper	Morning long-acting or intermediate-acting insulin or lunch rapid-acting insulin
Before Bedtime	Supper rapid-acting or short-acting insulin

If BG is high (over target) for 3 days in a row or 5 out of 7 days at any of the following times:	Increase the following insulin :
Before Breakfast	Bedtime (or supper) long-acting or intermediate-acting insulin
Before Lunch	Morning rapid-acting or short-acting insulin
Before Supper	Morning long-acting or intermediate-acting insulin or lunch rapid-acting insulin
Before Bedtime	Supper rapid-acting or short-acting insulin

GUIDELINES FOR INSULIN ADJUSTMENT

Adjust only one insulin at a time.

- Adjust insulin by **1 unit** if your **TDD is less than 20 units**.
- Adjust insulin by **2 units** if your **TDD is more than 20 units**.
- Wait 2 to 3 days before making the next insulin adjustment.
- See guidelines for Pattern Management on page 85.

Insulin dose adjustment

To calculate your TDD of insulin add up the number of units of insulin (all types) that you usually take each day. Here is an example:

Time	Type of Insulin	Amount Taken
Before Breakfast	Rapid-acting	6 units
Before Lunch	Rapid-acting	6 units
Before Supper	Rapid-acting	8 units
Bedtime Snack	Rapid-acting	2 units
Before Bed	Long-acting	20 units
TDD:		42 units

Adopted from: IWK Pediatric Diabetes Program. *Insulin Dose Adjustment*. Halifax, NS: Author; 2013.



Correction factor/insulin sensitivity factor

A Correction Factor or Insulin Sensitivity Factor (ISF) tells you how sensitive you are to insulin, and it is used to correct for blood glucose (BG) that is above your target. It is a number that tells you how much 1 unit of **rapid-acting** insulin will lower your BG.

- **Correction Factors/ISF** are different for each individual. For example, one person may find that 1 unit of rapid-acting insulin lowers their BG by 2 mmol/L, while another person may find that it lowers their blood glucose by 3 mmol/L. **Your diabetes health care team will estimate your correction factor/ISF for you or teach you how to do this.**
- Once you know your correction factor/ISF, you can calculate how much rapid-acting insulin is needed to bring a high BG back into your target range.
- The amount of rapid-acting insulin that is given to correct high BG is called a **Correction Bolus** or a **Correction Dose**.
- The lower the correction factor/ISF number, the more insulin that is used to correct and vice versa.

Method #1: Calculating a Correction Bolus

- Use the following formula to calculate a **Correction Bolus**:

$$\frac{(\text{Current BG} - \text{Target BG})}{\text{Correction Factor / ISF}} = \text{Correction Bolus}$$

EXAMPLE:

Your current BG = 15 mmol/L

Your target BG = 7 mmol/L

Your correction factor = 4 (as estimated by your team)

How much rapid-acting insulin would you need to take to get your BG back into target range?

Answer: $15 - 7 = \frac{8}{4} = 2$

2 units of rapid-acting insulin needed for correction bolus dose

Correction factor/insulin sensitivity factor

Method #2: Variable Insulin Dose Scale (VIDS)

- Some people use an algorithm - a special chart called a variable insulin dose scale (VIDS) to help correct a high BG. Ask your diabetes health care team to help you develop an algorithm that works for you.

Remember

- If your BG is above target before a meal and you require a **correction bolus**, you would take this **in addition** to the usual amount you take to cover the carbohydrate (carb) in the meal.
- Only give a correction bolus every 2 to 3 hours to give the insulin time to work.
- If you are on an insulin pump, the Insulin on Board (IOB) feature helps prevent insulin stacking. Be sure to set it and use it.
- Only give a **correction bolus** if the amount needed is at least half a unit.
- Correction Factors/ISF** may change over time because your sensitivity to insulin can change.
- To see if your correction dose has worked, check your BG 2 hours after the correction dose.
- If you find that the correction factor/ISF you are presently using does not correct the high BG, try lowering your correction factor by 1. If the 2 units of insulin did not work well (see Method 1 on page 96), change the correction/ISF from 4 to 3.
$$15 - 7 = \frac{8}{3} = 2.6 \text{ (round to 3)}$$
- Don't forget to also look for patterns in BG, especially if you are frequently taking correction doses (*refer to Pattern Management, page 85*).

Nutrition: healthy meals and snacks



Healthy eating is important for overall health and well-being. Good nutrition can also help you manage your blood glucose (BG), blood pressure, and cholesterol and possibly reduce your risk for developing diabetes complications. The principles of healthy eating are essentially the same for people with diabetes as for people without.

HEALTHY EATING MEANS...

- Enjoying a **variety of foods** from each of the 4 Food Groups in **Eating Well with Canada's Food Guide** (www.hc-sc.gc.ca/fn-an/food-guide-aliment/index-eng.php) every day. Aim to include food from at least three different food groups at meals and from at least two different food groups at snacks.
- Choosing **Vegetables and Fruit** more often. Depending on your age and gender, you should aim for 7 to 10 servings of vegetables and fruit each day. Include a dark green vegetable (such as spinach, romaine lettuce, or broccoli) and an orange vegetable (such as carrots, sweet potato, or squash) each day.
- Eating a variety of **Grain Products** each day. Choose whole grain breads, cereals and pasta, and try brown rice in place of white minute-rice. You could also experiment with other whole grains such as quinoa, barley, and wild rice.
- Having 2 to 4 servings of **Milk and Alternatives** each day (depending on your age and gender). Drinking 2 cups of skim, 1%, or 2% milk each day will help you meet your vitamin D requirements. If you do not drink milk, then aim for 2 cups of fortified soy beverage every day (it has calcium and vitamin D added to it). You might need a vitamin supplement to get the 600 IU of vitamin D per day that is recommended. Low-fat cheese and yogurt are also tasty ways to get calcium.
- Taking a multivitamin containing 0.4 to 1.0 mg folic acid or the equivalent folic acid dose is recommended for all young women.
- **Choosing lean cuts of meat, trimming the visible fat from meats, and removing the skin from poultry.** Meat alternatives include beans, lentils, tofu, nuts, and peanut butter.

Nutrition: healthy meals and snacks

HEALTHY EATING MEANS... (cont)

- Enjoying sweets and salty snacks in **moderation**. It's okay to enjoy dessert; have a serving of chips (check the Nutrition Facts table on the bag to find out what a serving is) or a small piece of chocolate occasionally. Just remember to enjoy a reasonable size portion of these foods after you've met all of your recommended servings from the 4 Food Groups, not in place of those foods. Also, make sure that these "extras" fit within your meal plan or be sure to carb count and take extra insulin if necessary.
- Check out **Eating Well with Canada's Food Guide** (www.hc-sc.gc.ca/fn-an/food-guide-aliment/index-eng.php) and the Canadian Diabetes Association's (www.diabetes.ca) **Good Health Eating Guide, Beyond the Basics**, or **Diabetes Food Guide** to see how many servings from each food group are right for you and what a serving size looks like. See **Appendix G: Ideas for Healthy Meals & Snacks, page 145** for additional meal and snack ideas.



Carbohydrate counting/ label reading

Carbohydrate (carb) counting is a flexible way to plan your meals. It focuses on foods that contain carbs, as these foods have the most effect on your blood glucose (BG). Follow these steps to count carbs and help manage your BG levels.

CARB COUNTING...KNOW WHERE THE “CARBS” ARE



- Be aware that whenever you eat a food from the following category of foods, you are eating carbs:
 - Grains and grain products (rice, oatmeal, quinoa, barley, bread, cereal, pasta, crackers, flour)
 - Starchy vegetables (potatoes, corn)
 - Fruit
 - Milk and milk products
 - Sugar and sweets (white sugar, brown sugar, honey, maple syrup, molasses)
 - Mixed products made with any foods from the categories above (casseroles and baked goods such as cookies and cake)
- It is hard to predict a food's impact on your BG. The most important factor is the **total amount of carb**. It is the total carbs that help determine how much insulin is required.
- Weigh or measure carb-containing foods regularly. This improves your ability to “eye-ball” serving sizes and helps when eating out.
- Meat products and foods that are mostly fat (butter, margarine, oil) do not contain carbs and, therefore, do not raise BG. The amount of carbs in most vegetables is insignificant and do not have to be included in your carb total for a meal or snack.

Carbohydrate counting/label reading

LABEL READING...ESTIMATE THE AMOUNT OF CARB IN YOUR FOOD

- The **Nutrition Facts** table on packaged foods will list the grams of total carb in 1 serving of a packaged food. It also lists the grams of **sugar and fibre** found in 1 serving of the food. Fibre has no effect on BG.
- If the food contains a **sugar alcohol** (often used in “diabetic” candy and chocolate), then the amount in 1 serving will also be listed on the Nutrition Facts table. Sugar alcohols **do not** have a significant effect on BG levels. It may be listed on the nutrition facts as sugar alcohol or by specific type of sugar alcohol such as sorbitol, mannitol, xylitol, etc.
- The **total carb** in food raises BG, not just the sugar. Do not focus entirely on grams of sugar, as that is not telling the whole story of the effect on BG!
- To figure out the total available carb (the amount that will raise your BG), **subtract the grams of fibre** from the grams of carb. Also, **subtract all sugar alcohol** (if any) from the grams of carb.

For example, the food label below shows that 2 cookies contain 17 grams of carb. However, we must subtract the 2 grams of fibre and 3 grams of sugar alcohols from the grams of total carb. The carb content that needs to be counted for insulin dosing is 12 grams ($17 - 2 - 3 = 12$).

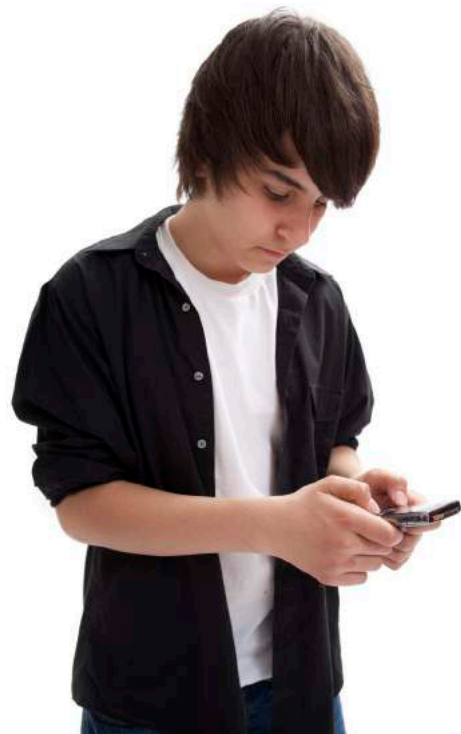
Nutrition Facts			
Per 2 cookies (17 grams)			
Amount Per Serving			
Calories 100			
		% Daily Value	
Total Fat 4.0 g		6%	
Saturated 1 g		5%	
Trans Fat 0 g			
Cholesterol 0 mg			
Sodium 30 mg		1%	
Carbohydrate 17 g		6%	
Fibre 2 g		8%	
Sugars 0 g			
Sugar alcohol 3 g			
Protein 2 g			
Vitamin A	0%	Vitamin C	0%
Calcium	0%	Iron	6%

- Remember, this is the amount of available carb in 1 serving of a particular food. **Be sure to check the “Nutrition Facts” table for the serving size to compare to the amount that you actually eat.**

Carbohydrate counting/ label reading

LABEL READING...ESTIMATE THE AMOUNT OF CARB IN YOUR FOOD (cont)

- Checkout resources like the Canadian Diabetes Association's **Beyond the Basics** poster. This resource divides carb-containing foods into groups. One portion of a food in each of these groups will provide 15 g of available carb. This system helps you to quickly estimate the grams of carb in foods. You simply need to familiarize yourself with the food groupings on the poster and the serving sizes used.
- Ask your diabetes health care team for a copy of the **Beyond the Basics** poster.
- Be sure you have food reference books, on-line databases, or mobile carb applications (apps) to search for carb values for foods without a label. Speak to your dietitian about credible sources.



Insulin-to-carb ratio

Using an insulin-to-carbohydrate (carb) ratio to calculate the amount of rapid-acting insulin to take with meals and snacks gives you more flexibility to eat according to your appetite.

WHAT IS AN INSULIN-TO-CARB RATIO?

- An insulin-to-carb ratio tells you how much rapid-acting insulin your body needs to “cover” a certain amount of carb. This allows you to calculate the amount of rapid-acting insulin you need based on the amount of carb you eat or drink at each meal and sometimes with snacks.

For example, an insulin-to-carb ratio of 1:20 means that 1 unit of rapid-acting insulin “covers” 20 grams of carb.

- Insulin-to-carb ratios are different for each person with diabetes. In other words, different people will have different insulin-to-carb ratios. Also, some people might have different insulin-to-carb ratios for different meals and snacks throughout the day. Like other insulin doses, a person’s insulin-to-carb ratio can change over time.

HOW DO I KNOW WHAT MY INSULIN-TO-CARB RATIO IS?

- Your insulin-to-carb ratio will depend on your total daily dose (TDD) of insulin and/or on how much insulin you currently take with meals.
- Your diabetes health care team will help you work out your insulin-to-carb ratios.

HOW DO YOU USE AN INSULIN-TO-CARB RATIO?

STEP 1: Count the total amount of carb in your meal or snack.

STEP 2: Divide the total amount of carb eaten by your insulin-to-carb ratio to determine your insulin dose.

Example using an insulin-to-carb ratio of 1:15:

STEP 1 (count up the total grams of carb):

1 cup brown rice	45 g carb
1/2 cup cooked broccoli	0 g carb
3 oz pork chop	0 g carb
1 cup (250 ml) milk	12 g carb
1/2 cup frozen yogurt	15 g carb

Total.....= 72 g carb

STEP 2 (divide by the insulin-to-carb ratio):

$72 \text{ g} \div 15 = 4.8$ units of insulin (those on multiple daily injections can round up to 5.0 units)

Insulin-to-carb ratio

TESTING YOUR INSULIN-TO-CARB RATIO

- Checking your blood glucose (BG) 2 hours after eating will tell you how well your insulin-to-carb ratio is working. See BG targets below. Test when the pre-meal BG is in the target range.
- Remember, your insulin-to-carb ratio can change with changes in your body weight and activity levels.
- Allow 2 to 3 days to see the effect of a change to one of your insulin-to-carb ratios before making another.

BG TARGETS

BG Before Meal	BG 2 hours After Meal	
4 to 7 mmol/L	5 to 10 mmol/L (5 to 8 mmol/L if A1C target not being met)	<p>If BG is ABOVE target 2 hours after eating:</p> <ul style="list-style-type: none"> • Use a smaller insulin-to carb ratio to give more insulin. <p>Example: was 1:20; try 1:18 or 1:15</p> <p>If BG is BELOW target 2 hours after eating:</p> <ul style="list-style-type: none"> • Use a bigger insulin-to carb ratio to give less insulin. <p>Example: was 1:20; try 1:22 or 1:25</p>

Physical activity and exercise



Being active is important for good health. Before you increase your activity, there are things you should know to manage your diabetes safely.

CHECK T. H. I. S. OUT!

Test

- The **type, duration, and intensity** of activity all affect blood glucose (BG) levels.
- Check your BG before, during (every 30 minutes during intense activity), and after exercising. Test overnight if the activity that day was intense, lasted a long time, or took place in the evening.
- An episode of hypoglycemia before exercising may put you at a greater risk of hypoglycemia during exercise.
- **Exercise can lower your BG for up to 24 hours** and some resources say up to 36 hours! This is because the muscles worked will continue to take up extra glucose from the bloodstream until the stores of glucose used up during exercise are replaced.
- Temporary increases in BG are possible during and after high-intensity exercise. **Use caution if choosing to correct a high BG right after exercising because your risk for hypoglycemia later increases.**
- Exercising with elevated glucose and ketones may lead to the development of **Diabetic Ketoacidosis (DKA)**. **Never exercise when ketones are present.**

Hydrate

- Drink enough water to stay well hydrated while exercising, about 1 cup for every 20 to 30 minutes of exercise.

Insulin

- Avoid injecting insulin directly over exercising muscle groups, as this may speed up absorption.
- Remember that insulin may require adjustment for up to 12 to 24 hours after activity.
- If the activity is planned within 1 to 2 hours after a meal, lowering of the pre-meal insulin by 20 to 50% may be required.
- If morning basal insulin is used, and an activity of 90 minutes or more has been planned for the morning or afternoon, lowering the morning basal insulin by 30 to 50% may be required.

Physical activity and exercise

Insulin (cont)

- Evening basal insulin may need to be reduced by 10 to 30% after activity to prevent delayed hypoglycemia or if exercise is planned for very early in the morning.
- Pumpers may benefit from a reduction of their basal insulin starting 90 minutes before to 90 minutes following the activity.
- Additional adjustments to insulin may be needed as fitness level improves.

Snack

- For unplanned activity, you may need to eat extra carbohydrates (carbs) to keep your BG from falling too low. Pumpers may be able to manage by suspending the pump basal.
- A general rule of thumb for most moderate-intensity exercise (e.g., tennis, swimming, cycling) is to have 15 to 30 g of carb for every 30 to 60 minutes of exercise. High intensity activity, such as hockey, soccer, and strenuous cycling, will require 30 to 60 g of carb every hour.
- You do not have to consume all the carbs at once. It is better to divide the carb so that you're eating/drinking every 20 minutes.
- Keep fast-acting carbs with you at all times in case you need to treat a low BG.

High glycemic index food choices meet carb demands faster and may be useful to consume right before and during exercise.	Low glycemic index snacks 1 to 2 hours after activity can protect against delayed hypoglycemia.
<p>The following examples of high glycemic index snacks contain 15 g of carbs:</p> <ul style="list-style-type: none"> • 7 plain soda crackers • 2 large or 12 small rice cakes • 1 low fibre granola bar <p>Other examples of high glycemic index snacks include:</p> <ul style="list-style-type: none"> • Diced fruit • Sports drinks/juice 	<p>The following examples of low glycemic index snacks contain 15 g of carbs:</p> <ul style="list-style-type: none"> • 7 plain soda crackers with cheese • 1/2 whole wheat peanut butter sandwich <p>Other examples of low glycemic index snacks include:</p> <ul style="list-style-type: none"> • A muffin with cheese • Fibre cereal sprinkled on yogurt

Adapted from: The Maestro Project. Chrisp M. Common recommendations for exercise & type 1 diabetes. *Building Connections: The Maestro Project*. 2008;32:4-5. Available at: [/www.maestroproject.com/wp-content/uploads/2012/10/32.Mid-Winter.Newsletter.pdf](http://www.maestroproject.com/wp-content/uploads/2012/10/32.Mid-Winter.Newsletter.pdf). Accessed June 26, 2013.

Physical activity and exercise

DIABETES AND EXTREME SPORTS

There are many people with diabetes who participate in vigorous exercise and/or extreme sports such as Chris Jarvis, Canadian Olympic rower; Bobby Clarke, former National Hockey League player; Jay Cutler, National Football League player; Dexter Bean, NASCAR driver; etc. Diabetes does not prevent individuals from participating in these sports; however, training and careful planning are necessary.

TIPS FOR PARTICIPATING IN VIGOROUS EXERCISE OR EXTREME SPORTS

- Discuss your plans with your doctor and diabetes health care team. There are both benefits and risks with exercise and special considerations are needed for individuals with diabetes.
- Become knowledgeable about the specific sport that interest you.
- Become knowledgeable about how physical activity and vigorous exercise affects you. Everyone's response to physical activity/exercise is individual and you need to know your own.
- Be prepared with necessary BG monitoring, insulin/food adjustment protocols, extra food, hypoglycemia supplies, diabetes identification, etc.

Complementary/ alternative therapies

Complementary and alternative therapies include the use of biological or natural products (e.g., herbs, special diets, vitamins, minerals, and non vitamin supplements such as fish oils); mind-body medicine (e.g., yoga, meditation, deep breathing exercises, acupuncture, etc.); and manipulative and body-based practices (e.g., massage, chiropractic, osteopathy, etc.).

Natural products claim to have healing effects, but the studies are usually with small numbers and of short duration; recommendations of safety and effectiveness are often hard to come by. Some natural products interact with other medications. It is good to let your doctor or pharmacist know if you choose to use one. In general, there is not enough scientific evidence to prove that dietary supplements have substantial benefits for diabetes or its complications.

Mind-body medicine is often used to assist with relaxation and stress reduction and management and to improve overall well-being. Keeping excess stress hormones in check with relaxation may help stabilize glucose levels and, at the same time, provide some protection for the heart. These are both very important issues for people with diabetes. Mind-body therapies work for some people, but they may not work for everyone.

Manipulative and body-based practices promote wellness by focusing on bones, joints, and soft tissues to restore normal spine and neuromuscular function. There is no proven benefit in the treatment of diabetes but they may assist with circulation and foot/lower limb pain/discomfort.

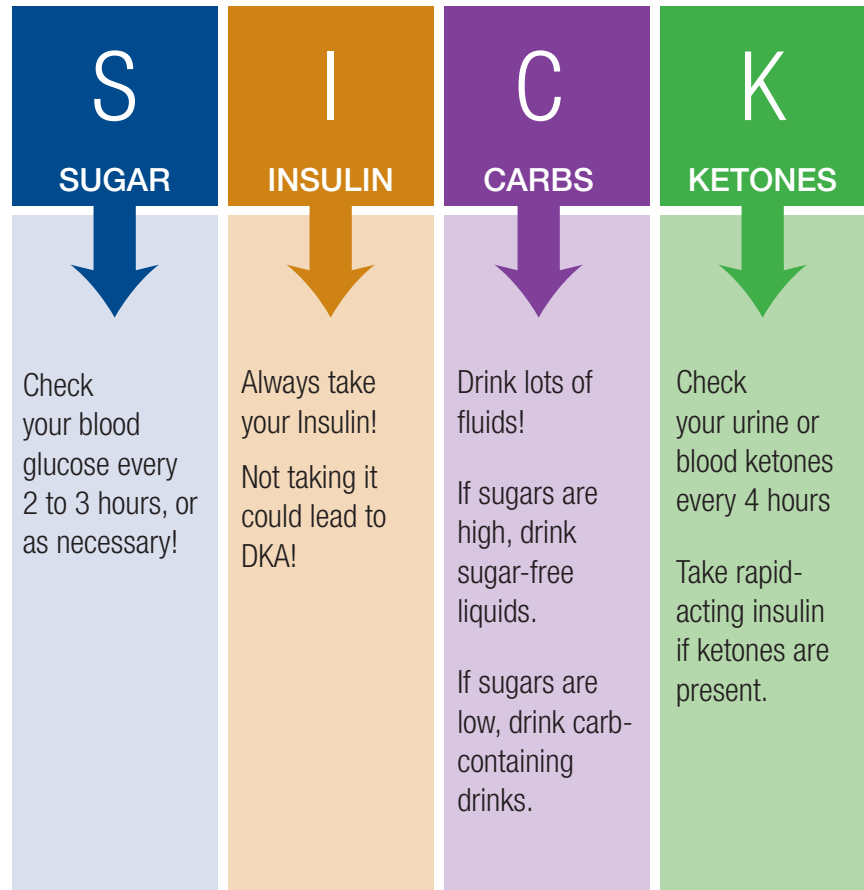
THINGS TO CONSIDER REGARDING USE OF COMPLEMENTARY/ALTERNATIVE THERAPIES

- **Do not stop** taking the medication your doctor has prescribed for you; specifically, your insulin. The consequences of not following your prescribed diabetes regimen can be very serious.
- Certain complementary and alternative therapies used for conditions other than diabetes may have side effects and/or drug interactions.
- Discuss any complementary or alternative therapies with your doctor/diabetes health care team.
- Always inform your doctor/diabetes health care team if you are taking or using any complementary or alternative therapies.

For more information on complementary and alternative therapies, contact the National Centre for Complementary and Alternative Medicine (<http://nccam.nih.gov/health/diabetes/CAM-and-diabetes.htm>).

Sick day management

No one likes being sick, but it can be especially bothersome for someone who has diabetes. Illness, such as a flu, fever, or vomiting and diarrhea, can cause serious problems with your diabetes control. By knowing what to do when you are sick, you can be sure to keep your diabetes in control.



Adapted from: Building Connections: The Maestro Project. *Participant Newsletter*. Fall 2007;30:4.
Available at: [http://www.maestroproject.com/newsletters/type1/Fall 30 Newsletter.pdf](http://www.maestroproject.com/newsletters/type1/Fall%2030%20Newsletter.pdf).

- **Check for blood or urine ketones every 2 to 4 hours:**
 - **Blood Ketones:** The preferred method for checking ketones is to use a meter that has special strips that can check your blood for ketones. Follow the instructions on the package carefully to check your blood for ketones. Ask your diabetes health care team for help if the instructions are not clear.
 - **Urine ketones:** Just like extra glucose in your blood can “spill” into your urine, ketones will also “spill” from your blood into your urine. Check your urine for ketones by dipping a test strip in a fresh sample of urine. The color change is then compared to a chart. A purple color means you have ketones in your urine.

Sick day management

- **Contact your physician or diabetes health care team if:**
 - You are unable to take fluids for 4 hours.
 - You vomit more than once in 4 hours.
 - You have taken extra insulin as recommended but your blood glucose (BG) and ketones do not improve.
 - The illness is very severe or vomiting lasts longer than 12 to 24 hours.
 - You have the signs and symptoms of DKA.

PREVENTING HYPOGLYCEMIA

Although many people find that their BG goes high when they are sick, some people get lows when they are ill. It's important that you follow your meal plan as closely as possible while you are sick to prevent hypoglycemia.

If you're able to eat small amounts but not ready for your regular meal plan, eat 15 grams of carb every 1-2 hours along with some liquids.

Examples of **15 grams of carb** include the following:

- 7 soda crackers
- 1 slice of toast
- 3 Arrowroot® biscuits
- 4 plain Melba Toast
- 2 Digestive® cookies
- 7 Ritz® crackers

If you are not able to eat, take 15 grams of carb in a liquid form EVERY HOUR.

Some examples include the following:

- 3/4 cup **regular** pop
- 3/4 cup **regular** juice
- 1 **regular** popsicle (2 sticks)
- 1/2 cup **regular** Jello®
- 1/2 cup **regular** Kool-Aid®
- 1 cup Gatorade® Perform*
- 3/4 to 1 cup Powerade® or 1 cup Allsport®

*Given the number and variety of products available, read the label carefully to ensure/confirm it has the amount of carbs needed.

Insulin adjustment guidelines for sick days

The amount of ketones that you have in your blood or urine, along with your blood glucose (BG) reading, will help you decide if you need extra rapid-acting insulin and how much of it to take. You will also need to know your total daily dose (TDD) of insulin and be able to calculate some percentages (%).

The following 3 steps will help you calculate extra insulin doses when you are sick:

STEP 1: Calculate Your TDD of Insulin

To calculate your TDD of insulin, add up the number of units of insulin (all types) that you usually take each day.

Now calculate YOUR TDD:

Time	Type of Insulin	Amount Taken
TDD:		

STEP 2: Based on your TDD in Step 1, Calculate 5%, 10%, and 15% of your TDD.

For example, if you normally take 45 units of insulin per day, 10% of this would be 4.5 ($0.10 \times 45 = 4.5$) and 15% would be 6.75 ($0.15 \times 45 = 6.75$).

5% of _____ = _____
(your TDD)

10% of _____ = _____
(your TDD)

15% of _____ = _____
(your TDD)

Insulin adjustment guidelines for sick days

STEP 3: Use the chart below to find out how much extra rapid-acting insulin you need to take based on your BG and ketone measurements.

Ketones		BG	Extra Insulin Required (rapid-acting)
Blood	Urine		
		< 6.0	Reduce usual dose 5 to 10%
< 1.5	negative	6 to 20	Usual doses and at usual times with corrections
1.5 to 3.0	positive	≥ 14	10% of your TDD in addition to usual dose. If this doesn't work within 2 to 3 hours, try 10 - 15% of your TDD or if on an insulin pump, use 1.5 times usual correction and seek medical attention.
< 1.5	negative	> 20	10% of your TDD in addition to usual dose. If this doesn't work within 2 to 3 hours, try 10 - 15% of your TDD or if on an insulin pump, use 1.5 times usual correction and seek medical attention.

NOTE: Remember to take your **usual dose** of basal insulin (NPH, Lantus®, or Levemir®) at the usual time. The extra dose of rapid-acting insulin is taken **in addition** to your usual dose of rapid-acting insulin.

If you are on an insulin pump and your blood ketones are greater than 0.6 mmol/L, consider changing your infusion set and site.

If you have taken extra insulin as recommended, but your glucose is not improving and your ketones are not clearing, contact your physician or diabetes health care team, or go to Emergency.



SICK DAY KIT CHECKLIST

Plan ahead by putting a sick day kit together while you are well. Include the following:

- | | |
|--------------------------|--|
| <input type="checkbox"/> | List of all medicines you are currently taking as well as medical problems |
| <input type="checkbox"/> | List of all important phone numbers (for advice regarding sick day management) |
| <input type="checkbox"/> | Phone numbers of family and friends who are able to help you |
| <input type="checkbox"/> | List of sick day foods and beverages |
| <input type="checkbox"/> | Insulin (rapid-acting)/insulin syringe |
| <input type="checkbox"/> | BG testing equipment and ketone test strips |
| <input type="checkbox"/> | Glucagon Emergency Kit |
| <input type="checkbox"/> | Quick sources of sugar, including glucose gel or tablets |
| <input type="checkbox"/> | Snack foods such as individually wrapped granola bars/juice packs |
| <input type="checkbox"/> | Sugar-free lozenges, drops, and cough syrup |
| <input type="checkbox"/> | Thermometer |
| <input type="checkbox"/> | Pain/fever relievers - Aspirin™ or Tylenol™ (acetaminophen) |
| <input type="checkbox"/> | An alarm clock or timer to remind you of when to test your BG and ketones |

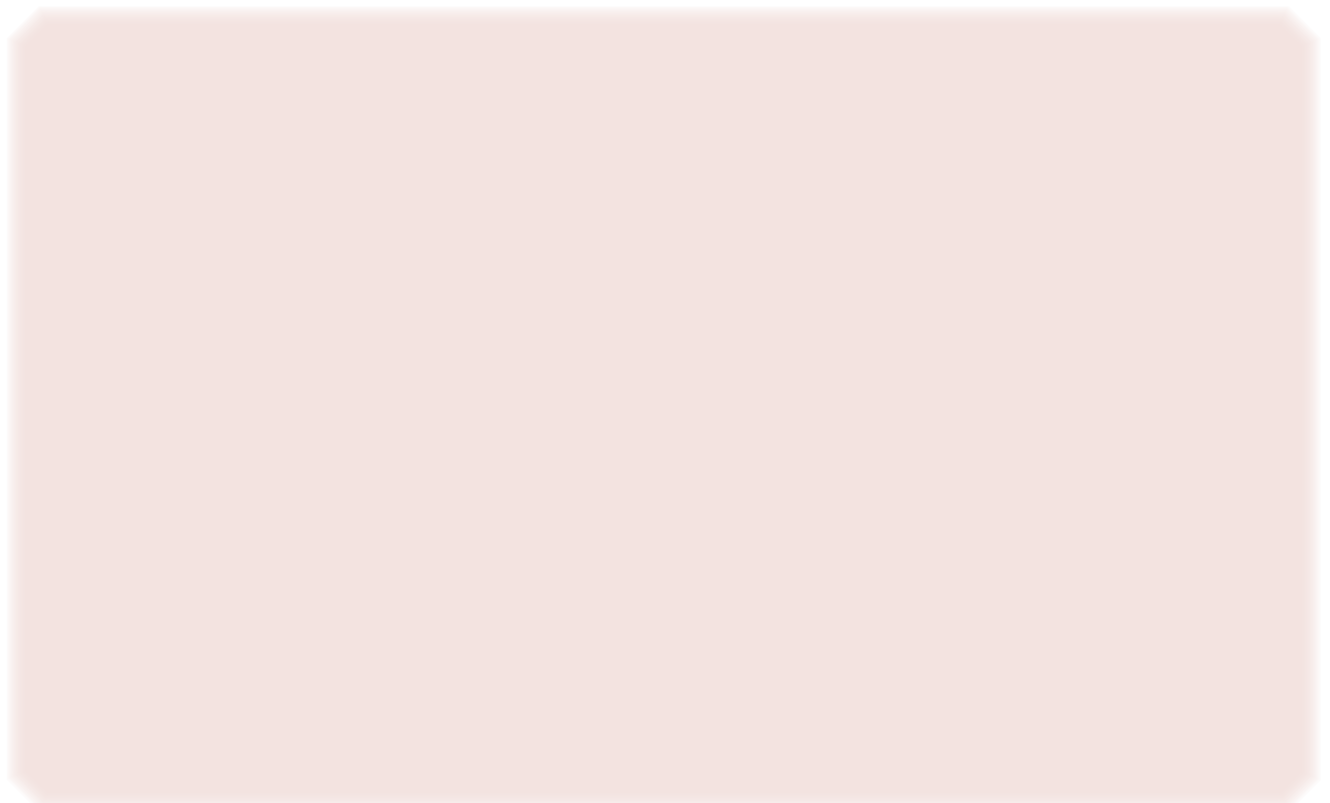
Adapted from: www.diabetesselfmanagement.com. Accessed March 2013.

For more information and a list of additional items to add to the kit in case of an emergency, check out **Diabetes Care...Planning for an Emergency**. Available at: <http://diabetescare.nshealth.ca/sites/default/files/files/DMEmergPrepare.pdf>.



CHAPTER
6

Odds &
Ends



To tell or not to tell

The decision about whether or not to disclose your diabetes to others is personal and depends on the circumstance. For example, there are certain situations where you do not have to tell anyone about your diabetes, while sometimes you are required by law to disclose that personal information.



THE FOLLOWING SITUATIONS WILL HELP YOU UNDERSTAND WHEN IT'S IMPORTANT FOR YOU TO BE OPEN ABOUT YOUR DIABETES

Applying for a Driver's License

- Anyone applying for a driver's license in Nova Scotia must disclose to the Registry of Motor Vehicles any disability or illness, including diabetes, that may interfere with the safe operation of a motor vehicle.
- Once you disclose that you have diabetes, you will likely be asked to see your doctor for a Driver's Medical Examination Report. The report will be reviewed by the Registry of Motor Vehicles and may be referred to the Medical Advisory Committee on Driver Licensing.
- Your doctor is required by law to report anyone she or he considers unfit to drive. With regard to diabetes, this could include someone who is newly diagnosed and just beginning to use insulin, someone who is not recognizing the early symptoms of hypoglycemia, someone who has just experienced a severe hypoglycemic reaction, or someone who is not managing diabetes responsibly.

For more information contact:

Registry of Motor Vehicles

Phone: 1-800-670-4357

Website: www.gov.ns.ca/snsmr/rmv/

To tell or not to tell



Applying for Certain Jobs

- Your medical information is confidential unless you work in a safety-sensitive position; so unless health-related questions are directly related to a specific job requirement, you are not required to report medical information on an employment application or in an interview.
- Similarly, if you are already working, your employer does not need to be informed about a diagnosis of diabetes unless you wish to disclose it or unless you need your employer to provide appropriate accommodation to manage your diabetes.
- If you are applying for a safety-sensitive position (i.e., airline pilot, railway engineer, police officer, paramedic, etc), you are required to disclose any medical condition, including diabetes, that could jeopardize the safety of your coworkers, clients, or the public. Not disclosing could be grounds for dismissal when your condition is discovered.
- If you are using insulin, you cannot serve in the Canadian Armed Forces. All Canadian soldiers must meet specific employment criteria and, unlike other employers, the military does not have a duty to accommodate those who do not meet those criteria.
- For more information about jobs and diabetes, refer to pages 34 & 35.

Applying for Insurance

- The insurance act of every province and territory specifically requires an applicant for insurance to disclose every fact within that person's knowledge that is relevant to an application for insurance.
- If you do not disclose all material information about your diabetes, even if the relevant question is not asked in your application for coverage, the insurance company can void your policy.
- Once a life or disability insurance policy has been issued, you do not need to report any subsequent changes in your health unless you apply for increased policy benefits.

Know your rights

In Canada, if you have diabetes, you are protected by law from employment-related and other types of discrimination.

LEGAL PROTECTION FOR PEOPLE WITH DIABETES CAN BE FOUND IN THE FOLLOWING 3 DOCUMENTS:

1. Canadian Human Rights Act

In 1977, Parliament passed the **Canadian Human Rights Act** to ensure equality of opportunity and freedom from discrimination in areas of federal jurisdiction such as federal government departments; the post office; chartered banks; airlines; television and radio stations; inter-provincial communications and telephone companies; buses and railways that travel between provinces; and other federally-regulated industries.

The Act prohibits people being placed at a disadvantage because of their disability or any other ground covered under the Act.

2. Charter of Rights and Freedoms

The equality of rights section of the **Canadian Charter of Rights and Freedoms** states:

15(1) “Every individual is equal before and under the law and has the right to the equal protection and equal benefit of the law without discrimination and, in particular, without discrimination based on... physical disability.”

This means that no government in Canada can pass a law that discriminates against a person because of a physical disability.

3. Human Rights Codes of the Provinces and Territories

Provinces and territories have similar human rights codes forbidding discrimination in their jurisdictions.

The Nova Scotia Human Rights Act states that everyone is free and equal in dignity and rights without regard to physical disability.

You may have noticed that the word “diabetes” was not used in any of the documents; instead, this is one of the times where diabetes falls under the category of a disability.

Know your rights

Filing a Human Rights Complaint

- A human rights complaint would be filed with the Canadian Human Rights Commission if discrimination occurred in federal jurisdiction. For more information, visit the Canadian Human Rights Commission website at www.chrc-ccdp.ca or call toll-free 1-888-214-1090.
- If discrimination occurred outside federal jurisdiction, the complaint would be filed with the Human Rights Agency in the province or territory where the incident occurred.
- The Nova Scotia Human Rights Commission central office is located in Halifax and there are regional offices in Sydney, Digby, and New Glasgow to serve people across Nova Scotia. For more information, call toll-free 1-877-269-7699 or 424-4111 (Halifax) or www.gov.ns.ca/humanrights/.
- Depending on the jurisdiction, the deadline to file a human rights complaint is generally 6 to 12 months following the incident. Therefore, a person is urged to file a complaint as soon as possible following the incident.
- Due to confidentiality concerns, the Human Rights agencies cannot reply to complaints of discrimination using the internet or e-mail. Contacting an office by phone provides opportunity to discuss the complaint and clarify the next steps; thereby accelerating the process.
- Contact information for all federal, provincial, and territorial human rights agencies can be located on the Canadian Human Rights Commission website at www.chrc-ccdp.ca.

Diabetes services in Nova Scotia

By dialing 211 or visiting the 211 website (www.ns.211.ca), users can easily and quickly connect to the social and community services they need anywhere in the province. 211 is free, confidential information and is available 24-hours a day, 365 days a year.

NOVA SCOTIA DIABETES CENTRES (DCs)

Centres where health professionals teach and support diabetes self-management. Education focuses on self-care to enhance quality of life, encourage healthy living, and to prevent or delay diabetes complications.

There are DCs throughout Nova Scotia that provide direct services to people with diabetes in over 50 communities.

Contact information:

Visit the Diabetes Care Program of Nova Scotia website (<http://diabetescare.nshealth.ca>) for a complete list of DCs and contact information.

CANADIAN DIABETES ASSOCIATION (CDA)

The CDA is a voluntary organization that supports people with diabetes in Canada.

The CDA offers summer camps, insurance plans, peer support groups, and information sessions on diabetes. There are CDA branches across Nova Scotia (contact the Regional Leadership Centre for locations).

Contact information:

Regional Leadership Centre (Halifax)

137 Chain Lake Drive, Suite 101, Halifax, NS

Phone: (902) 453-4232 or 1-800-326-7712

Website: www.diabetes.ca

DIABETES CARE PROGRAM OF NOVA SCOTIA (DCPNS)

A Provincial Program that supports diabetes health care providers by developing diabetes guidelines and other resources. The DCPNS also collects and tracks important information about rates of diabetes in Nova Scotia.

Contact information:

Diabetes Care Program of Nova Scotia

1276 South Park Street, Bethune Building #548

Halifax, NS B3H 2Y9

Phone: (902) 473-3219

Website: <http://diabetescare.nshealth.ca>

Diabetes services in Nova Scotia

JUVENILE DIABETES RESEARCH FOUNDATION (JDRF)

JDRF is a worldwide organization focused on type 1 diabetes research. Its mission is "to discover, develop and deliver advances that cure, better treat and prevent type 1 diabetes." JDRF Nova Scotia currently has 5 outreach initiatives including one specifically for adults over the age of 19 years.

Contact information:

Senior Development Coordinator, JDRF

1658 Bedford Highway, Suite 2055

Bedford, NS B4A 2X9

Phone: (902) 453-1586

Website: www.jdrf.ca

DIABETES CLINICAL RESEARCH PROJECTS

You may want to consider participating in a diabetes clinical research project/trial. Participating in a research study is one way you can contribute to understanding diabetes and stay up to date with the development of new therapies. The Endocrinology Research Group at Capital District Health Authority is often looking for study participants. Contact the number below for more information and how to become involved.

Contact information:

Endocrinology Research Group

Capital District Health Authority

Phone: (902) 473-1455

How to find credible diabetes information

It can be hard to judge the accuracy and credibility of diabetes information you read in books or magazines, see on television, or find on the Internet. There are no rules stating what kind of health or diabetes-related information can be put on the Internet or who puts it there. You may have to do some "detective work" to decide whether the information you find on-line is credible.



TIPS TO HELP YOU DECIDE WHAT INFORMATION IS BELIEVABLE AND ACCURATE ON THE INTERNET:

- Websites written by government agencies, universities, medical institutions, and non-profit agencies are generally good sources of information.
- If the address ends in “.gov”, “.edu”, or “.org”, that means that a government agency, an educational institution, or a non-profit organization maintains the site. Many Canadian non-profit organizations also have web addresses that end in “.ca”.
- Web addresses that end in “.com” are usually commercial sites that may be more interested in selling you a product than giving you information.
- Look for websites written by a non-profit organization that you already trust. Trustworthy diabetes organizations include:
 - The Canadian Diabetes Association
 - The American Diabetes Association
 - The Juvenile Diabetes Research Foundation
 - The National Institute of Diabetes and Digestive and Kidney Diseases
- Check the author's credentials (appear as letters after a person's name). For example, the letters MD after a person's name tells you he/she is a medical doctor. If the credentials are missing then consider it a red flag that the information may not be credible.
- Watch out for websites advertising and selling products that claim to improve your health or cure your diabetes. Credible sources of diabetes information want to inform you about your diabetes, not offer you false promises to get your money! If there is advertizing on the site, it should be clearly set apart from the information.
- Look for a date at the bottom of a web site to see if the information is current. The dates will usually tell you when the web page was first developed and when it was last reviewed or revised. If the web page is old, the information may be out-of-date.

How to find credible diabetes information

TIPS TO HELP YOU DECIDE WHAT INFORMATION IS BELIEVABLE AND ACCURATE ON THE INTERNET (cont)

- Ask yourself whether the information or advice on a website seems to contradict (is different from) what you learned from your diabetes health care team. If the information is different, talk to your diabetes team about it.
- Think twice about information that you read on the internet message boards or in chat rooms. Just because something worked for one person or even a few people, doesn't mean that it's accurate or safe information. Again, talk to your diabetes health care team about any new diabetes information that you read about on the internet.

Glossary of terms

Now that you are moving on to your new adult diabetes health care team, it is important to be familiar with some commonly used terms. The following is a list of terms used throughout this handbook that your new team may discuss with you.

Basal Insulin. Basal insulin refers to the long-acting (background) insulin when you are on multiple daily injections (MDI). On a pump, it refers to the continuous flow of background rapid-acting insulin. Basal insulin covers non food insulin needs.

Bolus (prandial) insulin. Bolus insulin refers to rapid-acting insulin that is given prior to meals/snacks and is intended to cover food needs. It is also used to correct for high blood glucose (BG). Prandial = meal.

Carbohydrate (carb) Counting. Determining the amount of carbs you plan to eat at each meal/snack. It is the carb in food that raises your BG level. Tools to help with carb counting include the Canadian Diabetes Association (CDA) *Good Health Eating Guide*, food labels, nutrient tables, and food scales.

Correction Factor or Insulin Sensitivity Factor (ISF). This tells you how sensitive you are to insulin. It is a number that tells you how much 1 unit of rapid-acting insulin will lower your BG and is used to calculate the dose of rapid-acting insulin needed to correct a high BG. The correction factor and insulin sensitivity factor (ISF) are different for each individual.

Diabetic Ketoacidosis (DKA). This is a life-threatening condition characterized by elevated BG levels, elevated ketone levels, and metabolic acidosis. DKA occurs most often in people with type 1 diabetes, especially during an acute illness. DKA can be prevented.

Glucagon. Glucagon is a hormone that stimulates the liver to release stores of glucose into the blood to raise the BG level. It is given by injection and is most often used to treat severe hypoglycemia.

Hypoglycemia Unawareness. When a person loses their ability to recognize symptoms of hypoglycemia or does not have the early symptoms of hypoglycemia. This can happen if you have had diabetes for a long time or if you experience frequent low BG.

Glossary of terms

Insulin-to-Carb Ratio. How much rapid-acting insulin your body needs to “cover” a certain amount of carb. For example, 1:15 means 1 unit of rapid-acting insulin covers 15 g of carb.

Intensive Diabetes Management. An intensive management approach tries to copy or imitate what happens in the body of a person who does not have diabetes. Most people in the adult Diabetes Centre will be encouraged to use intensive management to achieve the best possible BG targets.

Ketones. Ketones are byproducts produced whenever normal glucose metabolism is unable to meet energy demands and the body burns fat and muscle for energy instead of carbs. Ketones build up in the blood and “spill” into the urine and can be measured by either a urine ketone test strip or a blood ketone test strip and meter.

Multiple Daily Injections (MDI). Three to four insulin injections of rapid-acting (bolus) insulin per day, prior to meals/snacks; combined with one to two injections of a long-acting (basal) insulin in the morning and/or at bedtime.

.....

Adapted from: Markham Stouffville Hospital. *Young Adult Transition Guide*. Markham, ON: Author; 2006.

Quinte Health Care. *Your Transition to Adult Care*. Belleville, ON: Author; 2011.

Recommended websites

DIABETES:

- American Diabetes Association (ADA) (www.diabetes.org)
- BC Children's Hospital (www.bcchildrens.ca)
- Canadian Diabetes Association (CDA) (www.diabetes.ca)
- Diabetes Care Program of Nova Scotia (<http://diabetescare.nshealth.ca>)
- Diabetes Kids and Teens Australia (www.diabeteskidsandteens.com.au)
- Diabetes Program of Prince Edward Island (www.peidiabetes.pe.ca)
- Diabetes Québec (<http://www.diabete.qc.ca/en/index.html>)
- Juvenile Diabetes Research Foundation (www.jdrf.ca)

DIABETES COMPLICATIONS:

- Canadian National Institute for the Blind (www.cnib.ca)
- Heart and Stroke Foundation of Canada (www.heartandstroke.ca)
- Kidney Foundation of Canada (www.kidney.ca)

DISTRESS, STRESS, ANXIETY, DEPRESSION:

- Beyondblue (www.beyondblue.org.au)
- Canadian Diabetes Association (www.diabetes.ca/diabetes-and-you/living/complications/depression)
- Public Health Agency of Canada (www.phac-aspc.gc.ca/cd-mc/mi-mm/depression-eng.php)

DRIVING:

- Canadian Diabetes Association (www.diabetes.ca/diabetes-and-you/living/guidelines/commercial-driving/)
- Registry of Motor Vehicles (www.gov.ns.ca/snsmr/rmv/)

DRUG PLANS & TAX CREDITS:

- Family Pharmacare (www.nspharmacare.ca)
- Medical Service Insurance (MSI) (www.gov.ns.ca/DHW/)
- Nova Scotia Insulin Pump Program (NSIPP) (<http://novascotia.ca/dhw/nsipp>)
- Revenue Canada Agency (www.cra-arc.gc.ca/menu-eng.html)

EATING DISORDERS:

- Capital Health Eating Disorders Clinic (www.cdha.nshealth.ca/mental-health-program/programs-services/eating-disorders-clinic)

HEALTHY EATING:

- American Dietetic Association (www.eatwell.org)
- Dietitians of Canada (www.dietitians.ca)
- Health Canada (www.hc-sc.gc.ca/fn-an/food-guide-aliment/index-eng.php)

Recommended websites

HUMAN RIGHTS:

- Canadian Human Rights Commission (www.chrc-ccdp.ca/eng)
- Nova Scotia Human Rights Commission (www.gov.ns.ca/humanrights)

IMMUNIZATIONS:

- Immunize Canada (www.immunize.ca)
- Nova Scotia Department of Health and Wellness (www.gov.ns.ca/hpp/cdpc/immunization.asp)
- Public Health Agency of Canada (www.phac-aspc.gc.ca/index-eng.php)

PHYSICAL ACTIVITY:

- Insulindependence (www.insulindependence.org/)
- Participaction (www.participaction.com/get-informed/physical-activity-guidelines/)
- The Maestro Project (www.maestroproject.com/publications-reports/newsletters/)

SEXUAL HEALTH:

- Halifax Sexual Health Centre (www.halifaxsexualhealth.ca)
- Society of Obstetricians and Gynecologists of Canada (www.sexualityandu.ca)

SMOKING:

- Canadian Cancer Society (www.smokershelpline.ca)
- Health Canada Quit4Life (www.quit4life.com)

TRAVEL:

- Canadian Diabetes Association (www.diabetes.ca/diabetes-and-you/living/guidelines/travel)
- Centre for Disease Control and Prevention (www.cdc.gov/)
- Nova Scotia Department of Health and Wellness (www.gov.ns.ca/health/OOP)
- Public Health Agency of Canada (www.phac-aspc.gc.ca/tmp-pmv/index-eng.php)

.....

***All websites accessed June 2013**

Appendices

Appendix A:	My Present Treatment Plan
Appendix B:	Meal Plan Sheet
Appendix C:	Adolescent Knowledge & Skills Checklist
Appendix D:	Wallet Card
Appendix E:	Sample Letter to Roommate
Appendix F:	Shopping List of Healthy Food Choices
Appendix G:	Ideas for Healthy Meals & Snacks
Appendix H:	DKA Prevention When On An Insulin Pump
Appendix I:	Insulin Pump Failure or Temporary Interruption
Appendix J:	Transitioning Out of Province

Appendix A: My Present Treatment Plan

INSULIN: <input type="checkbox"/> Syringe <input type="checkbox"/> Pen <input type="checkbox"/> Pump (Type: _____)				
TYPE & DOSES:				<input type="checkbox"/> n/a
Before breakfast: _____				
Before lunch: _____				
Before supper: _____				
At bedtime: _____				

ORAL MEDICATION: _____					<input type="checkbox"/> n/a
-------------------------------	--	--	--	--	------------------------------

PUMP (INSULIN TYPE _____):				
Basal Rates	Time	Rate	Time	Rate
	12:00 a.m.	_____	_____	_____
	_____	_____	_____	_____
	_____	_____	_____	_____

INSULIN-TO-CARBOHYDRATE (CARB) RATIO: Breakfast: 1 unit _____ gm carb Lunch: 1 unit _____ gm carb Supper: 1 unit _____ gm carb Snacks: 1 unit _____ gm carb	CARB TARGETS FOR: Breakfast: _____ gm carb Lunch: _____ gm carb Supper: _____ gm carb Snacks: AM _____ gm; PM _____ gm; Bedtime _____ gm carb
--	--

CORRECTION FACTOR/INSULIN SENSITIVITY FACTOR (ISF): _____ _____	Insulin on Board (IOB): _____ hrs
--	---

BLOOD GLUCOSE TARGETS: Before meals _____ mmol/L; 2 hour after meals _____ mmol/L; Bedtime _____ mmol/L

Appendix B: Meal Plan Sheet

Time:								DATE:						
Carbohydrates (Grams/Choices)								Total	Carb	PRO	FAT			
Grains & Starches														
Fruits														
Milk & Alternatives														
Other Choices														
Vegetables														
Meat & Alternatives														
Fats & Oils														
								Grams						
								Kcal						
Total Kcal								%						

Time:								DATE:						
Carbohydrates (Grams/Choices)								Total	Carb	PRO	FAT			
Grains & Starches														
Fruits														
Milk & Alternatives														
Other Choices														
Vegetables														
Meat & Alternatives														
Fats & Oils														
								Grams						
								Kcal						
Total Kcal								%						

NOTES: _____

Appendix C: Moving on...with Diabetes Adolescent Knowledge & Skills Checklist (Part 1)



To be completed by the adolescent/young adult

Use this checklist to help you evaluate your knowledge and skill level in managing your diabetes. It will help you to identify those areas where new information or a review is needed. If you have questions about any area, talk to your diabetes health care team. They are always available to help.

Name _____	Age _____	Month/Year Completed _____
---------------	--------------	-------------------------------

1 PART ONE

DIABETES MANAGEMENT



a) Blood Glucose Monitoring

Knowledge/Skill	Got it Covered 🌟	Need Update 🤔	Not Applicable
Using my blood glucose (BG) meter			
Taking care of my meter			
Comparing my meter reading with the lab result			
Recording my BG/uploading BG from meter			
Looking for patterns of high or low readings			
Taking appropriate action if glucose is high or low			



b) Insulin Management

Knowledge/Skill	Got it Covered 🌟	Need Update 🤔	Not Applicable
Identifying my insulin(s) name/type			
Stating the action/timing of my insulin(s)			
Using and rotating appropriate injection sites			
Using proper injection technique			
Using the following injection devices (circle which one applies): <ul style="list-style-type: none"> - Insulin Pen - Syringes - Pump 			
Knowing what to do if my insulin pump stops working			
Adjusting my insulin/figuring out correction doses			
Uploading pump data to computer			
Safely disposing of my needles and sharps			
Proper storage of insulin			



c) **Nutrition**

Knowledge/Skill	Got it Covered 	Need Update 	Not Applicable
Eat healthy balanced meals/snacks			
Spacing my meals and snacks			
Measuring food portions			
Carbohydrate counting			
Adjusting insulin for the grams of carbohydrate that I eat			
Making appropriate food choices when eating out			
Using food references (booklets, online databases, mobile apps, etc.)			



d) **Physical Activity/Exercise**

Knowledge/Skill	Got it Covered 	Need Update 	Not Applicable
Benefits of physical activity			
Effect of different types of exercise on my BG			
Adjusting insulin/food for extra activity			
Monitoring BG before, during, and after exercise and know what to do with results			

SHORT TERM COMPLICATIONSe) **Hypoglycemia**

Knowledge/Skill	Got it Covered 	Need Update 	Not Applicable
Identifying signs and symptoms of a low BG			
Identifying causes of a low BG			
Appropriately treating a low BG			
What to carry with me to treat a low BG			
Why I need to wear a medic-alert ID or other identification			
What glucagon is used for/expiry date			
Dangers of driving with a low BG and how to avoid this			
What it means to have hypoglycemia unawareness			

f) **Sick Day Management**

Knowledge/Skill	Got it Covered 	Need Update 	Not Applicable
How often to check my BG when I am sick			
When to take my insulin when I am sick			
How to adjust my insulin and food when I am sick			
Why I should drink lots of water and glucose-free drinks			
When and how to check for ketones			
What to do to prevent diabetic ketoacidosis (DKA)			
When to call my diabetes care team			

Appendix C: Moving on...with Diabetes Adolescent Knowledge & Skills Checklist (Part 2)



To be completed by the adolescent/young adult

Use this checklist to help you evaluate your knowledge and skill level in managing your diabetes. It will help you to identify those areas where new information or a review is needed. If you have questions about any area, talk to your diabetes health care team. They are always available to help.

Name _____	Age _____	Month/Year Completed _____
---------------	--------------	-------------------------------

2 PART TWO



LIVING WITH DIABETES

a) Lifestyle

Knowledge/Skill	Got it Covered 	Need Update 	Not Applicable
Sexual Health and Birth Control			
Planned Pregnancy			
Smoking and Diabetes			
Alcohol and Diabetes			
Drug Use and Diabetes			
Dating and Diabetes			
Travel and Diabetes			
Driving and Diabetes			
Eating Disorders and Diabetes			
Depression/Anxiety and Diabetes			



TAKING RESPONSIBILITY FOR MY HEALTH CARE

b) Routine Follow-Up

Knowledge/Skill	Got it Covered 	Need Update 	Not Applicable
Making and Keeping Appointments			
Flu Vaccine and Other Immunizations			
Filling Prescriptions/Who Can Renew Prescriptions			
Ordering Diabetes Supplies			
Drug Plans and Tax Credits			
Insurances			
Contacting Other Health Care Professionals/Resource People			

LIVING ON MY OWN

c) Living On My Own



Knowledge/Skill	Got it Covered 	Need Update 	Not Applicable
Grocery Shopping			
Cooking/M meal Preparation			
University/College Life			
Apartment/Residence Living			
Finances and Budgeting			
Finding Reliable Diabetes Information/Resources			
Emergency Situation/Contact #s			

If there are things you are confused/unsure about, make a list below; talk to your diabetes health care team.

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Appendix D: Wallet Card

Folds into a wallet card

 	<p>EMERGENCY CONTACTS</p> <p>Emergency Contact 1: _____ Phone #: _____</p> <p>Emergency Contact 2: _____ Phone #: _____</p> <p>Emergency Contact 3: _____ Phone #: _____</p>
<p>R E M E M B E R</p> <ul style="list-style-type: none"> • Taking care of your diabetes is important. • Check your blood glucose levels regularly. • Carry supplies to treat a low blood glucose. • Keep in touch with your diabetes health care team. • Be prepared - have a sick day plan and supplies. 	<p>NEAREST HOSPITALS AND CLINICS</p> <p>Local Hospital: _____ Phone #: _____</p> <p>College/University Hlth Ctr: _____ Phone #: _____</p> <p>Walk-in Clinic: _____ Phone #: _____</p>
	<p>PHYSICIANS AND DIABETES CENTRE</p> <p>Specialist Physician: _____ Phone #: _____</p> <p>Family Physician: _____ Phone #: _____</p> <p>Diabetes Centre: _____ Phone #: _____</p>
<p>“MOVING ON...WITH DIABETES”</p> <p>IMPORTANT CONTACTS</p> <p>NAME:</p>	<p>PHARMACIES</p> <p>Nearest Pharmacy: _____ Phone #: _____</p> <p>Home Pharmacy: _____ Phone #: _____</p> <p>24-Hour Pharmacy: _____ Phone #: _____</p>

To obtain copies of the wallet card, please contact your local Diabetes Centre or the Diabetes Care Program of Nova Scotia (info@dcps.nshealth.ca).

Appendix E: Sample Letter to Roommate

When you head off to school, you don't need to tell everyone you have type 1 diabetes. However, some key people need to know: health services, of course, and also your roommate, the resident assistant (RA), and a few close friends. A medical ID and a list of contacts are very important in case of emergencies. Below is a sample letter to a new college roommate, provided by a Juvenile Diabetes Research Foundation volunteer whose daughter has type 1 diabetes. It can also be adapted for the RA.

Dear Roommate:

I am letting you and a few other people around me know that I have type 1 diabetes. Please understand that I do not want or need to be treated differently because of my diabetes, but there are some things I'd like you to know about the condition. Usually, my type 1 diabetes is under control; but sometimes my blood glucose gets too low or too high, which can endanger my health. To keep that from happening, I have to do certain things like test my blood glucose and wear an insulin pump/give myself insulin shots. It may help you to understand if I first tell you a little about diabetes.

First of all, please know that type 1 diabetes is not contagious. Diabetes is a medical condition. When a person eats a meal, the food is broken down into different substances, is absorbed, and enters the bloodstream. One of these substances is glucose, a sugar. The body cannot function without glucose. In turn, the body cannot use glucose without insulin, which is produced by the pancreas. My pancreas, like that of other people with type 1 diabetes, doesn't produce insulin, so I have to take insulin shots every day. It's mainly insulin, exercise, food, and stress that cause my blood glucose to go up or down. I do not expect you to have to take care of me, but I do sometimes have low blood glucose or insulin reactions, which might confuse or scare you if you don't understand what's happening.

During a reaction, for no apparent reason, you may notice a sudden onset of confusion, moodiness, irritability, incoherence, shakiness, and/or glassy stare. I usually know when my glucose is getting low and can avoid a reaction, but not always. If the low blood glucose persists too long, I may seem sleepy and withdrawn. At these times, I need to drink a sugared drink or eat something from my "low blood glucose food stash" right away. I may not be able to get it myself, so I would appreciate your help, even if I resist. If you don't feel comfortable with that please call the RA or Health Services to help me. If possible, don't leave me alone. Once I have some sugar, I should seem much better within 10-15 minutes. If not, try giving me more food and call one of my contacts listed below. Low blood glucose can be life threatening to me, so my food stash is like my "medicine" and needs to be kept separate from the food we can share.

Appendix E: Sample Letter to Roommate (cont)

If you feel uncomfortable about being around the shots and finger pricks, or keeping an eye open for emergencies, I'm happy to talk with you about it. My type 1 diabetes is totally familiar to me, but I realize it may take a little time and experience for you to adjust. Believe it or not, in spite of all the challenges that come with diabetes, I am able to lead a pretty "normal" everyday life. Most people won't even know that I have diabetes unless I tell them. I'm sure you have lots of questions, so let's set a time to talk.

Thanks,

(Signature)

.....

Adapted from: Juvenile Diabetes Research Foundation (JDRF). *Letter to a College Roommate*. Available at: www.jdrf.org/index.cfm?page_id=103664. Accessed June 2013.

Appendix F: Shopping List of Healthy Food Choices

Use this list to make shopping for healthy choices a little easier.

Vegetables (fresh, frozen, or canned)

- | | | |
|------------------------------------|--|--|
| <input type="checkbox"/> Broccoli | <input type="checkbox"/> Green/Yellow beans | <input type="checkbox"/> Spinach |
| <input type="checkbox"/> Cabbage | <input type="checkbox"/> Lettuce for salads (romaine, iceberg) | <input type="checkbox"/> Tomatoes |
| <input type="checkbox"/> Carrots | <input type="checkbox"/> Peppers | <input type="checkbox"/> Turnip |
| <input type="checkbox"/> Celery | <input type="checkbox"/> Potatoes (sweet, white, and gold) | <input type="checkbox"/> Winter squash |
| <input type="checkbox"/> Cucumbers | <input type="checkbox"/> Salad Bags | |

Fruits (fresh or dried)

- | | | | | | |
|-----------------------------------|----------------------------------|-------------------------------------|----------------------------------|------------------------------------|----------------------------------|
| <input type="checkbox"/> Apples | <input type="checkbox"/> Bananas | <input type="checkbox"/> Grapefruit | <input type="checkbox"/> Melon | <input type="checkbox"/> Pears | <input type="checkbox"/> Prunes |
| <input type="checkbox"/> Apricots | <input type="checkbox"/> Berries | <input type="checkbox"/> Grapes | <input type="checkbox"/> Oranges | <input type="checkbox"/> Pineapple | <input type="checkbox"/> Raisins |
| <input type="checkbox"/> Avocado | <input type="checkbox"/> Figs | <input type="checkbox"/> Kiwi | <input type="checkbox"/> Peaches | <input type="checkbox"/> Plums | |

Milk and Alternates

- | | |
|---|--|
| <input type="checkbox"/> Cheese (light or partly skimmed) | <input type="checkbox"/> Soy milk (8 g of protein per serving and light, low fat, or fat-free) |
| <input type="checkbox"/> Cottage cheese (low fat or fat-free) | <input type="checkbox"/> Sour cream (non fat, low fat) |
| <input type="checkbox"/> Milk (cow's milk: skim, 1%, 2%) | <input type="checkbox"/> Yogurt (less than 2% milk fat [MF]) |

Frozen Foods

- ☐ Frozen dinners (less than 4 g saturated fat and less than 700 mg sodium per serving)
- ☐ Frozen fruits (unsweetened)
- ☐ Frozen vegetables (plain)
- ☐ Frozen yogurt (low fat)

Fish, Poultry, and Lean Meat, and Alternates

- | | |
|--|--|
| <input type="checkbox"/> Beans (chickpeas, black, navy, and kidney - canned or cooked) | <input type="checkbox"/> Nuts (almonds, walnuts, etc.) |
| <input type="checkbox"/> Beef (lean or extra lean) | <input type="checkbox"/> Peanut butter and Almond butter |
| <input type="checkbox"/> Chicken (not breaded or battered) | <input type="checkbox"/> Pork (lean) |
| <input type="checkbox"/> Eggs | <input type="checkbox"/> Seeds (pumpkin, sunflower, ground flax, etc.) |
| <input type="checkbox"/> Fish (fresh, frozen, or canned; not breaded or battered) | <input type="checkbox"/> Tofu |
| <input type="checkbox"/> Hummus | <input type="checkbox"/> Turkey breast |
| <input type="checkbox"/> Lentils (canned or cooked) Pork (lean) | |

(see other side)

Appendix F: Shopping List of Healthy Food Choices (cont)

Cereal and grains	
<input type="checkbox"/> Oatmeal	<input type="checkbox"/> Barley
<input type="checkbox"/> Popcorn (light)	<input type="checkbox"/> Brown/wild rice
<input type="checkbox"/> Whole wheat english muffins	<input type="checkbox"/> Couscous
<input type="checkbox"/> Whole wheat pasta	<input type="checkbox"/> Millet
<input type="checkbox"/> Whole wheat tortillas and pitas	<input type="checkbox"/> Quinoa
<input type="checkbox"/> High fibre crackers (free of trans fats and free of hydrogenated vegetable oil)	
<input type="checkbox"/> Whole grain bread (at least 2 g of fibre per slice)	
<input type="checkbox"/> Whole grain cereal (at least 3 g fiber and less than 10 g sugar per serving)	
Canned foods	
<input type="checkbox"/> Beans (baked, chick peas, kidney beans, lentils)	<input type="checkbox"/> Pasta sauce
<input type="checkbox"/> Fish in water (tuna, salmon, clams)	<input type="checkbox"/> Tomatoes (sauce, paste, soup)
<input type="checkbox"/> Fruit in water or light syrup	
<input type="checkbox"/> Soup (less than 2 g saturated fat and no more than 500 mg per 250 mL serving)	
Other foods	
<input type="checkbox"/> Granola & cereal bars (should list oats or whole wheat as a first ingredient. At least 2 g fibre and no more than 2 g saturated plus trans fat combined. Avoid sugary coatings such as chocolate and yogurt.	<input type="checkbox"/> Herbs and Spices
	<input type="checkbox"/> Raisins
Fats	
<input type="checkbox"/> Margarine (non hydrogenated)	<input type="checkbox"/> Olive or canola oil
<input type="checkbox"/> Mayonnaise (light)	<input type="checkbox"/> Salad dressing (light)
Condiments	
<input type="checkbox"/> Jam (no sugar added)	<input type="checkbox"/> Soy sauce
<input type="checkbox"/> Ketchup	<input type="checkbox"/> Vinegar

Appendix G: Ideas for Healthy Meals & Snacks

Breakfast Ideas

- Make oatmeal with quick-cooking oats and a tablespoon (tbsp) each of wheat germ or wheat bran and dried raisins. Sprinkle with cinnamon and serve with a glass of milk.
- Have a whole grain, high-fibre cereal served with milk and orange sections or another fruit.
- Scramble some eggs in the microwave and roll them up in a whole wheat tortilla with shredded cheese, green peppers, and hot sauce or salsa.
- Have half a whole wheat bagel with a poached egg or 1 tbsp of peanut butter and some tomato juice.
- In a hurry? Take a small homemade wheat bran or oatmeal muffin with a container of juice and a piece of cheese. Avoid buying large commercial muffins that can be higher in fat or sugar and calories!

Lunch Ideas

- Microwave leftover pasta, stir-fry with rice, chili, stew, or casseroles for a quick fix. Enjoy with a glass of milk or fortified soy beverage and a piece of fruit.
- Take mixed salad greens and toss with fresh or grilled chopped vegetables, cheese, and 1 tbsp of dressing. Serve with whole grain bread or put in a pita.
- Try black bean, tomato with lentils, squash, carrot, cauliflower, or broccoli soup. Enjoy soup with half of a whole wheat bagel and a slice of cheese.
- Make up tuna, salmon, or egg salad; wrap in a whole wheat tortilla with lettuce, grated carrot, and peppers. Enjoy with a glass of fortified soy beverage or a container of yogurt.
- Have hummus and dip with whole wheat pita bread, baby carrots, and sliced peppers. Enjoy with cut up melon and a glass of milk.

(see other side)

Appendix G: Ideas for Healthy Meals & Snacks (cont)

Supper Ideas

- **Presto pasta!** Brown some onions and garlic in a large skillet. Add canned or bottled tomato-based pasta sauce and canned drained lentils or clams. Serve over pasta or couscous. A tossed green salad and glass of milk or fortified soy beverage completes the meal.
- **Steamed fish dish!** Place fish in a steamer over a pot of boiling water, add cut up broccoli, green beans, or asparagus. Cover and cook for 5 to 6 minutes or until fish flakes easily with a fork. Serve with brown rice.
- **Hot and spicy!** Cook boneless chicken strips in a skillet until juices run clear and meat is browned. Add sliced carrots and red peppers and cook until soft. Add raisins and curry paste to taste and a bit of water and heat through. Serve with couscous or rice.
- **Fast chili!** Brown lean ground beef; drain off the fat. Add chopped onions and green peppers, and sauté for several minutes. Stir in a large can of stewed tomatoes, one can of tomato soup, one large can of kidney beans and 15 mL (1 tbsp) of chili powder. Serve with whole grain toast.
- **Easy omelettes!** Choose your own fillings - ham, cheese, peppers, green onions, etc. Spice it up with salsa or hot sauce. Serve with whole grain bagels or toast. Have fruit for dessert.

Healthy Snack Ideas

- Low-fat yogurt (3/4 cup or 175 mL) with fruit (1/2 cup or 125 mL)
- Homemade trail mix (1/4 cup or 60 mL mini shredded wheat, 2 tbsp or 30 mL of dried cranberries and 2 tbsp or 30 mL of almonds)
- Melba toast (2) with peanut butter (1 tbsp or 15 mL)
- Celery/carrot sticks with hummus (1/4 cup or 60 mL)
- High fibre crisp breads (2) with partly skimmed mozzarella cheese (28 g)
- Skim milk (1 cup or 250 mL) with graham crackers (3)

Appendix H: DKA Prevention When On An Insulin Pump

Insulin pumps use only rapid-acting insulin. If the pump or pump site fails, there is no insulin delivery; and the blood glucose will rise quickly. Ketones can develop within 4 to 6 hours. As ketones rise, there is a risk of Diabetic Ketoacidosis (DKA).

Symptoms of DKA include:

- Stomach cramps
- Nausea
- Vomiting
- Tiredness
- Fruity smell to the breath

By testing for ketones as soon as the blood glucose rises, extra insulin can be given to avoid DKA.

Blood glucose over 14 with low or no ketones (urine ketones small or blood ketones lower than 0.6)	Blood glucose over 14 with ketones (urine ketones moderate or large or blood ketones higher than 0.6)
<ul style="list-style-type: none"> Determine insulin correction using your ISF or Correction Factor. If you use the Ez bolus (Animas), Bolus Wizard (Medtronic), or Bolus Calculator (Omnipod), you would use this to determine the dose. Give insulin using pump. Re-test blood glucose and ketones after 2 hours. If blood glucose has not decreased by at least 3.0 points on your meter or ketones are present or have increased, follow the steps for blood glucose over 14 with moderate or large urine ketones. 	<ul style="list-style-type: none"> Extra insulin must be given using INSULIN SYRINGE OR PEN. Determine insulin dose using ISF or Correction Factor If you use the Ez bolus (Animas), Bolus Wizard (Medtronic), or Bolus Calculator (Omnipod), you can use this to determine the dose. Give 1.5 times the usual correction dose using insulin syringe or pen. Example: Blood glucose target of 7. Correction factor is 2.0, blood glucose is 21.0 mmol/L, and blood ketones are 2.0 $21 - 7 = 14$ $14 \div 2 = 7 \text{ u}$ $7 \times 1.5 = 10.5 \text{ u}$ (if you do not have a ½ u pen, give either 10 u or 11 u) Once you have given the insulin by pen or syringe, change the pump site. Continue testing for ketones and giving insulin as above every 2 hours until ketones are negative. Call the Diabetes Centre if ketones do not improve.

Tips for Preventing DKA on an Insulin Pump

- Change the infusion site at least every 3 days. If there is an increase in the blood glucose before each scheduled site change, then change the site sooner.
- If you are correcting blood glucose using the pump and the blood glucose does not decrease as you would expect, this may mean that the site is failing. Give the next correction using a pen or syringe. The pump site should then be changed.
- If blood glucose is high, always re-test blood glucose after 2 hours to ensure that the correction has worked.
- Never go to bed with an elevated blood glucose without testing for ketones or a plan for re-testing during the night.
- Make sure that you have current basal, insulin-to-carbohydrate ratios, correction factor (ISF), target blood glucose, and average total daily insulin recorded in a safe place. These are needed to calculate the dose of basal insulin while off the pump.

Elevated blood glucose with vomiting can be a sign of impending DKA.

For high ketones with vomiting or fast breathing, call your Diabetes Centre or go to the hospital.

Source: Diabetes Care Program of Nova Scotia. *Insulin Pump Initiation for Children and Youth in Nova Scotia Diabetes Centres: Standardized Process with Patient and Provider Tools* (2012). Halifax, NS: Author; 2012.

Appendix I: Insulin Pump Failure or Temporary Interruption

If your insulin pump fails or you choose to switch to injections for a day or more, it is important to have a plan in place to manage your diabetes injections.

Pump failure or loss of the pump can happen at any time and having a plan in place will prevent interruption in your diabetes management. Your plan for pump interruption or failure is as follows:

1. If the pump fails, you must **call the 1-800 number on the back of your insulin pump to arrange a replacement pump**. All insulin pump suppliers have a 24-hour help line to assist you in getting a replacement insulin pump. Be sure to ask when they expect to have the new pump delivered to you.
2. **You must have your current basal rates, insulin-to-carbohydrate (carb) ratios, correction factor/insulin sensitivity factor (ISF), and target blood glucose (BG) recorded in a safe place.** You may not be able to retrieve this information from the pump if it fails or is lost. This information is necessary to determine your insulin doses off the pump and to reprogram a replacement pump.
3. Remember to **check for ketones if your BG is 14.0 mmol/L or higher**.
4. **Determine your insulin doses off the pump using the appropriate guidelines.** The guidelines you follow will depend on:
 - a) If your new pump will be delivered the **same day** (see below)
 - OR**
 - b) If it will take longer than 1 day for your new pump to arrive or you plan to stop the pump for 24 hours or longer (see other side).

PUMP RESTART THE SAME DAY

To replace basal insulin:

Use rapid-acting insulin (Humalog®, NovoRapid®, or Apidra®) by syringe or insulin pen to replace the basal insulin every 3 hours.

Example: Basal rate is 0.6 u/hour from 8 a.m. to 11 a.m. = 0.6 u/hour x 3 hours = 1.8 u (round to 2 units)

To replace the meal insulin:

Replace the meal insulin using your insulin-to-carb ratio as you would have used for each meal by insulin pump.

Example: 1 u of insulin for each 30 g of carbs (1:30). If eating 90 g of carbs, $90 \div 30 = 3$ u of rapid-acting insulin.

To correct high BG:

To correct a high BG, give the same amount of correction you would have given by the insulin pump.

Example: BG target is 7 mmol/L and correction factor/ISF is 4. BG is 20 mmol/L, so the correction would be $(20 - 7) \div 4 = 3.25$ u (round down to 3 units) of rapid-acting insulin.

From the examples above, you would give:

2 u for basal replacement
 + 3 u for meal insulin
 + 3 u to correct high BG
= 8 u of insulin in total for 8 a.m. injection

Additional Guidelines:

- If in 3 hours there is no meal, then replace the basal for the next 3 hours; and correct for high BG if needed. Continue every 3 hours until the pump is restarted.
- Wait 3 hours after the last injection before starting your pump's basal rates (may use temporary basal of 0%).

(see other side)

PUMP DELIVERY OR PLAN TO STOP THE PUMP FOR LONGER THAN ONE DAY**To replace the meal insulin:**

- Follow guideline to replace meal insulin for “Pump Restart the Same Day” on previous page.

To correct high blood glucose (BG):

- Follow guideline to correct a high BG for “Pump Restart the Same Day” on previous page.

To replace basal insulin using Humulin® N, Novolin® NPH, or Levemir® (see box at bottom of page for information re: Lantus®):

Overnight Basal

- You can replace the nighttime basal using Humulin® N, Novolin® NPH, or Levemir®.
- **If using this method, you do not need to replace overnight basal with rapid-acting insulin (Humalog®, NovoRapid®, or Apidra®).**
- Calculate the overnight basal rates from **10 p.m. to 8 a.m.**

Example:	10 p.m. to 3 a.m. is 0.4 u/hour	=	0.4 u/hour x 5 hours	=	2.0 u
	3 a.m. to 7 a.m. is 0.5 u/hour	=	0.5 u/hour x 4 hours	=	2.0 u
	7 a.m. to 8 a.m. is 0.6 u/hour	=	0.6 u/hour x 1 hour	=	0.6 u
	Total units for overnight			=	4.6 u

Using this example, the replacement would be 5 u of Humulin® N, Novolin® NPH, or Levemir®

Daytime and Evening Basal

- You will still need to replace the daytime and evening basal with rapid-acting insulin (Humalog®, NovoRapid®, or Apidra®) every 3 hours.
- Calculate the missed basal for the next 3 hours and replace that amount. Repeat every 3 hours during the day and evening (**8 a.m. to 10 p.m.**).
- If you will be off your pump for more than 2 or 3 days, contact the Diabetes Centre for advice about using daytime Humulin® N, Novolin® NPH, or Levemir®.

Example: Starting at 8 a.m., calculate the missed basal for 3 hours.
8 a.m. to 11 a.m. = **0.7 u/hour x 3 hours** = **2.1 u**

Using this example, give 2 u of Humalog®, NovoRapid®, or Apidra® at 8 a.m. and recalculate the next missed basal at 11 a.m. for the next 3 hours.

- You can restart your new pump during the day; 3 hours after the last rapid-acting injection was given.
- Frequent blood glucose monitoring is essential to be safe and to guide you.

To replace the basal insulin using Lantus®:

- Calculate the basal rates for 24 hours. Give this dose as Lantus® at time of pump failure and repeat every 24 hours.
- You will need to use rapid-acting insulin for meal insulin and BG corrections.
- **If using long-acting insulin (Lantus®), you must wait 24 hours from when it was given before starting your pump's basal rates.**

Source: Diabetes Care Program of Nova Scotia. *Insulin Pump Initiation for Children and Youth in Nova Scotia Diabetes Centres: Standardized Process with Patient and Provider Tools* (2012). Halifax, NS: Author; 2012.

Appendix J: Transitioning Out of Province

What an exciting time - moving to a different province for university, community college, or a job! Moving away from home and all the familiar things and people can be exciting and a little scary all at the same time. We want to make sure you are prepared, especially about the things you need to think about for your diabetes self-care.

Tips to Help You Live Independently

- Write down important contact names and numbers (*see Appendix D: Wallet Card, page 139*).
- Think about what you would do if you needed something after hours, where do you turn? (*See Appendix D: Wallet Card, page 139*)
- Be prepared – have a copy of your **Sick Day Plan** and supplies on hand.
- Have a list of all your diabetes supplies and make sure you have the extra supplies you may need to prevent running out unexpectedly; e.g., pump supplies.
- Have a “low blood glucose food stash” and keep it in a safe place. Let others know why and what it is for.
- Think about who you want to tell about your diabetes so you feel safe knowing you have help when needed – a roommate, new friends, your employer, etc.
- Refer to your *Moving on...with Diabetes: A Youth in Transition Handbook*, as it contains helpful information for young adults living with diabetes.
- Find out what other resources you could access such as local Canadian Diabetes Association branches and local support groups.

Moving/Living Out of Province Checklist

- ☐ Health Card
- ☐ Wallet Card (list of important contacts)
- ☐ Sick Day Plan and Supplies
- ☐ List of Diabetes Supplies and Prescription
- ☐ *Moving on...with Diabetes: A Youth in Transition Handbook*

Adapted from: The Barbara Davis Centre for Childhood Diabetes. Available at: <http://childrensfoundation.org/educ/shopping.html>

Reference List

ADJUSTING INSULIN

- Diabetes Care Program of Nova Scotia (DCPNS). *Insulin Dose Adjustment Policies & Guidelines Manual*. Halifax, NS: DCPNS; 2012.
- Nichol H. *Basal-Bolus Insulin with Multiple Daily Injections*. 2009. BC Children's Hospital website. Available at: www.bcchildrens.ca/NR/rdonlyres/5AF5E6DC-6ED6-4650-876F-98F7F0E38921/40524/basalbolus.pdf. Accessed June 26, 2013.
- Pediatric Diabetes Centre. *Insulin Dose Adjustment*. Halifax, NS: IWK Health Centre; 2005.

APARTMENT/RESIDENCE LIVING

- Juvenile Diabetes Research Foundation (JDRF). *Type 1 Diabetes in College*. 2012. JDRF website. Available at: http://intranet.jdrf.org/index.cfm?page_id=103520. Accessed June 26, 2013.
- Reece R. *Roommate Fact Sheet*. Children with Diabetes Inc. website. Available at: www.childrenwithdiabetes.com/d_0q_422.htm. Accessed June 26, 2013.

BLOOD GLUCOSE MONITORING

- Canadian Diabetes Association Clinical Practice Guidelines Expert Committee. Canadian Diabetes Association 2013 clinical practice guidelines for the prevention and management of diabetes in Canada. *Can J Diabetes*. 2013;37(suppl1):S1-S212.
- Nathan D, Kuenen J, Borg R, Zheng H, Schoenfeld D, Heine R. Translating the A1C assay into estimated average glucose values. *Diabetes Care*. 2008;31(8):1-6.

COMPLEMENTARY/ALTERNATIVE THERAPIES

- National Centre for Complementary and Alternative Medicine. Diabetes and CAM: A Focus on Dietary Supplements. National Institutes of Health website. Available at: <http://nccam.nih.gov/health/diabetes/CAM-and-diabetes.htm>. Accessed June 26, 2013.

COMPLICATIONS

- Canadian Diabetes Association (CDA). *Dental Care*. CDA website. Available at: www.diabetes.ca/diabetes-and-you/living/guidelines/dental-care/. Accessed July 2, 2013.
- Canadian Diabetes Association (CDA). *Foot Care: A Step towards Good Health*. CDA website. Available at: www.diabetes.ca/documents/about-diabetes/112030_08-384_footcare_0413_lc_final.pdf. Accessed June 26, 2013.

Reference List

COMPLICATIONS (cont)

- Canadian Diabetes Association (CDA). *Vision Health*. CDA website. Available at: www.diabetes.ca/diabetes-and-you/living/complications/vision-health/. Accessed June 26, 2013.
- Diabetes Care Program of Nova Scotia (DCPNS). Patient Resources. DCPNS website. Available at: <http://diabetescare.nshealth.ca/guidelines-resources/professionals-and-patients/patients>. Accessed June 26, 2013.
- HealthLinkBC. *Diabetic Nephropathy*. BC Government website. Available at: www.healthlinkbc.ca/kb/content/mini/uf3486.html. Accessed June 26, 2013.
- Markham Stouffville Hospital. Complications & How To Avoid Them. In: Markham Stouffville Hospital *Young Adult Transition Guide*. Markham, Ontario: Markham Stouffville Hospital; 2006:25. Available at: www.wrh.on.ca/webbuild/site/wrh-internet-upload/file_collection/Transition%20guide.pdf. Accessed June 26, 2013.
- Mayo Clinic staff. *Diabetes and Dental Care: Guide to a Healthy Mouth*. Mayo Clinic website. Available at: www.mayoclinic.com/health/diabetes/DA00013. Accessed July 2, 2013.
- TeensHealth from Nemours. *Long-Term Complications of Diabetes*. KidsHealth® website. Available at: http://kidshealth.org/teen/diabetes_center/basics/complications.html. Accessed June 26, 2013.
- The Maestro Project. Virus Alert! *Building Connections: The Maestro Project*. 2007;30:4. Available at: www.maestroproject.com/publications-reports/newsletters/. Accessed June 26, 2013.

DISTRESS, STRESS, ANXIETY, DEPRESSION

- Polonsky WH. *Diabetes Burnout: What To Do When You Can't Take It Anymore*. Alexandria, VA: American Diabetes Association; 1999

DRUG PLANS AND TAX CREDITS

- Canada Revenue Agency. Government of Canada website. Available at: www.cra-arc.gc.ca/ndvdl-fmls/menu-eng.html. Accessed June 26, 2013.
- Nova Scotia Department of Health and Wellness. Nova Scotia Family Pharmacare. Nova Scotia Department of Health and Wellness website. Available at: www.gov.ns.ca/health/pharmacare/. Accessed June 26, 2013.
- Nova Scotia Department of Health and Wellness. Nova Scotia Insulin Pump Program (NSIPP). Nova Scotia Department of Health and Wellness website. Available at: <http://novascotia.ca/dhw/nsipp>. Accessed October 28, 2013.

Reference List

DRUG USE AND DIABETES

- American Diabetes Association (ADA). *Just for Teens*. ADA website. Available at: <http://web.diabetes.org/wizdom/download/JustforTeens.PDF>. Accessed June 26, 2013.
- Australian Diabetes Council. *Risky Business*. Diabeteskidsandteens.com.au website. Available at: www.diabeteskidsandteens.com.au/riskybusiness.html. Accessed June 26, 2013.

GLUCAGON

- American Diabetes Association (ADA). *Diabetes Care Tasks At School: What Key Personnel Need to Know. Glucagon Administration*. ADA website. Available at: www.diabetes.org/living-with-diabetes/parents-and-kids/diabetes-care-at-school/school-staff-trainings/diabetes-care-tasks.html. Accessed June 26, 2013.
- Diabetes Education Resource for Children and Adolescents and Building Connections: The Maestro Project. *Building Connections: A Resource for Young Adults with Type 1 Diabetes*. Winnipeg, MB: Department of Pediatrics and Child Health; 2004. Available at: www.maestroproject.com/wp-content/uploads/2012/09/YAResourceBk.pdf. Accessed June 26, 2013.
- Markham Stouffville Hospital. The Use of Glucagon for Severe Hypoglycemic Reactions. In: Markham Stouffville Hospital *Young Adult Transition Guide*. Markham, Ontario: Markham Stouffville Hospital; 2006:11. Available at: www.wrh.on.ca/webbuild/site/wrh-internet-upload/file_collection/Transition%20guide.pdf. Accessed June 26, 2013.

GROCERY SHOPPING AND MEAL PREPARATION

- TeensHealth from Nemours. *Cooking Tips and Resources*. KidsHealth® website. Available at: http://kidshealth.org/teen/food_fitness/nutrition/whats_cooking.html. Accessed June 26, 2013.

HEALTHY MEALS AND SNACKS

- Health Canada. *Fast and Easy Meal Ideas*. Health Canada website. Available at: www.hc-sc.gc.ca/fn-an/food-guide-aliment/using-utiliser/suggestions-eng.php. Accessed June 26, 2013.
- HealthLinkBC. *Healthy Snacks for Adults*. BC Government website. Available at: www.healthlinkbc.ca/healthfiles/hfile68i.stm. Accessed June 26, 2013.

Reference List

HOW TO FIND CREDIBLE DIABETES INFORMATION

- MedicineNet.com. *Tips: Searching for Credible Health Information in the Internet*. 2004. MedicineNet.com website. Available at: www.medicinenet.com/script/main/art.asp?articlekey=33229. Accessed June 26, 2013.

HOW TO TALK TO YOUR FAMILY DOCTOR/HEALTH CARE TEAM

- Aventis Pharmaceuticals Inc. *Taking Control: How to talk diabetes with your doctor*. Parsippany, NJ: Aventis Pharmaceuticals Inc.; 2000. Available at: <http://health.nv.gov/PDFs/Diabetes/HowToTalk.pdf>. Accessed June 26, 2013.
- Mendosa R. *How to Talk to Your Doctor About Diabetes*. HealingWell.com website. 2002. Available at: www.healingwell.com/library/diabetes/article.asp?author=mendosa&id=2. Accessed June 26, 2013.

HYPOGLYCEMIA

- Bolderman KM. *Putting your Patients on the Pump*. Alexandria, VA: American Diabetes Association; 2003.
- Canadian Diabetes Association Clinical Practice Guidelines Expert Committee. Canadian Diabetes Association 2013 clinical practice guidelines for the prevention and management of diabetes in Canada. *Can J Diabetes*. 2013;37(suppl 1):S1-S212.
- Diabetes Education Resource for Children and Adolescents and Building Connections: The Maestro Project. *Building Connections: A Resource for Young Adults with Type 1 Diabetes*. Winnipeg, MB: Department of Pediatrics and Child Health; 2004. Available at: www.maestroproject.com/wp-content/uploads/2012/09/YAResourceBk.pdf. Accessed June 26, 2013.
- Pictou County Health Authority Diabetes Centres. *Hypoglycemia (Low Blood Sugar)*. New Glasgow, NS: Author; 2007.

INSURANCES

- Canadian Diabetes Association (CDA). *Tips on Travel, Health, and Life Insurance and Diabetes*. CDA website. Available at: www.diabetes.ca/files/tips-insurance-final.pdf. Accessed June 26, 2013.
- Canadian Diabetes Association (CDA). *Youth On It: Youth in Transition Handbook*. Vancouver, BC: CDA; 2002. Available at: http://diabetes.ca/files/YOI_Handbook.pdf. Accessed June 26, 2013.
- Nova Scotia Department of Health and Wellness. Nova Scotia Health Card (MSI). Nova Scotia Department of Health and Wellness website. Available at: www.gov.ns.ca/health/msi/. Accessed June 26, 2013.

Reference List

INTENSIVE DIABETES MANAGEMENT

- Nichol H. *Basal-Bolus Insulin with Multiple Daily Injections: Focus on Children & Youth*. Vancouver, BC: British Columbia's Children's Hospital; 2009. Available at: www.bcchildrens.ca/NR/rdonlyres/5AF5E6DC-6ED6-4650-876F-98F7F0E38921/40524/basalbolus.pdf. Accessed July 26, 2013.
- Pediatric Diabetes Centre. *Insulin Dose Adjustment*. Halifax, NS: IWK Health Centre; 2005.

JOBS AND DIABETES

- Canadian Diabetes Association (CDA). *Diabetes & Shift Work*. CDA website. Available at: www.diabetes.ca/diabetes-and-you/living/guidelines/shiftwork. Accessed June 26, 2013.
- Canadian Diabetes Association (CDA). *FAQs - Diabetes and Employment*. CDA website. Available at: www.diabetes.ca/advocacy/advocacy-engagement/faq/employment/. Accessed June 26, 2013.

KNOW YOUR RIGHTS

- Canadian Diabetes Association (CDA). *FAQs - Diabetes and Human Rights & Discrimination*. CDA website. Available at: www.diabetes.ca/get-involved/helping-you/advocacy/faq/human-rights-discrimination/. Accessed June 26, 2013.
- Canadian Diabetes Association (CDA). *FAQs - Filing a Human Rights Complaint*. CDA website. Available at: www.diabetes.ca/about-us/what/position-statements/discrimination/human-rights/. Accessed June 26, 2013.

PHYSICAL ACTIVITY AND EXERCISE

- Chrisp M. Common recommendations for exercise & type 1 diabetes. *Building Connections: The Maestro Project*. 2008;32:4-5. Available at: www.maestroproject.com/wp-content/uploads/2012/10/32.Mid-Winter.Newsletter.pdf. Accessed June 26, 2013.
- Riddell MC, Perkins BA. Type 1 diabetes and vigorous exercise: applications of exercise physiology to patient management. *Can J Diabetes*. 2006;30(1):63-71. Available at: www.diabetes.ca/files/riddell--final.pdf. Accessed June 26, 2013.

Reference List

PLANNED PREGNANCY

- Canadian Diabetes Association Clinical Practice Guidelines Expert Committee. Canadian Diabetes Association 2013 clinical practice guidelines for the prevention and management of diabetes in Canada. *Can J Diabetes*. 2013;37(suppl1):S1-S212.
- Diabetes Care Program of Nova Scotia. *I Have Diabetes and I Can Have a Healthy Baby! Information for Women with Type 1 or Type 2 Diabetes*. Halifax, NS: Author; 2013.
- Mayo Clinic Staff. *Preparing for pregnancy: When you have diabetes*. Mayo Clinic website. Available at: www.mayoclinic.com/health/pregnancy-and-diabetes/DA00061. Accessed June 26, 2013.
- Public Health Agency of Canada (PHAC). *Folic Acid and Prevention of Neural Tube Defects*. PHAC website. Available at: www.phac-aspc.gc.ca/fa-af/fa-af08-eng.php. Accessed June 26, 2013.
- Women's College Hospital. *Pregnancy with Type 1 or Type 2 Diabetes*. Women's College Hospital website. Available at: www.womenshealthmatters.ca/health-resources/diabetes/pregnancy-and-diabetes/pregnancy-with-type-1-or-type-2-diabetes/. Accessed July 26, 2013.

SEXUALITY AND CONTRACEPTION

- Canadian Diabetes Association (CDA). *Men's Sexual Health*. CDA website. Available at: www.diabetes.ca/diabetes-and-you/living/complications/mens-sexual-health/. Accessed June 26, 2013.
- Women's College Hospital. *Reproductive and Sexual Health*. Women's College Hospital website. Available at: www.womenshealthmatters.ca/health-resources/diabetes/reproductive-and-sexual-health/. Accessed July 26, 2013.

SICK DAY MANAGEMENT

- IWK Health Centre Clinical Nutrition. *Diabetes and Sick Days*. Halifax, NS: IWK Health Centre; 2006.
- Pictou County Health Authority Diabetes Centres. *Sick Day Guidelines: Diabetes*. New Glasgow, NS: Author; 2007.
- The Maestro Project. *Virus Alert! Building Connections: The Maestro Project*. 2007;30:4. Available at: www.maestroproject.com/publications-reports/newsletters/. Accessed June 26, 2013.

Reference List

THREE INJECTIONS A DAY

- Nichol H. *Basal-Bolus Insulin with Multiple Daily Injections*. 2009. BC Children's Hospital website. Available at: www.bcchildrens.ca/NR/rdonlyres/5AF5E6DC-6ED6-4650-876F-98F7F0E38921/40524/basalbolus.pdf. Accessed June 26, 2013.
- Pediatric Diabetes Centre. *Insulin Dose Adjustment*. Halifax, NS: IWK Health Centre; 2005.

TO TELL OR NOT TO TELL

- Canadian Diabetes Association (CDA). *FAQs - Diabetes and Employment*. CDA website. Available at: www.diabetes.ca/get-involved/helping-you/advocacy/faq/employment/. Accessed June 26, 2013.
- Canadian Diabetes Association (CDA). *Diabetes & Shiftwork*. CDA website. Available at: www.diabetes.ca/diabetes-and-you/living/guidelines/shiftwork/. Accessed June 26, 2013.

UNIVERSITY LIFE

- Mellinger DC. Preparing students with diabetes for life at college. *Diabetes Care*. 2003;26(2):3675-78.
- Student Affairs Counseling Services. *Tips for Adjusting to University Life and Resources at the Counseling Services*. University at Buffalo website. Available at: <http://ub-counseling.buffalo.edu/adjusting.shtml>. Accessed June 26, 2013.

Notes

