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# **HEALTH AUTHORITY INSULIN PUMP THERAPY POLICY**

**Part 1: Expectations of an Nova Scotia Insulin Pump Program  
(NSIPP)-Approved Diabetes Centre**

**Part 2: Safe Management of Insulin Pump Patients**

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DEVELOPED BY: THE NSIPP CLINICAL AND INFRASTRUCTURE WORKING GROUP (JUNE 2014)



## HEALTH AUTHORITY INSULIN PUMP THERAPY POLICY

Insulin pump therapy is growing in prevalence in Nova Scotia. The Nova Scotia Insulin Pump Program (NSIPP), launched on Sept. 16, 2013, and expanded in 2015, provides funding support to children and young adults up to and including age 25 years for insulin pump and/or pump supplies. Funding support is based on need (family income and size) for individuals who meet established medical eligibility criteria. For more information on the NSIPP, visit: <http://novascotia.ca/DHW/insulin-pump-program.asp>. It is currently estimated that 35-45% of those ≤ age 25 years use insulin pump therapy, with expectations that it may grow to as high as 75%. With growing pump use, health care providers in hospital and emergency settings will see increasing numbers of individuals using pump therapy.

This policy is designed to assist Health Authority/Management Zone personnel in understanding the expectations of NSIPP-approved Diabetes Centres (Part I); and for non-diabetes specialists, how to manage pump patients safely in and around hospital (Part II). (*Note: If a Health Authority Management Zone does not have an NSIPP-approved Diabetes Centre, referrals to an approved site are expected; and the safety guidelines in Part II still apply for HA-Zone-specific facilities.*)

### PART I: EXPECTATIONS OF AN NSIPP-APPROVED DIABETES CENTRE

For persons with type 1 diabetes (and their guardian/family members, where applicable) seeking access to benefits offered under the Nova Scotia Insulin Pump Program (NSIPP), note Zone Facility here will ensure:

- The Diabetes Centre(s) meets the requirements of an NSIPP-approved site (see PART 1: APPENDIX A), including, among others, a full-time operation with 24-hour on-call service for specified periods of time; formalized access to diabetes specialist physician(s); an adequate staffing mix of experienced and pump-qualified certified diabetes educators; a structured pump assessment and education program; and sufficient exposure to the specific pump population to maintain staff expertise and competency. (*Note: NSIPP sites serving patients under 16 years of age must have a system for newly diagnosed children with type 1 diabetes to support diabetes education and 24-hour on-call services at diagnosis.*)
- The insulin pump initiation process offered through the Diabetes Centre(s) follows the Process Pathway for Insulin Pump Initiation set out by the Diabetes Care Program of Nova Scotia (see PART 1: APPENDIX B).
- The diabetes health care team members in an NSIPP-approved Diabetes Centre must not accept compensation from pump vendors in support of NSIPP insulin pump initiation and follow-up services.
- The NSIPP Medical Eligibility Criteria (see PART 1: APPENDIX C) is used as the foundation for assessing and recommending safe pump initiation and follow-up for all pump candidates.
- Applicable NSIPP forms are completed and forwarded to the NSIPP Coordinator in a timely manner.
- Reporting to the NSIPP/DCPNS is conducted on a regular basis, as required for accountability purposes, including annual completion of the Diabetes Centre Requirements Self-assessment Form (see PART 1: APPENDIX D).
- Suggestions for improvement and revision to existing NSIPP procedures, protocols, and processes will be collated and provided to the NSIPP/DCPNS on a regular basis.
- Support for periodic site visits by the Diabetes Care Program of Nova Scotia to review NSIPP processes and documentation.
- The Diabetes Centre has the capacity to complete annual renewals/reassessments for their NSIPP patient population.

**Note:** For all persons with type 1 or 2 diabetes considering/initiating insulin pump therapy, it is expected that the same processes used for the NSIPP (including the medical eligibility) will apply to ensure safe and successful pumping.



## **PART 1: APPENDICIES**

- Appendix A: NSIPP-Approved Diabetes Centre Requirements
- Appendix B: Process Pathway for Insulin Pump Initiation (Children & Youth < Age 19 years)
- Appendix C: Medical Eligibility
- Appendix D: NSIPP-Approved Diabetes Centre Site Self-Assessment



## PART 1: APPENDIX A



Diabetes Care  
Program of Nova Scotia



### NSIPP-Approved Diabetes Centre Requirements

- **NSHA/Management Zone/IWK Policy** for initiation/follow-up care for insulin pump patients. This policy would name the site or sites that offer the service and help ensure that management/physicians and other applicable care providers were engaged in the planning. This will also promote discussion and understanding of available/required resources. This policy could also guide the hospital staff if youth/family present to the Emergency Department or inpatient areas; e.g., consult Diabetes Centre; hold pump therapy if family not available to room-in/patient not able to manage pump; switch to multiple daily injections, etc. The DCPNS will provide a draft template that can be populated at the NSHA/Management Zone/IWK-level.
- **Full-time Diabetes Centre**
  - Policy for 24-hour on-call service for the pediatric population (new type 1 diagnosis and pump initiation) of clinic service (at least 5 to 7 days post pump initiation/7-14 days post new diagnosis).
- **\*Paediatrician or Diabetes Specialist** (for older youth/young adults) within the Diabetes Centre or committed link to the Paediatrician/Diabetes Specialist, **with expertise in pump therapy**, who supports the patient/family/team through the initiation process (including trouble shooting, back-up contact, dose adjustment in case of crisis management, etc.). Diabetes Centre staff will ensure follow-up communication (by phone, fax, or face-to-face) with the Paediatrician or Diabetes Specialist, within the first 5-7 days of initiating therapy. This communication will include a review of the pump progress, blood glucose values, planned treatment changes, etc. A follow-up appointment with the Paediatrician or Diabetes Specialist will occur within 1 to 4 weeks of initiating therapy, or as required.
- **Staffing complement:**
  - **Diabetes Educator team** (CDEs—RN & RD) with expertise in insulin pump therapy and pediatric/youth/young adult type 1 diabetes care. In the absence of the CDE designation, 3-5 years of direct, intensive diabetes expertise accompanied by supporting documentation from the Program Manager will be considered. At least one member of the core (two-member) team must be a CDE.
  - Clerical support to assist with appointment schedules, data capture, and correspondence/reporting.
  - **Access to mental health therapist/social worker is preferred** (with a defined referral process).
- **Staff training/expertise:**
  - RN & RD certified in **DCPNS Insulin Dose Adjustment** (basic and specialty).
  - **A minimum of 2 certified pump trainers** (in programs with a single RN & RD team, both should certify). This will ensure coverage for vacations, staff absences, and to provide appropriate support during on-call coverage. In areas where more than one DC has been recognized as an NSIPP-approved site, consideration will be given to cross-facility coverage for specific pumps.
  - Pump trainers **hold or are working toward certificates from each of the two pump vendors**.
- Able to **provide a structured assessment/education program for insulin pump therapy** initiation, inclusive of the DCPNS recommended processes, tools/resources, and videos.
- **Actively following type 1 diabetes pump and non-pump patients\***
  - **For pediatric programs:** initiating, at a minimum, 3-5 pumps per year (for ages < 19 years) and providing follow-up to at least 10 pump patients.
  - **For young adult/adult programs:** initiating, at a minimum, 3-5 pumps per year (any age) and providing follow-up to at least 10 pump patients.

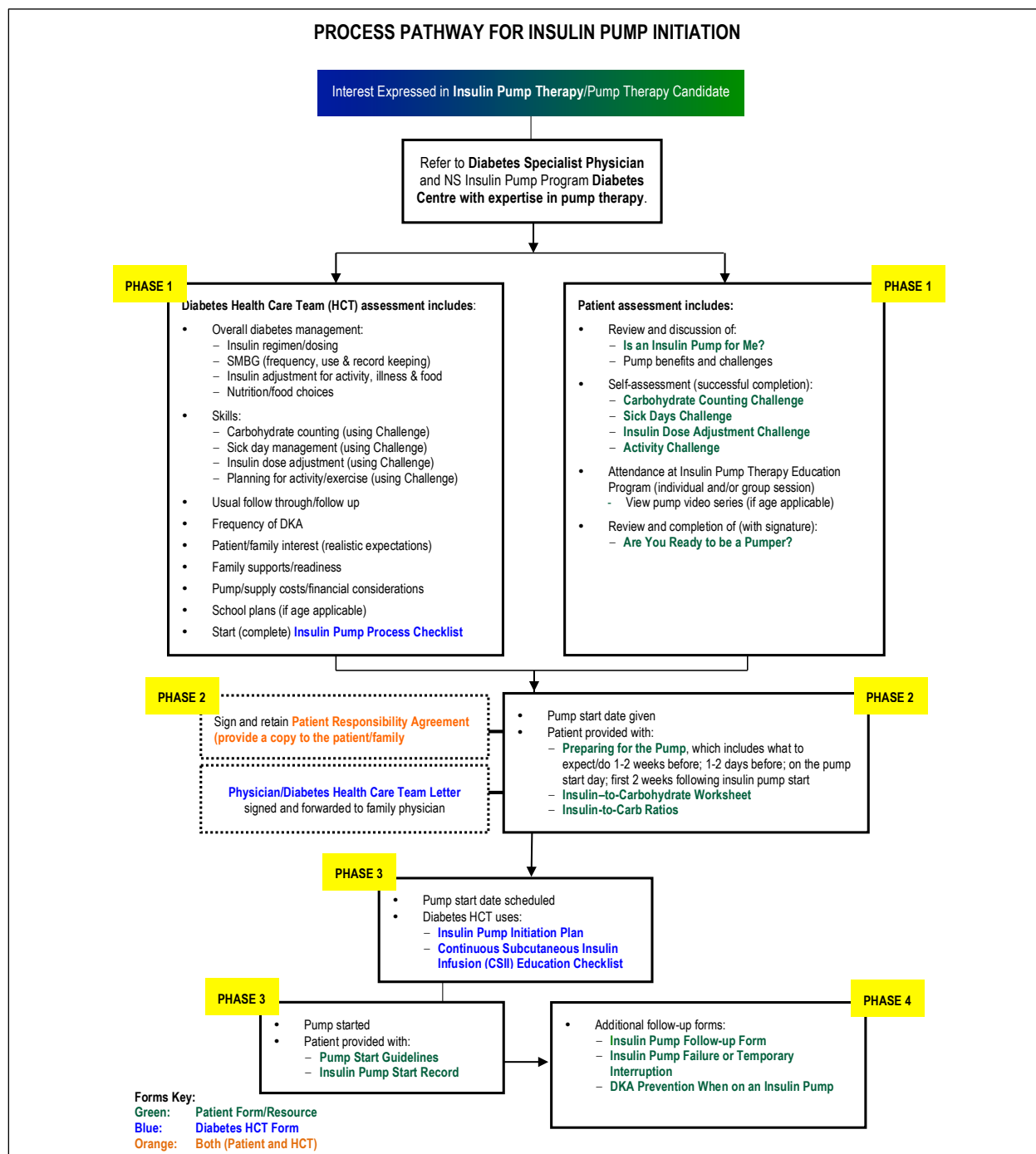
**Note:** Programs should have competency measures in place for staff (e.g., attendance of required continuing education, peer-to-peer or peer-to-physician practice review, demonstrated competency, etc.)

\*A pediatric site should have experience with initiating and managing new diagnoses of type 1 diabetes in the ≤ age 16 population.

**Note:** In the case of toddler care, NSIPP-approved DCs should consider consultation with the IWK. This could be accomplished via referral or phone/telehealth to discuss and share care decisions.

Diabetes Care Program of Nova Scotia - March 2018

## PART 1: APPENDIX B





## PART 1: APPENDIX C



Diabetes Care  
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### NOVA SCOTIA INSULIN PUMP PROGRAM (NSIPP)

#### Medical Eligibility Criteria for Pump Initiation/Pump Supplies

The requirements listed below are deemed necessary to be eligible for the provincially funded Nova Scotia Insulin Pump Program (NSIPP).

To be eligible for assistance with the purchase of an insulin pump/pump supplies through the NSIPP, you must meet the following criteria:

1. Pump/Supplies: Age  $\leq$  25 years at some point in the calendar year (Jan. 1 to Dec. 31) for which you are applying.
2. Has had type 1 diabetes for more than a year - some exceptions will apply; e.g., infants, zinc allergies, a knowledgeable family with diabetes management challenges that could be mitigated by pump therapy, etc.
3. Assessed by Diabetes Health Care Team (including a specialist experienced with insulin pump therapy) at an NSIPP-approved Diabetes Centre.
4. Attended the Diabetes Centre's Insulin Pump Therapy Education Program (individual or group); completed the required home reading, preparation, and follow-up; and demonstrated competency (knowledge and practice) in the following:
  - a. Carbohydrate counting
  - b. Sick day management
  - c. Insulin dose adjustment
5. Able to appropriately manage his/her diabetes pump therapy safely (e.g., no risk of harm to self, good use of a support/family network, demonstrates good judgement and acts appropriately in potentially risky situations).
6. Attended an appointment with a Diabetes Health Care Team  $\geq$  2 times in the last year.
  - o  $\geq$  1 of these appointments must occur within Nova Scotia (if NS resident studying out-of-province).
7. Commit to attend  $\geq$  2 follow-up appointments a year with a Diabetes Health Care Team.
  - o  $\geq$  1 of these appointments must occur within Nova Scotia (if NS resident studying out-of-province) at an NSIPP-approved Diabetes Centre.
8. Agrees to perform self-monitoring of blood glucose (SMBG)  $\geq$  4 times per day AND to act on the readings.
9. Agrees to have  $\geq$  2 A1C tests per year.
10. Actively attempting to meet and/or maintain **the personalized A1C goal identified by the applicant/applicant family and his/her Diabetes Health Care Team**, with the ultimate goal of achieving an age-appropriate A1C (under 6 years:  $< 8\%$ ; 6-18 years:  $< 7.5\%^{**}$ ; 19 years and older:  $< 7.0\%$ ).
  - o If the A1C is persistently (over the previous 6-12 months) greater than the personalized A1C goal, the request will need to undergo a special assessment by an NSIPP Diabetes Health Care Team to determine the need for exception status. The local team has the option to refer to another NSIPP team, if desired.
  - o If the A1C is  $\geq 10\%$ , an assessment by the local NSIPP Diabetes Health Care Team is required to obtain exception status. The local team has the option to refer to another NSIPP team, if desired.
11. No more than 2 diabetic ketoacidosis (DKA) episodes in the past year.
12. For younger children, or those with limited ability to manage their pump:
  - a. There must be a plan for pump operation when applicant is not in the care of family (e.g., daycare, school).
  - b. There must be a designated caregiver available at all times in case there is a problem with the insulin pump.

**\*\*The target A1C for ages 12-18 years differs from the Canadian Diabetes Association 2013 Clinical Practice Guidelines, but is consistent with the ISPAD and ADA guidelines.**



## PART 1: APPENDIX D



Diabetes Care  
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### Nova Scotia Insulin Pump Program (NSIPP) Requirements for an NSIPP-approved Diabetes Centre—Site Self-Assessment

NSIPP-approved Diabetes Centres (DC) must meet provincially established requirements on an annual basis. The approval process includes a site-specific self-assessment form, review of DCPNS Registry information (numbers of individuals seen within the specified period), and periodic site visit to review processes and documentation.

Instructions:

- In conjunction with the diabetes educators and specialty physician(s), please indicate by each requirement if it has been met, is in progress, or not possible. As this self-assessment form reflects an abbreviated version, **the detailed requirements document is attached.**
- Use the back of this form to indicate items that are "in progress," the status of each, expected date for completion, any outstanding issues for consideration, etc.
- Once completed, please have this signed by:
  - The Diabetes Centre Manager and Director

**Please Note:** Depending on the specific requirement(s) in progress, exception status to operate as a NSIPP-approved site may be allowed for a limited period of time while progress is made to meet the requirement(s).

Diabetes Centre site: \_\_\_\_\_ Date: \_\_\_\_\_

| ABRIDGED REQUIREMENTS (see attached for complete version) |   | MET | IN PROGRESS | NOT MET |
|---|---|-----|-------------|---------|
| 1.  | District Policy for initiation/follow-up care for insulin pump patients (using NSIPP-provided template). <i>Draft provided to former DHAs/Zones.</i>  |     |             |         |
| 2a.   | Full-time Diabetes Centre   |     |             |         |
| 2b.   | Policy for 24-hour on-call service for the pediatric portion (new type 1 diagnosis and pump initiation) of clinic service (at least 5 to 7 days post pump initiation).  |     |             |         |
| 3.  | *Paediatrician or Diabetes Specialist (for older youth/young adults) within the Diabetes Centre or committed link to the Paediatrician/Diabetes Specialist with expertise in pump therapy   |     |             |         |
| 4.  | Staffing complement: <ul style="list-style-type: none"> <li>○ Diabetes Educator team (CDEs—RN &amp; PDt) with expertise in insulin pump therapy and pediatric/youth/young adult type 1 diabetes care.</li> <li>○ Clerical support</li> <li>○ Access to mental health therapist/social worker is preferred (with a defined referral process)</li> </ul>  |     |             |         |
| 5.  | Staff training/expertise: <ul style="list-style-type: none"> <li>○ RN &amp; RD certified in DCPNS Insulin Dose Adjustment (basic and specialty).</li> <li>○ A minimum of 2 Certified Pump Trainers with experience in pump initiation (3-5) in the past year (in programs with a single RN &amp; RD team, both should certify). <i>Complete and return attached Inventory.</i></li> <li>○ Pump trainers should hold certificates from each of the 2 pump vendors</li> </ul> |     |             |         |
| 6.  | Able to provide a structured assessment/education program for insulin pump therapy initiation, inclusive of the DCPNS recommended processes, tools/resources, and videos  |     |             |         |
| 7.  | Actively following type 1 diabetes pump and non-pump patients* <ul style="list-style-type: none"> <li>○ For pediatric programs: initiating, at a minimum, 3-5 pumps per year (for ages &lt; 19 years) and providing follow-up to at least 10 pump patients.</li> <li>○ For young adult/adult programs: initiating, at a minimum, 3-5 pumps per year (any age) and providing follow-up to at least 10 pump patients.</li> </ul>  |     |             |         |

Note: Competency measures in place.

\*A pediatric site should have experience with initiating and managing new diagnoses of type 1 diabetes in the ≤ age 16 population.

## Site Self-Assessment (cont.)



### In Progress Item(s):

Indicate the specific requirements that are "in progress" and provide an update on the progress, expected timeline to completion, current mitigation strategy, and anticipated outcome.

| INDICATE #<br>HERE  | PROVIDE STATUS UPDATE   |
|---------------------|---|
| Insulin Pump Policy | Please indicate the status of this policy within your facility or Zone. |
|                     |   |
|                     |   |

Return Completed form **by August 25, 20\_\_** to:  
 Program Manager  
 Diabetes Care Program of Nova Scotia  
 Bethune Building, Suite 548  
 1276 South Park St., Halifax, NS B3H 2Y9  
 Phone: 902-473-3209 Fax: 902-473-3911

\_\_\_\_\_  
 Name (Please Print) & Title

\_\_\_\_\_  
 Signature

\_\_\_\_\_  
 Name (Please Print) & Title

\_\_\_\_\_  
 Signature

## **Part 2: Safe Management of Insulin Pump Patients**

1. Insulin Pumps and Hospitalizations ..... Pages 13-14
2. Insulin Pumps in the Emergency Department ..... Pages 15-16
3. Insulin Pump Therapy and Surgery ..... Pages 17-18
4. Appendices ..... Pages 19-28



## PART II: SAFE MANAGEMENT OF INSULIN PUMP PATIENTS

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### 1. INSULIN PUMPS AND HOSPITALIZATIONS

Patients on insulin pump therapy may be able to continue this type of therapy while hospitalized, depending on the reason for/type of admission. Individuals on pump therapy (and/or family members in the case of a child/youth) are often more knowledgeable than many healthcare providers about diabetes management and should be encouraged to self-manage their diabetes during hospitalization, if deemed to be safe and desirable.

To promote collaboration between the hospital staff and the person with diabetes (and/or his/her family members), and to ensure patient safety, hospitals should have clear policies and procedures in place to guide the continued use of insulin pumps in the inpatient setting.

Facilities should consider use of a system-wide label for pump patients. In this way, no matter what department the patient is in, such as X-ray, it is known that this patient is on an insulin pump.

The Diabetes Care Program of Nova Scotia (DCPNS) video **Safety & Insulin Pumps in Emergency and Hospital Situations** should be used to assist with education, provide awareness, and to promote safe practices when working with/caring for individuals who use insulin pump therapy to manage their diabetes (see PART 2: APPENDIX A for an overview of the video contents).

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#### Indications for Continuation of Insulin Pump Therapy

To continue pump usage, the patient should be assessed for physical and mental capacity. Occasionally, some patients may be dependent on family members to manage their insulin pump due to vision, coordination issues, or age. These patients may be considered for continuation of insulin pump therapy as long as knowledgeable family members remain at the bedside.

**All** of the following must be present (for the patient and/or his/her caregiver):

- Alert; oriented to person, place, and time
- Knowledgeable and competent to manage the insulin pump
- Have adequate insulin pump supplies, including infusion sets, reservoirs, and batteries. *Note: Pump manufacturers provide 24-hour help lines that the patient can contact for device-related problems. The telephone number can usually be found on the back of the pump.*
- Capillary/self-monitoring and recording of blood glucose is in place 4-7 times a day.
- Capillary or urine ketone testing is in place if blood glucose values  $\geq 14$  mmol/L.
- Willing/able to change pump site every 2-3 days.

The patient/caregiver will need to sign a patient agreement (see PART 2: APPENDIX B for a sample patient/family agreement).

The physician will need to write the order for self-management and approve (sign-off) on the patient's self-care (see PART 2: APPENDIX C for Insulin Pump Orders for Management in Hospital).

The inpatient pump log for in-hospital use is for use at the bedside (see PART 2: APPENDIX D for a sample bedside log) and becomes part of the permanent chart.

If the patient is not able/competent or does not have adequate supplies, the insulin pump should be discontinued and the patient placed on a subcutaneous insulin regimen or IV insulin infusion (see PART 2: APPENDIX E for DCPNS Pump Failure or Temporary Interruption guide).

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## PART II: SAFE MANAGEMENT OF INSULIN PUMP PATIENTS (cont.)

### **Contraindications for Inpatient Use of an Insulin Pump**

**Any** of the following are present:

- **DKA, or persistent unexplained hyperglycemia**
- Altered or changes to state of consciousness and/or cognitive status
- Psychiatric illness that interferes with the patient's ability to self-manage (at risk of suicide)
- Critically ill (sepsis, trauma) and needs intensive care
- Refusal or unwillingness to participate in self-care
- Caregiver support/assistance required to manage insulin pump but not available at present

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### **Special Considerations for Discontinuation/Suspension of Insulin Pump Therapy**

**Any of the following tests:**

- Magnetic resonance imaging (MRI) (pump must be removed, included metal cannula)
- Computed tomography (CT) scans
- Radiology procedures (exception, ultrasound)

The pump should not be brought into the room where the test is being performed.

Secure the pump in a safe place; avoid immersing in water. Document accordingly.

The patient will become relatively insulin deficient within 1-2 hours and absolutely insulin deficient within 4 hours, once the pump is suspended/stopped. Pumps should not be discontinued/suspended for > 2 hours without alternate insulin available as needed. Check blood glucose before and after disconnecting/suspending.

### **If insulin pump is discontinued:**

- Notify the physician immediately and obtain orders to discontinue the pump and initiate insulin therapy.
- Stop the pump immediately when starting IV insulin or subcutaneous rapid-acting insulin. For planned discontinuation, place the patient on a subcutaneous basal/bolus insulin program prior to pump withdrawal. The pump should be discontinued 2 hours after the first injection of basal insulin.
- Suspend (stop) the pump and remove the infusion set from the insertion site.
- Secure the pump or give to patient's family for safekeeping. Avoid immersing the pump in water. Document accordingly.
- Document rationale for discontinued use of the patient's insulin pump.



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## PART II: SAFE MANAGEMENT OF INSULIN PUMP PATIENTS (cont.)

### 2. INSULIN PUMPS IN THE EMERGENCY DEPARTMENT

#### Diabetic Ketoacidosis (DKA)

Insulin pump failure can lead to DKA. Pump failure may be related to blockage or leakage in the reservoir (syringe) or the infusion set or connectors, causing an interruption of infusion flow or mechanical failure.

When DKA occurs:

- The pump **must** be discontinued and insulin given IV.
- Treat the patient according to established DKA treatment guidelines.
- The patient may be transitioned back to the pump after resolution of the DKA. A new insertion site must be chosen before insulin therapy is re-initiated through an insulin pump.

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#### Patient Presenting with Hyperglycemia (Not In DKA)

If a patient presents to the Emergency Department with hyperglycemia and is not found to be in DKA, the Emergency Department:

- Must take steps to prevent development of DKA.
  - A. If glucose is over 14.0 mmol/L with ketones, extra rapid-acting insulin must be given using an insulin syringe or pen (1.5 times the usual correction) and the pump site changed or not used until the patient/family are able to change the site.
  - B. If glucose is over 14.0 mmol/L with negative or low ketones (urine small/blood less than 0.6 mmol/L), a correction dose may be given via pump or injection. However, if not improved by at least 3 mmol/L within 2 hours or ketones have increased, follow the steps in A (as above).
- Review patient management of hyperglycemia.
- Refer the patient to the local Diabetes Centre or back to their diabetes education team for reinforcement of teaching.
- As with anyone who has diabetes and presents with poor glucose control, an underlying illness or error in insulin dosing may be present and should be ruled out.

If a patient presents with hyperglycemia that has not responded to 2 or more correction boluses for high glucose given with the pump, then it should be assumed that there is a problem with insulin delivery (e.g., site not working, pump malfunction), and there may be a need to use IV or subcutaneous insulin.

**Note:** If there appears to be a problem with pump malfunction, ask the patient/family to contact the 1-800 number of the pump company to access technical support.

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## **PART II: SAFE MANAGEMENT OF INSULIN PUMP PATIENTS (cont.)**

### **Presenting With Severe Hypoglycemia**

For patients on pump therapy who present with severe hypoglycemia (i.e., confusion, loss of consciousness or seizure):

- Suspend the pump or disconnect and correct the hypoglycemia with IV dextrose or glucagon.
  - If staff members are not familiar with disconnecting or suspending the pump, the tubing may be cut close to the insertion site.
  - Restart the insulin pump once hypoglycemia has been successfully treated (blood glucose > 6 mmol/L).
  - The cause of hypoglycemia should be identified (i.e., too high a basal rate for background insulin needs, taking more insulin than needed for food or to correct high blood glucose, exercising without setting a temporary basal rate, or drinking alcoholic beverages without eating carbohydrate-containing food).
  - Instruct the patient to contact their diabetes care team to discuss strategies to avoid severe hypoglycemia in the future; if not followed by a team, refer to the local Diabetes Centre.
  - Instruct family members on the management of hypoglycemia, including administration of glucagon.
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### **Patient Presenting with Infusion Site Abscess or Infection**

Most skin infections associated with pump therapy are cellulitis secondary to staphylococcus aureus bacteria.

- Remove the infusion set and reservoir and discard.
- Another infusion site must be used until the infection has cleared.
- Skin abscesses should undergo incision and drainage and debrided material sent for culture and susceptibility testing.
- Refer and educate regarding proper insertion technique (infusion sets should be changed every 2 to 3 days, or sooner if redness, swelling, and/or tenderness develop).

## PART II: SAFE MANAGEMENT OF INSULIN PUMP PATIENTS (cont.)

### 3. INSULIN PUMP THERAPY AND SURGERY

#### General Principles

- Patients with type 1 diabetes must be maintained on insulin at all times to prevent the development of DKA. Pumps may be suspended or disconnected for brief periods only (approximately 2 hours) for procedures. Longer periods of discontinuation without providing insulin by an alternate route may lead to hyperglycemia and DKA.
- Elective surgery should be planned in advance in consultation with the patient's usual Endocrinologist or Diabetes Specialist. If possible, schedule surgery for early morning for patients with type 1 diabetes.
- Insulin pumps should not be worn in the operating room - the pump and sites cannot be easily seen and monitored by staff, the staff may not be knowledgeable about pump operation, and the pump needs to be protected from inadvertent damage. (*Note: Operating room staff cannot be expected to have or maintain knowledge of operation of insulin pumps.*)
- For short procedures (maximum 2 hours), if blood glucose (BG) is below 14 mmol/L, insulin pumps may be disconnected and then reconnected in recovery room. For longer procedures or if BG is high (above 14 mmol/L), pumps should be disconnected and IV insulin ordered by the patient's physician/anesthetist.
- The glucose target perioperatively is generally 5-10 mmol/L but may be individualized for the patient and his/her circumstances.
- Insulin pumps should not be worn for procedures that involve exposure to radiation due to the strong electromagnetic field.

**Note:** Staff members who are not trained in pump management should not attempt to operate the insulin pump other than to disconnect the infusion set from the insertion site.

#### Minor Elective Surgery and Procedures (In the Morning)

- The patient administers usual basal, bolus, and correction insulin until midnight the night before surgery, unless advised otherwise by their diabetes team.
- The patient continues usual basal infusion rates for the rest of the night. An extra BG check at 3 a.m. is advisable to allow adjustment of basal rate to obtain target glucose level (5-10 mmol/L) preoperatively.
- At the initiation of surgery (on call to the operating room), the pump should be disconnected for the procedure and given to a family member or placed in a designated location for safekeeping. Document accordingly.
- Check capillary BG hourly during surgery and in the anesthetic recovery period. Management is at the discretion of the anesthetist. A BG less than 4 mmol/L is considered hypoglycemia and requires treatment. Once the patient is able to eat or drink, IV fluids can be discontinued.
- Insulin pump may be reconnected post-operatively when a family member is able to do so. The patient or family member must be available and able to manage the pump. Family members should be allowed into recovery room to perform this function.
- The patient may resume usual basal rates, as well as bolus insulin, using usual pump settings.
- If BG is not controlled, and/or pump disconnection time extends beyond expected duration, manage as per Major/Emergent surgery.

Advise patient/caregiver to check capillary BG more frequently in the 1 to 2 days after surgery.

## PART II: SAFE MANAGEMENT OF INSULIN PUMP PATIENTS (cont.)

### Minor Elective Surgery and Procedures (In the Afternoon)

- The procedure is similar to that followed for morning surgery except that if the patient can eat a light breakfast, as per anesthetist guidelines, the insulin bolus given for breakfast should take into consideration the preprandial capillary BG (plus correction bolus if hyperglycemic).

### Major Elective Surgery and Emergency Surgery or Trauma

- Discontinue the pump and begin IV insulin.
- The pump should be discontinued when the IV insulin and fluids are commenced or as per physician/diabetes specialist orders.
- Check BG hourly during surgery and in the anesthetic recovery period. Management is at the discretion of the anesthetist. A BG less than 4 mmol/L is considered hypoglycemia and requires treatment.
- Transition back to subcutaneous insulin in the postoperative period should be determined on an individual basis and will vary depending on the patient's usual insulin regimen and ability to tolerate an oral diet.
- It is possible to recommence insulin pump therapy in the postoperative period, even if the patient is being kept NPO, with administration of the usual basal rates and correction boluses. Mealtime boluses are not given, as the patient is not eating. (**Note:** *Insulin requirements are often higher than usual at times of physiological stress; i.e., surgery, so higher basal rates may be needed. Consult with diabetes specialist for assistance or if not achieving target of 5-10 mmol/L.*)

### References:

- Ren JJ, Houlden RL. A practical guide to insulin pump management in adults in and around hospital. *Canadian J Diabetes*. Autumn 2011;24(3):11-16.
- Waterloo Wellington Hospital. Use of Continuous Subcutaneous Insulin Infusion (CSII) Pumps in Hospitalized Patients—Policy and Procedure. December 2012. Available at: [www.waterloowellingtondiabetes.ca/userContent/documents/Professional-Resources/AdultPumpProtocol\\_December2012.pdf](http://www.waterloowellingtondiabetes.ca/userContent/documents/Professional-Resources/AdultPumpProtocol_December2012.pdf). Accessed July 2013.
- Canadian Diabetes Association Clinical Practice Guidelines Expert Committee. Canadian Diabetes Association 2013 Clinical Practice Guidelines for the Prevention and Management of Diabetes in Canada. *Canadian J Diabetes*. 2013;37(suppl 1):S77-80.
- Boyle ME, Seifert KM, Beer KA, Apsey HA, Nassar AA, Littman SD, et al. Guidelines for application of continuous subcutaneous insulin infusion (insulin pump) therapy in the perioperative period. *Journal of Diabetes Science and Technology*. 2012;6(1):184-190.
- Leonhardi BJ, Boyle ME, Beer KA, Seifert KM, Bailey M, Miller-Cage V, et al. Use of continuous subcutaneous insulin infusion (insulin pump) therapy in hospital: a review of one institution's experience. *Journal of Diabetes Science and Technology*. 2008;2(6):948-062.
- Cook CB, Boyle ME, Cisar NS, Miller-Cage V, Bourgeois P, Roust LR, et al. Use of continuous subcutaneous insulin infusion (insulin pump) therapy in the hospital setting: proposed guidelines and outcome measures. *The Diabetes Educator*. 2005;31(6):849-857.

## **PART 2: APPENDICIES**

- Appendix A: Safety & Insulin Pumps in Emergency and Hospital Situations Video Overview
- Appendix B: Patient Agreement: Use of Continuous Subcutaneous Insulin Infusion (CSII) Pumps in Hospitalized Patients Policy and Procedure
- Appendix C: Insulin Pump Orders for Management in Hospital
- Appendix D: Bedside Insulin Pump Log for In-Hospital Patient Use
- Appendix E: Insulin Pump Failure or Temporary Interruption



## PART 2: APPENDIX A



**Video Title:** Safety & Insulin Pumps in Emergency and Hospital Situations

**Video Length:** 20:09 minutes

**Video Link:** <http://youtu.be/SC3dAJqMJHM>

**Target Audience:**

- Emergency Room and hospital personnel, first responders (paramedics and fire fighters), volunteers (St. John Ambulance, sport coaches), medical students, diabetes care providers, teachers and teaching assistants, and others with an interest in the safe use of insulin pumps.

**Video Purpose:**

- To assist with education and awareness about insulin pump therapy both in the hospital and community settings.
- To promote safe practices and highlight safety considerations when working with/caring for individuals who use insulin pump therapy to manage their diabetes.

**Cast:**

- Marc Payne, young adult pumper
- Kiersten Pianosi, young adult pumper
- Dr. Shirl Gee, Endocrinologist, QEII Health Sciences Centre, Halifax
- Dr. Beth Cummings, Paediatric Endocrinologist, IWK, Halifax
- Dr. Lynne Harrigan, Internal Medicine Specialist, Valley Regional Hospital, Kentville
- Dr. Andrew Lynk, Paediatrician, Sydney
- Shawna Boudreau, RN CDE, Diabetes Case Management Coordinator, QEII, Halifax
- Guest appearances (young people living with type 1 diabetes from across NS): Lucas Arnold, Rebecca Ansems, Meghan MacLeod, Dakota MacNeil, and Olivia Ryerson.

**Content Areas:**

The video addresses a number of specific topic areas using a question and answer format. Diabetes experts provide answers to these questions and promote safe practices.

- 1. What do insulin pumps look like?**
  - Provides a brief demonstration of the 4 insulin pumps currently available in Nova Scotia.
- 2. How and where are pumps connected?**
  - Provides an understanding of where pumps can found/carried by the individual.
  - Demonstrates both tubing and pod insulin delivery systems.
  - Discusses 1-800 number (location and technical supports available).
- 3. What should people know in an emergency situation?**
  - Introduces the concepts of low and high blood glucose (and the importance of knowing blood glucose values).
  - Discusses the cost of a pump and the need to treat it gently and secure it safely, if removed.

(see other side)

## Safety & Insulin Pumps in Emergency and Hospital Situations Video Overview (cont.)

2

4. **Who should manage the pump in hospital?**
  - Introduces the concept of patient involvement in care and the conditions that must be met for pump continuation while in hospital—with a focus on patient/family capability, health professional support, and medical condition (risk associated with). *Ref: DCPNS DHA Insulin Pump Policy, 2014*
5. **How do you suspend/disconnect a pump?**
  - Introduces when (under which conditions) suspension/disconnection might be required.
  - Demonstrates how to disconnect a pump.
6. **What needs to be considered for surgery—minor elective, emergency/trauma, and major elective?**
  - Introduces the differences between elective and emergency surgeries for individuals using pump therapy.
  - Discusses the need for planning, preparation, and inclusion of the pump user and his/her diabetes specialist with any elective surgery.
7. **What is the difference between hypoglycemia and hyperglycemia?**
  - Explanations are given for the difference between hypoglycemia and hyperglycemia, and the implications of pump therapy with each.
8. **How do you treat hypoglycemia?**
  - Discusses the best approach based on the state of the patient (conscious or unconscious). The need for a standard hypoglycemia protocol is promoted.
9. **How do you treat hyperglycemia (with a focus on DKA prevention)?**
  - Provides an explanation of hyperglycemia and the impending risk of DKA.
  - Addresses hyperglycemia in both the unconscious and conscious individual and promotes the essential role of emergency support/treatment.
  - Discusses the need for IV insulin and standard protocols in the treatment of DKA.
10. **What is the best source of information about the insulin pump?**
  - Highlights the need to access specialized diabetes educator teams/certified pump trainers to advise and support.

### Closing Advice:

“Do not be confounded by the technology—it is just real time delivery of insulin; in fact, it gives you an advantage and provides more flexibility to management. You don’t need to know how to operate the pump you just need to know how it works in collaboration with the patient who has diabetes and his/her diabetes team.” *Lynne Harrigan, MD*

### Supporting Resources:

- DCPNS District Health Authority Insulin Pump Policy, June 2014
- DCPNS Video Series: Insulin Pump Initiation for Children and Youth  
This is a series of 7 videos (plus a brief introductory video) aimed at families considering insulin pump therapy.  
*The videos are designed to promote thoughtful conversation about some of the main issues and concerns of parents, young pumpers, and their health care team. They are intended to provide background and context that will be further explored during individual or group teaching sessions. They are not intended to stand alone, but to complement health care team teaching. These videos are intended to promote consistent messaging and assist in managing expectations about insulin pump therapy.*

**Produced by:** The Diabetes Care Program of Nova Scotia (DCPNS), February 2014  
Website: <http://diabetescare.nshealth.ca>



## PART 2: APPENDIX B

### Patient Agreement: Use of Continuous Subcutaneous Insulin Infusion (CSII) Pumps in Hospitalized Patients Policy and Procedure

#### Continuous Subcutaneous Insulin Infusion Pump Therapy Patient Agreement

For your safety and optimal medical care during this hospitalization, we request that you agree to the following recommendations. If you feel you cannot agree to these recommendations, we would like to treat your diabetes with insulin injections and request that you discontinue the use of your insulin pump.

During my hospital stay, I will agree to:

1. Provide all of my pump settings, including basal rates and bolus settings, to my ordering physician.
2. Complete my diabetes insulin pump log, including glucose and ketone readings, meal boluses given, correction doses and basal rate, and pump set changes.
3. Change the infusion set every 48-72 hours or as needed.
4. Provide my own insulin pump supplies.
5. Report any signs and symptoms of low blood sugar
6. Report any pump problems

I also understand that my pump may be discontinued and a different insulin delivery given for any of the following:

- a) Doctor's order
- b) Changes in my judgment
- c) Changes in my level of awareness or consciousness
- d) Radiology exam including:
  - X-ray
  - MRI
  - CT scans
  - Mammography and
  - PET scans
- e) Procedures requiring general anaesthesia
- f) Other reasons deemed necessary by medical staff

If I cannot manage the pump myself, I may have a family member assist the medical staff and me with the operation of the insulin pump on the condition that they must remain in the hospital during my entire stay. If the family member cannot remain in the hospital, the insulin pump will need to be discontinued.

Patient Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Family Member Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Witness Signature: \_\_\_\_\_ Date: \_\_\_\_\_

*Adapted from: Waterloo Wellington Diabetes (2012) and Cook et al (2005)*

## PART 2: APPENDIX C

Addressograph Area

### INSULIN PUMP ORDERS FOR MANAGEMENT IN HOSPITAL

- ☐ Diet \_\_\_\_\_ ☐ Tube Feeding ☐ TPN
- Bedside glucose monitoring:** ☐ Before meals and at bedtime ☐ Every \_\_\_\_ hrs ☐ 2300 hrs ☐ 0300 hrs  
☐ Other \_\_\_\_\_
- Type of insulin in pump:** ☐ Novorapid/Aspart ☐ Humalog/Lispro ☐ Apidra ☐ Regular (Human)
- Provide and instruct patient to complete **bedside insulin pump record**. Review every \_\_\_\_ hours.
- ALERT:** Prior to suspending or stopping the insulin pump (> 2 hrs), call the physician for an alternative dose of fast-acting insulin.
- Site change** every \_\_\_\_ days; starting \_\_\_\_\_.
- Patient to manage pump according to the following parameters:**

#### BASALS

| START | STOP | UNITS/HOUR |
|-------|------|------------|
|       |      |            |
|       |      |            |
|       |      |            |
|       |      |            |
|       |      |            |
|       |      |            |
|       |      |            |
|       |      |            |
|       |      |            |
|       |      |            |
|       |      |            |
|       |      |            |
|       |      |            |
|       |      |            |

#### Insulin-to-Carb Ratio

| START | STOP | RATIO |
|-------|------|-------|
|       |      |       |
|       |      |       |
|       |      |       |
|       |      |       |
|       |      |       |
|       |      |       |
|       |      |       |
|       |      |       |
|       |      |       |
|       |      |       |
|       |      |       |
|       |      |       |
|       |      |       |
|       |      |       |

- Bolus insulin for meals** (patient to program insulin pump):  
☐ **Set Doses:** Breakfast: \_\_\_\_ units Lunch: \_\_\_\_ units Dinner: \_\_\_\_ units Other: \_\_\_\_\_
- Correction Factor:** 1 unit of insulin lowers glucose \_\_\_\_ mmol/L  
**Glucose Target:** Day: \_\_\_\_ mmol/L Night: \_\_\_\_ mmol/L  
**Calculate correction factor** (e.g., BG 13 minus BG target 6 divided by ISF 3:  $\frac{13 - 6}{3} = 2.3$  u to correct): \_\_\_\_ mmol/L
- ☐ **Other orders** (use blank Physician Order Form)
- Consults to:** ☐ Diabetes Nurse Educator ☐ Endocrinology ☐ Internal Medicine ☐ Pediatrician  
☐ Diabetes Dietitian Educator ☐ Social Worker

**PHYSICIAN SIGNATURE:** \_\_\_\_\_ **PRINTED NAME:** \_\_\_\_\_  
**DATE:** \_\_\_\_\_ **TIME:** \_\_\_\_\_ **Pager #:** \_\_\_\_\_

November 2013

## PART 2: APPENDIX D

Addressograph Area

### Bedside Insulin Pump Log for In-hospital Patient Use

Date: \_\_\_\_\_

Type of Rapid Insulin: \_\_\_\_\_

Make/Model of Insulin Pump: \_\_\_\_\_

Blood Glucose Meter: ☐ Hospital ☐ Own (type): \_\_\_\_\_

#### Patient Instructions, please document:

- Blood glucose (BG) values, food/carbs, ketones if BG > 14 mmol/L
- Changes to pump: e.g., basal suspensions/changes; temporary basal rates or changes to the basal settings; changes to the infusion site.

|                      | AM |   |   |    |    |    | PM |   |   |   |   |   | AM |   |   |   |    |    |    |   |   |   |   |   |   |
|----------------------|----|---|---|----|----|----|----|---|---|---|---|---|----|---|---|---|----|----|----|---|---|---|---|---|---|
|                      | 7  | 8 | 9 | 10 | 11 | 12 | 12 | 1 | 2 | 3 | 4 | 5 | 6  | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 | 3 | 4 | 5 | 6 |
| Blood Glucose        |    |   |   |    |    |    |    |   |   |   |   |   |    |   |   |   |    |    |    |   |   |   |   |   |   |
| Ketones              |    |   |   |    |    |    |    |   |   |   |   |   |    |   |   |   |    |    |    |   |   |   |   |   |   |
| Food/Carbs           |    |   |   |    |    |    |    |   |   |   |   |   |    |   |   |   |    |    |    |   |   |   |   |   |   |
| Insulin: Basal Rate  |    |   |   |    |    |    |    |   |   |   |   |   |    |   |   |   |    |    |    |   |   |   |   |   |   |
| Bolus Dose           |    |   |   |    |    |    |    |   |   |   |   |   |    |   |   |   |    |    |    |   |   |   |   |   |   |
| Correction Bolus     |    |   |   |    |    |    |    |   |   |   |   |   |    |   |   |   |    |    |    |   |   |   |   |   |   |
| Infusion site change |    |   |   |    |    |    |    |   |   |   |   |   |    |   |   |   |    |    |    |   |   |   |   |   |   |
| Infusion set change  |    |   |   |    |    |    |    |   |   |   |   |   |    |   |   |   |    |    |    |   |   |   |   |   |   |
| COMMENTS             |    |   |   |    |    |    |    |   |   |   |   |   |    |   |   |   |    |    |    |   |   |   |   |   |   |

|                      | AM |   |   |    |    |    | PM |   |   |   |   |   | AM |   |   |    |    |    |   |   |   |   |   |   |
|----------------------|----|---|---|----|----|----|----|---|---|---|---|---|----|---|---|----|----|----|---|---|---|---|---|---|
|                      | 7  | 8 | 9 | 10 | 11 | 12 | 1  | 2 | 3 | 4 | 5 | 6 | 7  | 8 | 9 | 10 | 11 | 12 | 1 | 2 | 3 | 4 | 5 | 6 |
| Blood Glucose        |    |   |   |    |    |    |    |   |   |   |   |   |    |   |   |    |    |    |   |   |   |   |   |   |
| Ketones              |    |   |   |    |    |    |    |   |   |   |   |   |    |   |   |    |    |    |   |   |   |   |   |   |
| Food/Carbs           |    |   |   |    |    |    |    |   |   |   |   |   |    |   |   |    |    |    |   |   |   |   |   |   |
| Insulin: Basal Rate  |    |   |   |    |    |    |    |   |   |   |   |   |    |   |   |    |    |    |   |   |   |   |   |   |
| Bolus Dose           |    |   |   |    |    |    |    |   |   |   |   |   |    |   |   |    |    |    |   |   |   |   |   |   |
| Correction Bolus     |    |   |   |    |    |    |    |   |   |   |   |   |    |   |   |    |    |    |   |   |   |   |   |   |
| Infusion site change |    |   |   |    |    |    |    |   |   |   |   |   |    |   |   |    |    |    |   |   |   |   |   |   |
| Infusion set change  |    |   |   |    |    |    |    |   |   |   |   |   |    |   |   |    |    |    |   |   |   |   |   |   |
| COMMENTS             |    |   |   |    |    |    |    |   |   |   |   |   |    |   |   |    |    |    |   |   |   |   |   |   |

RN Signature (reviewed pump log and verified compliance): \_\_\_\_\_

Print Name: \_\_\_\_\_

Note time (comments): \_\_\_\_\_



## PART 2: APPENDIX E



### 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 (ISF), and target blood glucose 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 blood glucose (BG) is 14.0 mmol/L or higher**.
4. **Determine your insulin doses off the pump using the guidelines in this handout**. 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 page 2).

#### 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 hrs.

**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 carb (1:30). If eating 90 g of carb,  $90 \div 30 = 3$  u of rapid-acting insulin.

##### To correct high blood glucose (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 pumps basal rates (may use temporary basal of 0%).

(see other side)

## Insulin Pump Failure or Temporary Interruption (cont.)

2

### 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.**

|                 |                                  |   |                      |          |              |
|-----------------|----------------------------------|---|----------------------|----------|--------------|
| <b>Example:</b> | 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        |
|                 | <b>Total units for overnight</b> |   |                      | <b>=</b> | <b>4.6 u</b> |

Using this example, the replacement would be 5 u of Humulin® N OR 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®.

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

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.

If you have any questions, please call the Diabetes Centre at: \_\_\_\_\_