

Provincial Clinical Knowledge Topic

Insulin Pump Therapy, Pediatric and Adult – Acute Care

V 1.0

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Revision History

Version	Date of Revision	Description of Revision	Revised By
1.0	January 2018	Completion of Topic	Julie McKeen

Important Information Before You Begin

The recommendations contained in this knowledge topic have been provincially adjudicated and are based on best practice and available evidence. Clinicians applying these recommendations should, in consultation with the patient, use independent medical judgment in the context of individual clinical circumstances to direct care. This knowledge topic will be reviewed periodically and updated as best practice evidence and practice change.

The information in this topic strives to adhere to Institute for Safe Medication Practices (ISMP) safety standards and align with Quality and Safety initiatives and accreditation requirements such as the Required Organizational Practices. Some examples of these initiatives or groups are: Health Quality Council Alberta (HQCA), Choosing Wisely campaign, Safer Healthcare Now campaign etc.

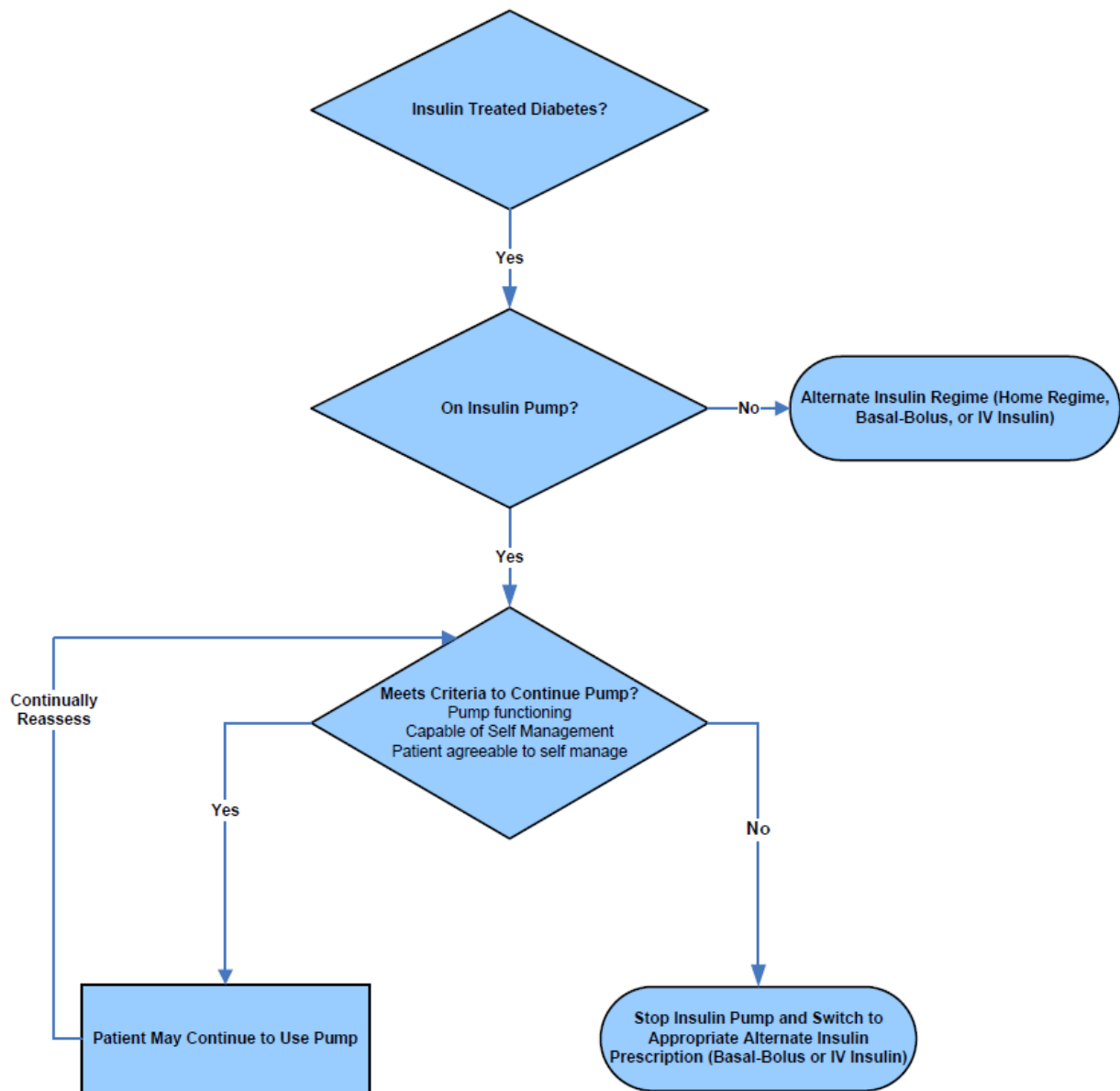
This topic is based on the following guidance:

- [Guidelines for the Safe Management of Insulin Pump Therapy in Hospital Diabetes Obesity Nutrition SCN](#)

Decision Making

Algorithm for Assessing Self-Management of Insulin Pump in Hospital

Key Message: “If pump stopped, must replace basal insulin within 2 hours to prevent Diabetic Ketoacidosis (DKA)”



Criteria for Self-Management of Insulin Pump

Patient is able to self-manage if all of the following criteria are met:

(Attending MD responsibility to assess)

- 1) Mentally
 - a) Alert and oriented x 3
- 2) Physically
 - a) Has no physical/dexterity limitations
 - b) Alternatively, if patient unable to self-manage, a non-health system caregiver (i.e. family member/guardian) is available to provide support/assistance to manage insulin pump 24 hours/day
- 3) Medically stable
- 4) No identified reasons for **pump discontinuation***

*Criteria for Pump Discontinuation

- 1) Cognitive or psychological limitations
 - a) Altered, deteriorating or fluctuating changes to state of consciousness and/or cognitive status, including use of medications that may interfere with cognition or may be sedating (e.g. narcotics)
 - b) Psychiatric illness that interferes with the patient's ability to self-manage (at risk of self-harm/suicide)
- 2) Medical conditions:
 - a) DKA, or persistent unexplained hyperglycemia
 - b) Persistent/recurrent severe hypoglycemia
 - c) Critically ill (sepsis, trauma) and needs intensive care
 - d) Other inter-current illnesses where use of the insulin pump is risky or non-effective, as determined by the medical staff
- 3) Pump functionality or performance limitations:
 - a) Pump not functioning
 - b) Hyperglycemia fails to respond to appropriate action (bolus insulin)
 - c) Insufficient pump supplies (hospital will not provide)
 - d) Physical limitations to using the insulin pump
- 4) Refusal or unwillingness to participate in self-care or to agree to self-management terms
- 5) Non-health system guardian or caregiver support/assistance (for patients under 18), required to manage insulin pump, is **not available 24 hours/day**

Order Set: In-Hospital Orders for Self-Management of Insulin Pump

Order Set Components

Order Set Keywords: IPT

Order Set Requirements: Use this order set only if the most responsible health practitioner has determined that patient meets criteria, and Patient (Guardian/Caregiver if under age 18) agrees to the self-management of insulin pump in hospital responsibilities.

In-Hospital Orders for Self-Management of Insulin Pump ([AHS form #20102](#))

Clinical Communication

- ☑ Clinical Communication - Patient (Guardian/Caregiver if under age 18) has read and accepted the terms of the **Patient Agreement to Self-Manage Insulin Pump In-Hospital** ([AHS form #20369](#))
- ☑ Clinical Communication - Patient (Guardian/Caregiver if under age 18) to sign the **Patient Agreement to Self-Manage Insulin Pump In-Hospital** ([AHS form #20369](#))
- ☑ Clinical Communication - Patient (Guardian/Caregiver if under age 18) to complete the **Insulin Pump Information Sheet** ([AHS form #20114](#))
- ☑ Clinical Communication - Patient (Guardian/Caregiver if under age 18) to complete the **Insulin Pump Therapy Bedside Logbook** ([AHS form #20189](#)) daily
- ☑ Clinical Communication - Nurse to review and sign the **Insulin Pump Therapy Bedside Logbook** ([AHS form #20189](#)) at the end of each shift. Completed form to be placed into chart daily at 0700 hours
- ☑ Clinical Communication - Do not stop or suspend the insulin pump unless physician provides alternative regime of insulin. If pump stopped, basal insulin must be replaced within 2 hours to prevent Diabetic Ketoacidosis (DKA)
- ☑ Clinical Communication - The patient is self-managing their diabetes on insulin pump therapy. For radiologic procedure less than 2 hours, pump may be removed without replacement of subcutaneous insulin by injection. If pump suspended/disconnected for more than 2 hours, insulin must be replaced by subcutaneous injection to prevent diabetic ketoacidosis

[Refer to AHS Glycemic Management Policy - Adult](#) (*Pediatric Policy to be developed*)

Hyperglycemia

- ☑ Clinical Communication - If blood glucose is greater than 14.0 mmol/L, check Beta-Hydroxybutyrate (Ketones) or urine ketones. If positive for ketones, patient/guardian/caregiver to self-administer correction insulin by syringe **OR** pen **AND** change infusion set. Nurse to notify most responsible health practitioner

Hypoglycemia

- ☑ Clinical Communication - Do not remove or stop Insulin Pump Therapy without Physician Order
- ☑ Clinical Communication - Treat according to Hypoglycemia Procedure - Adult (Pediatrics procedure to be developed)

Point of Care Testing (POCT)

- Blood Glucose Monitoring- POCT Nurse to review and sign Insulin Pump Therapy Bedside Logbook at the end of each shift. Completed form to be placed into chart daily at 0700 hours
- Blood Glucose Monitoring- POCT Before meals and bedtime
- Blood Glucose Monitoring- POCT 2 hours after site change
- Blood Glucose Monitoring- POCT at 0300 hours
- Blood Glucose Monitoring- POCT Every _____ hours
- Blood Glucose Monitoring- POCT Other (*specify*) _____

Patient Care

- Subcutaneous Cannula- Patient/guardian/caregiver to change site every _____ day(s) (*usually every 2-3 days*), starting _____ Date (yyyy-Mon-dd)

Monitors

- Monitor Pump Settings - Patient to manage pump according to their specified settings. Refer to “Insulin Pump Information Sheet” and “Insulin Pump Therapy Bedside Logbook” daily

Laboratory Investigations - *As required, choose only ONE of the following options depending on the on-site availability for testing*

Chemistry

- Beta-Hydroxybutyrate (Ketones)
 - Conditional Order: Available for nurse to activate if patient on insulin pump and blood glucose is greater than 14.0 mmol/L

Urine

- Urine Ketones (POCT Dipstick Urinalysis if available)
 - Conditional Order: Available for nurse to activate if patient on insulin pump and blood glucose is greater than 14.0 mmol/L

Medications

- Discontinue all previous insulin orders
- rapid acting insulin continuous SUBCUTANEOUSLY infusion via patient pump
Choose ONE:
 - lispro (HumaLOG®)
 - aspart (Novorapid®)
 - Other (*specify*) _____

Analytics

Baseline Analytics – Outcome Measure #1, Order Set Usage

Name of Measure	Number of times In-Hospital Orders for Self-Management of Insulin Pump Order Set order set used.
Definition	Number of times order set In-Hospital Orders for Self-Management of Insulin Pump Order Set is used. Overall, by zone, by sites, by domain (ED, Inpatient, etc.), and by units. Will be required on an ongoing basis with the ability to filter by location, time period, domain, etc.
Rationale	Intended to measure if the order set cited is being used and what % of time for the indicated disease or condition. May indicate areas with adoption issues or gaps in the order set.

Baseline Analytics – Outcome Measure #2

Name of Measure	Compliance to clinical standards of order set In-Hospital Orders for Self-Management of Insulin Pump Order Set.
Definition	The elements of the CKT for which it is important to measure compliance against in the order set are: <ul style="list-style-type: none"> • hyperglycemia rates (blood glucose greater than 14.0 mmol/L) • transition to Basal Bolus Insulin Therapy (when appropriate)
Rationale	Measure compliance to specified clinical standards within the CKT.

Relevant Guidelines, Procedures, Protocols, and Policies

Insulin Pump In-Hospital Therapy – ipumpit.ca

[Basal Bolus Insulin Therapy Website](#)

(Note: BBIT is appropriate if patient requires subcutaneous insulin)

- [How to BBIT: An Educational Resource for Prescribers AHS Adult Subcutaneous Basal Bolus Insulin Therapy \(BBIT\)](#)

[AHS Glycemic Management Policy – Adult](#)

- [Procedure: Treatment of Hypoglycemia - Adult HCS-206-01](#)
- [Procedure: Treatment of Hyperglycemia - Adult HCS-206-02](#)
- [Resource: Glycemic Management Policy Suite FAQ](#)

[Diabetes Canada Clinical Practice Guidelines](#)

References

1. Diabetes Obesity Nutrition Strategic Clinical Network. *Guidelines for the Safe Management of Insulin Pump Therapy in Hospital*. <https://extranet.ahsnet.ca/teams/policydocuments/1/clp-ahs-scn-don-guidelines-for-safe-management-of-ipt-in-hospital.pdf> Updated October 18, 2017.

Additional Readings and General References

[Insulin Safety & Diabetes Management Toolkit for Health Care Professionals](#)

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