**SARASOTA MEMORIAL HOSPITAL**

**NURSING PROCEDURE**

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<th>TITLE: MANAGEMENT OF PATIENT'S OWN INSULIN PUMP/CONTINUOUS SUBCUTANEOUS INSULIN INFUSION PUMP (dia13)</th>
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**ISSUED FOR:** Nursing

**RESPONSIBILITY:** RN

**PURPOSE:** To assist the patient with safe and accurate administration of their insulin utilizing their personal insulin pump during their hospital stay.

**OBJECTIVE:** To collaborate with the patient and physician to deliver the necessary insulin via a personal Insulin Pump system during a patient’s hospital stay.

**DEFINITION:**

1. **CSII- Continuous Subcutaneous Insulin Infusion**
   In CSII therapy, insulin is infused into subcutaneous tissue in small amounts at frequent intervals by an insulin pump. The pump is connected to the patient by a plastic tubing of varying length. It is connected to a 27-gauge or smaller needle/cannula which is inserted into the subcutaneous tissue. Rapid acting insulin analogs are most frequently used in the pump but Regular insulin or U500 insulin may also be used.

2. **Insulin Pump**
   An External electro-mechanical syringe pump used to deliver insulin continuously to a patient. The pump is programmed to deliver insulin at different rates.

3. **Basal rate**
   is the number of unit(s) the insulin pump is programmed to deliver each hour.

4. **Bolus dose**
   is the amount of additional insulin required before meals and/or at other times when special circumstances arise.

5. **Total Daily Insulin Dose**
   the total amount of insulin from both basal rate(s) and bolus doses that the patient has taken per external insulin pump in the last 24 hours. This amount can be accessed from the utility or review screen in the patient’s external insulin pump and starts from 2400 hours (12 midnight).

6. **“No Delivery” Alarm**
   an alarm signal (either audible...
beeps or vibration) that alerts the insulin pump wearer that insulin delivery through the pump has stopped. This usually occurs when the pump detects a blockage or occlusion. The patient must change the entire infusion set.

7. **Diabetic Ketoacidosis (DKA):** In the case of the external insulin pump where only rapid-acting insulin is used, an interruption of insulin delivery for more than 2 hours can result in DKA.

**KNOWLEDGE BASE:**

Patients using insulin pump therapy at home have undergone extensive evaluation and training to manage this therapy. They can continue diabetes self-management with their pumps in the hospital provided their mental and physical capacity has not been compromised by their current illness.

1. The patient’s mental status will be assessed upon admission and then re-assessed every shift. The **patient must be capable of programming basic pump functions such as: bolus dose, basal rate and suspend.**

2. The preferred site of insertion is the abdomen, and site rotation is essential to ensure an even insulin absorption. Site selection would include areas free of scar tissue, stretch marks, bony prominences, or inflammation. It is also preferable that the patient be able to easily visualize the site to monitor for complications.

3. There are different types of Insulin pumps available. All pumps contain:
   a. Programming for basal and bolus doses of insulin.
   b. Memory which records the history of insulin delivery.
   c. “Suspend” or “hold” capabilities so the infusion can be stopped when patient drops too low or if the patient is going to change the needle insertion site or shower.
   d. The manufacturer’s name and 24/7 resource phone # is listed on each pump.

4. The insulin pump by itself **does not** contain a sensor.
capable of monitoring blood glucose, therefore, the patient or nursing staff will be responsible for completing this testing.

5. CSII pumps and supplies are obtained from specific distributors and cannot be purchased locally. **The hospital does not stock these supplies.** The patient is responsible for maintaining a stock of pump syringes/reservoirs, tubing sets and batteries during the hospitalization.

6. CSII pumps are watertight, but not waterproof. Therefore, they should not be submerged in liquid for any length of time.

7. **Some Procedures may require removal of pump from the patient temporarily:** MRI, CT, X-ray, cardiac catheterization, nuclear stress test and possible others. The presence of the pump is information that should be communicated in your hand-off to the procedural area.

**Contraindications include:**

1. If the patient is unable to manage the pump safely.
2. Altered state of consciousness
3. Patient receiving medications that alter his/her state of consciousness
4. Patient at risk for suicide
5. Patients insulin pump not working properly
6. Patient does not have the appropriate supplies.

**Equipment patient is responsible for throughout admission:**

1. Continuous Subcutaneous Insulin Infusion Pump with batteries.
2. Subcutaneous Insertion Set (this item is the micro-volume infusion set connected to the syringe/reservoir in the pump)
3. Pump syringe/reservoir
4. insulin

**Patient Responsible for:**

1. Continuous Subcutaneous Insulin Infusion Pump with batteries.

**PROCEDURE:**

**On admission to the unit the RN will:**

1. Obtain order from physician to CONTINUE pump therapy which should include:
Continuation of pump therapy during hospitalization at current settings

b. Endocrinology Consult if physician not comfortable ordering insulin pump
c. Type of insulin to be used in pump
d. Frequency of patient self-monitoring of blood glucose, or the preference of the patient. The patient using an insulin pump should check their blood glucose 4-6 times a day and record on bedside log

2. RN and patient review, complete, and sign the “Assessment Sheet for the Patient using an Insulin Pump” form # 922272. The insulin and insulin pump is considered a home medication and treated as such. The form is to be scanned to pharmacy then placed in the physician’s progress notes section of the chart.

3. RN to review with patient and patient will sign the “Bedside log for the patient using an Insulin Pump” form # 922271. The patient uses this form to record bolus doses of insulin and/or pump changes. The patient should be instructed to report any changes they make in pump settings to the nurse and record them on the log. Completed logs will be filed in the MAR section of the chart.

4. Complete “The Continuous Subcutaneous Insulin Infusion Pump Therapy Patient Agreement” form and place in hard chart under consents and provide copy to patient

5. Consult Diabetes Treatment Services if needed

**Continued Nursing Responsibilities**

1. Nursing staff will perform a minimum of BID, (AM & PM, preferably AC Breakfast & HS), testing using an SMH Accuchek meter so results will download into the EMR.

**Pump Infusion Site:**

The infusion site will be changed every 24-72 hours.

1. The infusion site will be assessed on admission
and every shift throughout the hospitalization. Document in Assessment/Reassessment flow sheet.

2. If inflammation, redness, tenderness, swelling, or leaking of insulin at the infusion site occurs, the site should be changed immediately by the patient. The nurse will document in electronic medical record, the new location and reason for the site change.

3. Any physician’s orders indicating a change to the patient’s pump settings must be put in SCM as a “Med communication order”

4. If patient is unable to manage insulin pump therapy independently, the physician must be notified and orders for an alternative insulin therapy must be obtained.

5. If the pump will be discontinued for a prolonged period of time, the physician must be notified for an alternative insulin therapy. (i.e., intravenous insulin drip or subcutaneous injections)

6. Consult dietary or Pharmacy as needed

Additional resources include:
   a. Diabetes Treatment Services
   b. The Physician managing the pump
   c. Wound Care Unit

**Monitor for signs of Hypoglycemia** – follow SMH Procedure (dia14) Insulin Reaction/hypoglycemia Protocol for the Adult Patient.

- If Blood sugar less that 50, put pump in “Suspend “mode, treat per protocol (dia14) and call physician.

**NOTE:** Pump orders may need to be adjusted or discontinued for periods of time (NPO, procedures, surgery); the patient will need basal insulin even when they are NPO, call the physician for orders.

**To disconnect a pump:** disconnect the infusion set from the patient, NOT at the pump.

1. Do NOT remove the cartridge from the pump without first disconnecting the infusion set from the patient.
2. If the pump is to be disconnected >60 minutes, the physician MUST order an alternative insulin therapy to be started at the time the pump is stopped.

**DOCUMENTATION:**

Continuous Subcutaneous Insulin Infusion Pump Therapy Patient Agreement Form #922273.

Assessment Sheet for the Patient Using an Insulin Pump Form # 922272.

Bedside Log for the Inpatient Using an Insulin Pump Form # 922271.

Nursing Assess/Reassessment: Assess and document the site condition, site care, changing of reservoir or syringe, checking pump for low battery and any other pertinent information, patient teaching and response.

Medication Administration Record (eMAR): Document on the EMAR only if the SMH Pharmacy has supplied insulin to refill the pump and a pharmacist has generated the order.

Glycemic Control Flowsheet: Document insulin type and that the patient is self managing an insulin pump.

**REFERENCES:**


Dalton, M.F.; Klipfel, L.; Carmichael, K. Safety issues: Use of continuous subcutaneous insulin infusion (CSII) pumps in hospitalized patients. Hospital Pharmacy. (2006); 41(10), pg. 956-969.


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