**Outcome Measure: Insulin Injection Observations**

**Level 5 Outcome (Performance)**

Observe the use of insulin pen devices to administer insulin to patients and injection technique at the hospital during the baseline and post-intervention periods. A sample of at least 45 observations should be collected during each observation period using the check list in Appendix A.

The sample should be collected from three different patient care areas at pre-specified times when insulin administration is most common (e.g. pre-breakfast, pre-lunch, pre-dinner, and at bedtime). The number of observations in each patient care area and during each time frame should be approximately equal. Thus there should be at least 15 observations in each patient care area and at least 8 observations during each mealtime time frame (no minimum for the bedtime time frame). An “other” category (with no minimum) is included for injection observations that occur outside of these timeframes. For example:

|  |  |
| --- | --- |
| Patient Care Area | Time Frame (# of observations) |
| Ward A (Adult Medicine)  15 observations | Pre-Breakfast 7am-9am (6)  Pre-Lunch 11am-12noon (5)  Bedtime 8pm-10pm (3)  Other (1) |
| Ward B (Adult Surgery)  15 observations | Pre-Lunch 11am – 12noon (5)  Pre-Dinner 4pm-6pm (6)  Bedtime 8pm-10pm (4) |
| Ward C (General Pediatrics)  15 observations | Pre-Breakfast 7am-9am (3)  Pre-Lunch 11am-12noon (4)  Pre-Dinner 4pm-6pm (5)  Bedtime 8pm-10pm (3) |
| **TOTALS**  45 observations | Pre-Breakfast 7am-9am (9)  Pre-Lunch 11am-12noon (14)  Pre-Dinner 4pm-6pm (11)  Bedtime 8pm-10pm (10)  Other (1) |

Consult members of the interprofessional team to help determine which patient care areas will be most appropriate and what time frames should be sampled.

The baseline and post-intervention data sample should be reasonably similar. The observations should be conducted in the same three patient care areas at baseline and post-intervention. Moreover, the number of observations during each time frame should be reasonably similar during the baseline and post-intervention period.

Prior to performing the observations, the observer should obtain permission from the unit director or nurse manager. Tell the unit director or nurse manager that you are auditing “medication administration procedures” for quality improvement purposes. **Do NOT** tell the unit director or nurse manager that you are auditing insulin pen device use. The observations may be announced or unannounced. However, if unannounced, the nursing staff should be made aware of the time frame during which unannounced audits will occur.

**When conducting an observation, the observer should:**

1. Obtain a printout from the pharmacy with the names of all patients with an ACTIVE order for one or more insulin pen device(s) in the patient care area. Determine which patients who are likely to be administered insulin (via pen device) during the time frame of the observation (e.g. if the audit is being conducted at bedtime, determine which patients should be administered insulin via pen device at bedtime).
2. Bring 10-15 copies of the insulin injection check list to the ward. Bring a clipboard and pencil to document your findings.
3. Determine which members of the nursing staff will be responsible for administering insulin to the identified patients. Tell each nurse that you would like to observe him/her administering medications and state the specific patient name(s). The purpose of your observation is to audit “medication administration procedures” for quality improvement purposes. **Do NOT tell the nurse or the patient that you are auditing insulin pen device use.**
4. Use the insulin injection check list to document your findings. Be sure to identify yourself (the observer), nurse, date, and unit name, as well as the time frame of the observation at the top of each form. Instead of recording the full names of the observer and nurse, consider recording just four characters (first three letters of first name and first initial of last name). If a step is performed as described (and in an appropriate order), mark that step as “YES” (meaning, YES it was observed). If a step is NOT performed as described or performed at a clearly incorrect time during the sequence, mark that step as “NO.” There is some flexibility with regard to the order that the steps are performed. For example, the nurse may mix NPH insulin before identifying the patient or scanning the patient’s ID band. This would be acceptable if the nurse then administered the insulin within 60-90 seconds of mixing the insulin. It would NOT be acceptable if the nurse mixed NPH insulin after it has already been injected. Thus, the observer must exercise some judgment to determine if a step was completed in an appropriate manner.

If the observer did not observe the nurse performing a step because the observation began after the nurse had started to prepare the insulin device for use OR the observation was terminated before the nurse could reasonably complete all steps in the procedure, the step should be marked “Not Observed.” If the step is not applicable to the circumstances (e.g. the pen is not expired and therefore no replacement is needed), the observer should mark the “not applicable (n/a)” box.

**Important Note - The distinction between “NO” and “Not Observed”**

“No” should only be marked if observer “knows” the step was not performed or, if performed, it was not performed properly. “Not observed” should only be marked if the observer cannot determine whether (or not) the step was performed.

For example, the observer enters the patient’s room as the nurse is attaching a needle to the pen device. It is clear that the needle is a new needle as the disposable packaging is on the patient’s meal tray. Thus, the observer will mark “YES” for the step “Attaches new disposable need onto the pen.” However, the observer in this example did NOT witness the nurse retrieve the pen device, wash his/her hands, identify the patient according to hospital policy, or check the label. Therefore, the “Not Observed” should be marked for these steps as it is unknown if the nurse performed these steps or not. “NO” should only be marked if the nurse did NOT perform the step or did not perform the step correctly during the observation when he/she would be reasonably expected to perform the step.

Another example: The observer watches the nurse retrieve the insulin pen device from a drawer in the patient’s room (not an approved storage location). This would be marked “NO” as the step was not performed correctly. The observer witnesses the entire injection procedure. At the conclusion of the procedure, the nurse places the insulin pen device in his/her pocket, proceeds to another patient’s room, and begins to administer medications to the new patient. It was observed that the nurse did not return the pen device to a hospital-approved storage location in a timely manner (in this case, prior to administering medications to another patient — therefore this step should be marked “NO.” Had the observer left the area (and terminated the observation) before the nurse had a reasonable opportunity to return the medication to a hospital-approved storage area, the step would be marked “Not observed” as it is not known whether the nurse performed this step correctly or not.

1. If possible, the observer should follow each nurse through the entire medication administration process for each identified patient. To keep the illusion that the observer is auditing the entire medication administration procedure, take additional notes about other observations (random and unrelated to the purpose of the audit) on the reverse side of the check list and stay with the nurse as long as practical. However, you are not required to observe all steps outlined on the check list. The observer may begin and terminate the observation at any point. However, the observer should appropriately mark those steps that could not be witnessed as “Not observed.”
2. While it is not a requirement to observe all steps for each patient, it is important to witness all steps at least 15 times during the baseline and post-intervention audit periods. Thus it may be necessary to conduct additional audits if you did not observe, for example, the nurse retrieving the insulin pen device from a hospital approved storage location 15 or more times during the data collection period. It is NOT necessary to observe the three items marked with an “\*” 15 times as they will most likely be “n/a” in most circumstances. Thus, you must have at least 15 “YES, “NO” or “n/a” observations for every item on the check list.

Implementation notes:

1. The use of multiple observers is encouraged.
2. For data analysis, calculate simple descriptive statistics where the unit of analysis is each step (i.e., the percentage of times step 1 was done correctly when step 1 was observed). That will provide the hospital with information about the steps in the insulin injection process that pose potential safety risks such that attention can be directed there during the implementation phase. The number of observations (n) for each step is the denominator for the calculation.

**Appendix A**

**Insulin Injection Observation Check List**

Observer: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Nurse: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Ward/Unit: \_\_\_\_\_\_\_\_ Timeframe: ☐ Breakfast ☐ Lunch ☐ Dinner ☐ Bedtime ☐ Other \_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Step | Step Performed | YES | NO | Not observed | n/a\* |
| 1 | **Retrieves** insulin pen device from hospital-approved patient-specific storage area |  |  |  |  |
| 2 | **Expiration** is documented on label |  |  |  |  |
| 3 | **Obtains** replacement pen if expiration date is not documented or if expired\* |  |  |  |  |
| 4 | **Displays** use of proper hand hygiene prior to patient contact |  |  |  |  |
| 5 | **Performs** patient identification (according to hospital policy) |  |  |  |  |
| 6 | **Checks** medication label |  |  |  |  |
| 7 | **Scans** the patient’s ID band and the insulin pen bar code (prospectively, prior to administration) [when applicable]\* |  |  |  |  |
| 8 | **Mixes** insulin by gently tilting pen device back and forth 8-10 times or rolling in palm of hands (**NPH insulin only**)\* |  |  |  |  |
| 9 | **Swabs** rubber stopper with alcohol swab |  |  |  |  |
| 10 | **Attaches** new disposable needle onto the pen |  |  |  |  |
| 11 | **Primes** pen before injection (e.g. dials 2 units on the dose selector, points needle up so that bubbles are forced to top, and firmly presses plunger until drop of insulin appears; repeat if needed until drop of insulin appears; if no drop appears after 6 attempts, changes pen device) |  |  |  |  |
| 12 | **Dials** correct dose (e.g. based on patient-specific order) |  |  |  |  |
| 13 | **Selects** appropriate injection site (e.g. abdomen, back of arm, thigh) |  |  |  |  |
| 14 | **Pinches** fold of skin§ at the injection site, **holds** pen at 90 degree angle# to skin, and **inserts** pen needle all the way into the skin |  |  |  |  |
| 15 | **Lets** go of skin fold and **injects** the entire dose of insulin |  |  |  |  |
| 16 | **Keeps** plunger pressed and **holds** against the skin for at least 5 seconds after injection is given |  |  |  |  |
| 17 | **Removes** and **discards** needle in appropriate sharps container |  |  |  |  |
| 18 | **Returns** pen device to hospital-approved patient-specific storage area in a timely manner (e.g. within 15 minutes of injection or prior to giving medications to another patient) |  |  |  |  |

Other observations of concern:

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\* Not applicable (applies to only 3 steps in the process).

§ For 5mm BD mini needle, it is not necessary to pinch a skin fold.

# For children or very lean patients, a 45° angle is permissible if 8mm (5/16”) or 12.7mm (1/2”) length needle is used.