



Strategies for Ensuring the

Safe Use of Insulin Pens IN THE HOSPITAL

Quality Improvement Initiative and Safety of Insulin Pen Use in the Hospital

Community Medical Center
Missoula, Montana

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Team Members

- Team leader
 - Mikayla Klug, Pharm.D., Pharmacy Resident
- Team members
 - Kevin Cady, Pharm.D., Clinical Pharmacy Manager
 - Janice Tate, RN, CDE, Diabetes Nurse Educator
 - Marcie Willmore, RN, Med/Surg Clinical Director
 - Theresa Horst RN, Coordinator, Quality and Risk Management
 - Stacey Rice, BSN, RN, Clinical Informatics Analyst of ICU, Med/Surg, Ortho & RNU



Community Medical Center

- Community teaching hospital
- 151-bed, acute-care hospital
 - General medicine and surgery
 - Accredited by The Joint Commission
 - Accredited by the Commission on Accreditation of Rehabilitation Facilities (CARF)
- Population served
 - ~5,000 inpatient admissions
 - ~18,000 Emergency Room visits
 - ~4,000 inpatient and outpatient surgeries



Background and Description

- Insulin Pen Use
 - >85% of our insulin use comes from delivery by insulin pen devices
 - Humalog®
 - Humalog® Mix 75/25™
 - Lantus® SoloSTAR®
 - Levemir® FlexTouch®
- Participation
 - With the recent risk reporting to regulatory agencies, we believed a thorough review of our practice would validate or expose any risk to our patients

Background and Description

- The need for change
 - Based on the baseline data we saw small risk for the sharing of patient specific insulin pens
 - However, other processes need improvement
 - Nursing education of insulin
 - Administration technique
 - Sterile technique
 - Holding pen 5-10 seconds after administration
 - Storage of insulin pens
 - Insulin pens being left in patient rooms

Process Improvements

- Policy & Procedure
 - Insulin Pen Use
 - Administration
 - Storage
- New Insulin Pen Labeling
 - Labels on insulin pen cartridge
 - Patient-specific label
 - Expiration label
 - Tamperproof tape
 - Labels on insulin pen cap
 - High alert sticker
 - Patient-specific label and expiration label are now covered in clear tape to reduce risk of damaged labeling or lost labels

Process Improvements

- Diabetes Educator
 - Involvement of our diabetes educator who continues to monitor and educate on process improvement
- Nursing Continuing Education (CNE)
 - 1 hour of free CNE on insulin pharmacokinetics and new policies and procedures, including administration and storage

Selected Results: Insulin Injection Observations

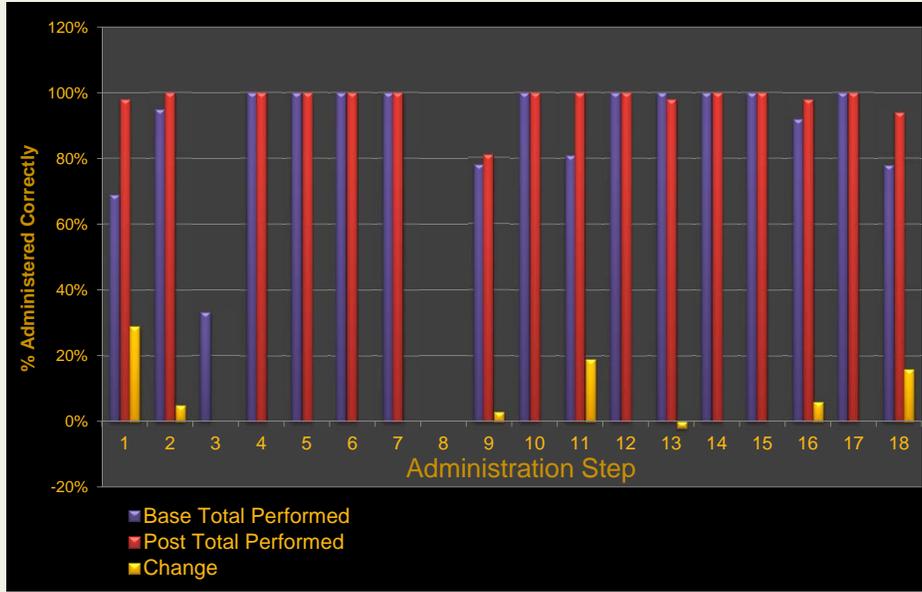
Step	Step Description
1	Insulin pen device from hospital-approved patient-specific storage area
2	Expiration is documented on label
3	Obtains replacement pen if expiration date is not documented or if expired*
4	Displays use of proper hand hygiene prior to patient contact
5	Performs patient identification (according to hospital policy)
6	Checks medication label
7	Scan patient's ID band & insulin pen bar code (prospectively, prior to admin) [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 injection site, holds pen at 90° angle to skin, and inserts pen needle all the way into 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)

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

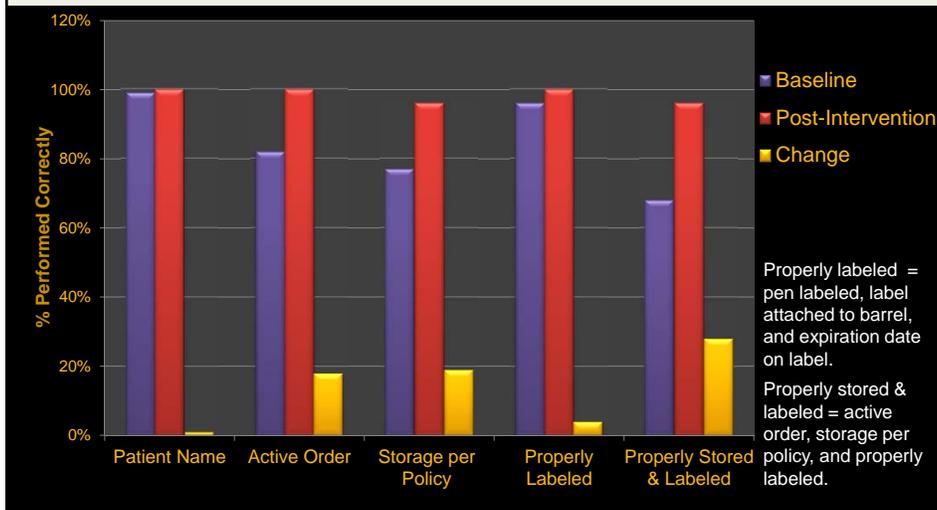
§ For 5mm BD mini needle, it is not necessary to pinch a skin fold.

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

Selected Results: Insulin Injection Observations



Selected Results: Pen Storage and Labeling Audit



Selected Results: Nurse Survey

- Response Rate
 - 5% baseline vs 8.5% post
- Areas for Improvement
 - Insulin time-action profiles
 - Proper steps to insulin administration
 - Storage of insulin pens
 - Results for the nursing survey were similar at baseline and post intervention
- 1 report of possible insulin pen sharing

Issues

- Nurses had issues with the nursing survey in not being able to watch videos along with complaints about the survey
 - Due to access issues it is undetermined if the results of the survey are actual reflections of the nursing knowledge
- Baseline insulin pen administrations were not blinded
 - May have led to better baseline outcomes
- The goal of observed insulin pen administrations were not met
 - Reported 37 administrations with a goal of 45
- Inadequate isolation medication storage devices led to decreased insulin pen storage compliance

Next Steps

- New Policies and Procedures
 - Keeping up to date with practice
- Nursing Education by Diabetes Educator
 - Huddles
 - Small group meetings
 - Monthly nursing meetings
 - Presence on floors that will allow for one-on-one education

Next Steps

- Yearly Nursing Competencies (Healthstreams) will now include
 - Insulin time-action profile education
 - Steps for accurate insulin pen administrations
 - Proper storage of insulin pens within the units



Mentored Quality Improvement Activity: A Broad View

- Patient Safety
 - With the recent risks reported to regulatory agencies, we believed that being involved in the ASHP Mentored Quality Improvement Activity allowed for the utmost assurance that we are performing all necessary procedures to ensure the safety of our patients



Mentored Quality Improvement Activity: A Broad View

- Hospital Participation
 - Promoted a team approach to ensure insulin pen safety
 - Established the need for written policies and procedures on insulin pen use for our hospital
 - Recognized the need for continuous nursing education on insulin profiles
 - Increased the awareness of pen safety across the hospital