Strategies for Ensuring the

Safe Use of Insulin Pens IN THE HOSPITAL

One pen.
One patient.

Improving Safety of Insulin Pen Use

Indiana University Health Ball Memorial Hospital
Muncie, Indiana

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One patient.

Team Members

- Team leader: R. Brian Wolfe, Pharm.D., BCPS, Pharmacy Services
- Team members
  - Melanie Rumfelt, RN, Manager Clinical Operations, Medical Diabetes Unit
  - Rebecca Clark, RN, Manager Clinical Operations, 9N Medicine Unit
  - Dallas Lambert, RN, Manager Clinical Operations, Cardiac Progressive Unit
  - Carrie Huffman, RN, Manager Clinical Operations, Progressive Care Unit
  - Maggie Sims, RN, Manager Clinical Operations, Medical Telemetry Unit
  - Chanel Venable, RN, Manager Clinical Operations, 7N Surgical Services
  - Lori Delaney, RN, Clinical Nurse Specialist, Medical-Surgical Services
  - Patricia Cronk, RN, Certified Diabetes Educator
  - Beverly Dowling, RN, Certified Diabetes Educator
  - Jonna Grindle, RN, Professional Nursing Educator
  - Sandy Cable, RN, Team Leader, Professional Nursing Educator
  - Sherry Harrigan-Ridenour, RN, Quality Management

Indiana University Health Ball Memorial Hospital

- 1 of 18 hospitals in the Indiana University Health System
- Regional referral hospital for 6 counties in East Central Indiana
- 350-bed community teaching hospital in a Midwest city of 60,000
- Internal medicine and family medicine residency programs
- Level 2 Trauma Center
- Serving medical, surgical, cardiology, oncology, critical care, OB/GYN, orthopedic, and pediatric patients

Background and Description

- Nationwide, continued use of insulin pens has come under scrutiny following high profile instances of inappropriate use
- 2 hospitals in 18-hospital system continue to use insulin pens
- Desire to demonstrate safe, effective, efficient, and appropriate use of insulin pens in an inpatient setting using an unbiased third-party methodology
- Desire to use insulin pens to train new patients with diabetes on device to ease transition to self-management following discharge
- Patient-specific insulin pens stored in locked medication server in patient room
- Baseline data identified several opportunities for improvement
  - Nurse baseline knowledge of duration and peak effects of various insulins
  - Insulin administration technique
  - Insulin pen labeling and storage

Process Improvements

- Nurse baseline knowledge assessment led to posting peak/duration graphics on hospital intranet resulting in improved communication of duration and peak effects of various insulins
- Nurse knowledge baseline led to nursing education consultant providing small group in-services resulting in improved performance of insulin pen administration technique
- Baseline identified issues between patient-specific and product-specific bar codes
- Baseline verified good tamper-resistant and expiration dating labeling practices in place
- Improvement not yet seen in assuring patient-specific labels do not separate from pen

Selected Results: Insulin Injection Observations

- Proper insulin mixing technique
  - 9N Baseline 83% 9N Post-intervention 100%
  - MDU Baseline 91% MDU Post-intervention 100%
- Injects insulin at 90 degrees into pinched skin fold
  - 9N Baseline 93% 9N Post-intervention 100%
- Releases skin fold and injects whole insulin dose
  - MDU Baseline 84% MDU Post-intervention 100%
- Depresses insulin pen plunger for 5 seconds after dose delivered
  - CPC Baseline 86% CPC Post-intervention 100%

Selected Results: Pen Storage and Labeling Audit

- Based on audit results, work continues on
  - Bar code scanning to ensure correct pen is used, especially when patients are housed in a semi-private room
  - Ongoing facility remodeling to convert all semi-private to private rooms will take another 2-3 years to complete

Selected Results: Nurse Survey

- Based on Baseline and follow-up Nurse Knowledge surveys, ongoing support will focus on
  - Insulin peak effect and duration of action

Lessons Learned

- Nurse managers, educators, and staff nurses were highly motivated and quickly improved insulin pen administration technique
- Baseline Knowledge survey is a powerful teaching tool

Next Steps

- Annual assessment of insulin pen administration technique using a baseline survey is planned
- New nurses will go through an insulin pen administration technique check-off
- Pharmacy Services will further explore patient-specific vs. product-specific bar code scanning with computer system vendor

Mentored Quality Improvement Activity: A Broad View

- Participation in this ASHP Mentored Quality Improvement project has heightened overall awareness of methods used in assessing and assuring safe drug therapy
- Participation promoted interprofessional team approach
- Participation promoted ensuring insulin pen safety, as well as provided data for decision making