Strategies for Ensuring the
Safe Use of Insulin Pens
IN THE HOSPITAL

Insulin Pen Mentorship
Mercy Hospital Joplin
Joplin, Missouri
Sarah Boyd, Pharm.D., BCPS, Team Leader
August 2015

Team Members

- **Team leader**
  - Sarah Boyd, Pharm.D., BCPS
    - Director of Pharmacy

- **Team members**
  - Amy Honey, Pharm.D., BCPS
    - Pharmacy Clinical Manager
  - Tim Holding, Pharm.D.
    - Pharmacy Operations Manager
  - Vicki McCleary, RN, BSN
    - Director Medical Surgical
  - Karen Parsons, RN, BSN
    - Nursing Manager 3MS, 4MS, 6 Surgical
  - Kelli Bigando, M.S., RN, ACNS-BC
    - Director Medical Surgical
  - Kelli Whitehead, RN
    - Nurse Manager
  - Donna Stokes, RN
    - Infection Control Coordinator
  - Melanie McNeill, RN, BSN
    - Infection Control Coordinator
  - Joan Wilson, RN, BSN
    - Clinical Educator, Trauma/ICU/TCU/ED
  - Kristen Fenimore, RN
    - Diabetes Educator
Mercy Hospital Joplin

• Community-based hospital
  – Baseline data
    • Collected at 120-bed replacement facility
  – Post-intervention data
    • Collected at 250-bed facility

Background and Description

• Insulin pens used since 2009
• In March 2015, we moved to our new hospital
• We believed the mentorship program would help us focus on insulin pen safety throughout the move continuum
  – Medication storage would be changing with new hospital
  – Increasing reports of medication errors within ISMP, the need to review our own processes to ensure safe use
    • Although insulin pens have been used for years, the administration had not been observed
Process Improvements

• Storage
  – Completed policy/procedure for in-room patient medication lock boxes
  – Created a work-out group focusing on re-dispensing of insulin pens to address problem of multiple pens being available for one patient

• Labeling
  – Secured the label to the pen with tape
  – Provided education on beyond use date stickers

Process Improvements (cont.)

• Education
  – Quick reference tool created to help education on time-action profiles of the different types of insulin
  – Pharmacy now participates in nursing orientation
    • Discuss insulin pen safety and overall management process
Selected Results: Direct Observations

Efforts focused on those areas in which education could be most impactful

- Beyond use date stickers are applied to every pen, but through observation learned that our nursing co-workers were unfamiliar with its necessity
- During the intervention period, education provided via gemba huddles and nursing newsletter

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**Insulin Pen Mentorship Direct Observation**

<table>
<thead>
<tr>
<th>Step Description</th>
<th>Baseline ICU</th>
<th>Post CVI</th>
<th>Baseline Unit A</th>
<th>Post 4MS</th>
<th>Baseline Unit E</th>
<th>Post 7CM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expiration is documented on label</td>
<td>93%</td>
<td>93%</td>
<td>85%</td>
<td>100%</td>
<td>87%</td>
<td>100%</td>
</tr>
<tr>
<td>Obtains replacement pen if expiration date is not documented or if expired*</td>
<td>100%</td>
<td>0%</td>
<td>50%</td>
<td>75%</td>
<td>50%</td>
<td>100%</td>
</tr>
<tr>
<td>Displays use of proper hand hygiene prior to patient contact</td>
<td>92%</td>
<td>93%</td>
<td>73%</td>
<td>93%</td>
<td>93%</td>
<td>100%</td>
</tr>
<tr>
<td>Checks medication label</td>
<td>86%</td>
<td>87%</td>
<td>100%</td>
<td>87%</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>
Selected Results: Nurse Survey

- Based on nursing opinion, we focused on time-action profiles
- The education piece was not in place until after the hospital move

<table>
<thead>
<tr>
<th>Knowledge and Skill Development Needs</th>
</tr>
</thead>
<tbody>
<tr>
<td>12. In your opinion, which of the following is the greatest knowledge or skill gap that nurses have with regard to the safe use of subcutaneous insulin in hospitals? (Select only one)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Answer</th>
<th>Baseline Response (%)</th>
<th>Post Response (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subcutaneous injection technique</td>
<td>1%</td>
<td>0%</td>
</tr>
<tr>
<td>Hypoglycemia—what is the risk and how to manage it</td>
<td>3%</td>
<td>5%</td>
</tr>
<tr>
<td>Insulin pen devices—unique features and precautions</td>
<td>5%</td>
<td>1%</td>
</tr>
<tr>
<td>Accurately interpreting gliclazide and administering correct insulin dose</td>
<td>1%</td>
<td>0%</td>
</tr>
<tr>
<td>Time-action profiles of different insulin products (e.g., time to stop, peak, and duration of each insulin product) and timing of injections</td>
<td>27%</td>
<td>16%</td>
</tr>
</tbody>
</table>

Total: 37% 100% 20% 100%

Selected Results: Pen Storage and Labeling Audit

- Implementation of in-room lock boxes was successful based on proper storage
- “Smudge proof” labels not requiring tape overlay was not beneficial
  - Additional issues found with labels falling off

Properly labeled = pen labeled, label attached to barrel, and expiration date on label.
Properly stored & labeled = active order, storage per policy, and properly labeled.
Lessons Learned

• Labeling and storage audit provided insight into a couple issues with recent changes
  – New “smudge proof” labels
  – In-room patient medication lock boxes
• Direct observations were integral to ensuring education was received and part of daily practices
• The nurse survey allowed us to see various educational opportunities

Next Steps

• Based on labeling and storage audit
  – Training within the nursing newsletter to highlight labeling requirements of insulin pens
  – Audit the use of patient medication lock boxes on all units
    • Initially 5 medication lock boxes on each unit
      – Based on findings, determine if further audits are necessary
Next Steps

• Based on direct observations
  – Training within the nursing newsletter to highlight administration procedures using insulin pens
  – Increase direct observations
    • Train super users for each unit
      – At minimum 1 RN per unit per shift
      – Super user training to be completed by end of August 2015

Next Steps

• Based on nurse survey
  – Complete posters illustrating the time-action profiles of various types of insulin
    • Laminate and post in all med rooms
  – Increase one-on-one education during both orientation via clinical nurse managers and pharmacy
Mentored Quality Improvement Activity: A Broad View

• The mentorship helped maintain insulin pen safety throughout the hospital move
  – Patient medication lock box storage process and procedure development was an interprofessional process that aided in the success of our educational efforts
  – Direct observations allowed us to validate that the education provided was implemented at the bedside
    • Direct observations were just as educational to the observer in that implementation of new educational tools were based on “real life” needs vs. implied issues