Dispensing Patient-Specific Insulin

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Newport Hospital
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Goals

- Background on insulin dispensing at Newport Hospital
- Reasons for change
- Purchasing patterns and financial impact
- Describe our process for dispensing patient-specific insulin and workflow issues
- Methods of communication
Newport Hospital

• 129-bed community hospital founded in 1873

• A Lifespan partner
  • Rhode Island Hospital
  • Hasbro Children’s Hospital
  • The Miriam Hospital
  • Newport Hospital
  • Bradley Hospital
  • Gateway Healthcare
Background

• Before January 2014, high usage insulins were delivered as “floor stock” vials
  • Nursing unit was charged for the vial
  • Multi-dose and multi-patient
  • Novolin® R, Novolin® N, Novolin® 70/30, Humalog®, and Lantus®
  • All other insulins were sent as patient-specific vials
  • Humulin® R U-500 doses were individually drawn up by the pharmacy
Background

• Vials were labeled with a 28-day beyond use date and a “refrigerate” sticker when dispensed from the pharmacy
  • Requested from the nurse
  • Assumption that the vial would be opened that day

• Pharmacy techs were responsible for inspecting the refrigerators on rounds to look for expiring vials
  • Techs would find many vials expired and many unopened
  • Nurses often keep vials in their cart-on-wheels
Reasons for Change

• Centers for Disease Control and Prevention (CDC):

Injection Safety

• In 2007 CDC recommended single-dose vials whenever possible
• 2010:
  • “Multi-dose vials should be dedicated to a single-patient whenever possible.”
  • “If multi-dose vials must be used for more than one patient, they should not be kept or accessed in the immediate patient treatment area.”
• [http://www.cdc.gov/injectionsafety/providers/provider_faqs_multivials.html](http://www.cdc.gov/injectionsafety/providers/provider_faqs_multivials.html)
Reasons for Change

• Safe Injection Practices Coalition

• CDC One and Only Campaign
  • http://www.cdc.gov/injectionsafety/1anonly.html

• The Joint Commission Sentinel Event Alert Issue 52, June 16, 2014
  Preventing infection from the misuse of vials
  • Reiterates CDC position
What did we change and when?

- November 2013 RIH and TMH change to *patient-specific vials of insulin*
  - Each patient gets a vial and is charged
  - No common floor stock vials

- NPT changes in January 2014
The CDC is taking action to prevent unsafe injection practices that may result in disease transmission, including hepatitis B virus.


- Recommend that multi-dose vials be dedicated to a single patient whenever possible
- If a multi-dose vial enters a patient's room, it should be dedicated to that patient
- Syringes and needles should never be used for more than one patient
- 28-day beyond-use date for multi-dose vials

**WHAT IS CHANGING on 1/27/2014?**

- Insulin vials will be labeled and sent from pharmacy on a patient-specific basis
- Vials will be stored in patient-specific bin in the Omnicell tower
- First vial will be sent automatically; additional vials will require a call to pharmacy
- Extra vials will be stored in the night cabinet refrigerator for after-hours use
- The hospital will switch from Novolin® to Humulin® for human insulins R, N, and 70/30 in order to take advantage of patient-specific 3 ml vials
How did purchasing change?

<table>
<thead>
<tr>
<th>Avg. # vials per month:</th>
<th>Pre-implementation</th>
<th>Post-implementation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Novolin® R 10 mL</td>
<td>21</td>
<td>0</td>
</tr>
<tr>
<td>Humulin® R 3 mL</td>
<td>0</td>
<td>30</td>
</tr>
<tr>
<td>Savings per year:</td>
<td></td>
<td>$4,400</td>
</tr>
</tbody>
</table>

- No significant change for NPH insulin. Low-volume.

<table>
<thead>
<tr>
<th>Avg. # vials per month:</th>
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<th>Post-implementation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Humalog® 3 mL</td>
<td>23</td>
<td>62</td>
</tr>
<tr>
<td>Financial impact:</td>
<td></td>
<td>Additional cost estimated $6,200 annually</td>
</tr>
</tbody>
</table>

- We were using Humalog® 3 mL vials as floor stock prior to January 2014
How did purchasing change?

<table>
<thead>
<tr>
<th>Avg. # vials per month</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Levemir® 10 mL</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Lantus® 10 mL</td>
<td>13</td>
<td>33</td>
</tr>
</tbody>
</table>

- Levemir® was always sent as a patient-specific vial
- No significant financial impact. Low volume.
- Financial impact: potential cost increase of $39,000 annually
Lantus® Purchasing

Vials of Lantus

0
5
10
15
20
25
30
35
40
45

SEP OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG

Vials of Lantus
Lantus® and Levemir® by the Unit

• In July 2014 the Pharmacy began dispensing *individual doses* of the basal insulins Lantus® and Levemir®.
• IT Department created a “charge by the unit”
• A report prints twice a day at 0630 and 1830
• Pharmacist prints a label and charges by the unit
• Pharmacy tech draws up the doses in compounding aseptic isolator
Lantus® and Levemir® by the Unit

- USP<797> low-risk preparation
  - 48 hours at room temp or 14 days refrigerated
- No studies available to support extended storage in a syringe
- Assign an 8 hour beyond use date
Workflow

• Additional time in IV room for techs drawing up doses
• Additional delivery runs
• Less time spent inspecting refrigerators and managing floor stock
• Pharmacists need to retrieve the report, print labels, and charge patients
  • Could assign this duty to a tech
  • No pre-printing of labels
  • Doses can easily change; check the patient profile
  • Charging occurs only after dose is administered
Workflow

• Reduced time for nurses drawing up insulin in patient care areas
• No need to search for the floor stock vial
• Fewer calls to pharmacy
• Safer procedure
  • Aseptically prepared
  • Checked by a pharmacist
• Compliance with CDC and The Joint Commission
Communication

• Pharmacy and Nursing staff
• Email alerts
• One-to-one teaching in pharmacy
• Nursing unit councils
PRODUCT CHANGE ALERT

HumaLOG
HumuLIN R
HumuLIN N
HumuLIN 70/30

**Now available in 3mL vials**

These vials are specifically designed for use in hospital settings and are intended to improve the safety of insulin administration and reduce waste compared to 10 mL vials previously used.

Please Call Pharmacy Services (5-1566) with any questions.
Follow Safe Injection Practices

- Use multi-dose medication vials for a single patient whenever possible.
- Use a new needle and syringe for every injection.
- Clean your hands immediately before handling any medication.
- Disinfect the vial by rubbing the diaphragm with alcohol or other approved antiseptic swab.
- Draw up all medications in a clean medication preparation area.
- Each time medication is to be withdrawn, access all vials using a new sterile syringe and a new needle/cannula.
- Always adhere to sterile technique.

Know the difference between a Single-Dose vial (SDV) vs. Multi-Dose Vial (MDV)

- Check the label! MDV are labeled as multi-dose vials or with beyond-use date instructions.
- Size, Shape, Color does not distinguish SDV from MDV.
- Use MDV for a single patient.
- Discard the vial when:
  - Doses are drawn up in an immediate treatment area (includes patient rooms, bays or operating rooms), or
  - The 28-day beyond-use-date is reached, or
  - The sterility of the vial is in question, or
  - The vial has been used during an emergency procedure.
- When in doubt, throw it out.

What about Insulin?

- A single insulin vial is provided for each patient.
- Insulin vials are multi-dose vials, so a single insulin vial may be used multiple times for the same patient if drawn up outside of the immediate patient care area (e.g. patient room).
- An insulin vial should NOT be used to prepare doses of insulin for multiple patients.
- Insulin vials are provided pre-labeled from the pharmacy with a 28-day beyond use date.
- Do NOT write the date opened on the vial!
Financial Impact

• After switching to “by the unit” dispensing we are now purchasing an average of 5 vials of Lantus® per month and 1 vial of Levemir®
  
  • Estimated $54,400 annual savings on Lantus®
  • Estimated $6200 annual savings on Levemir®
    • Compared to dispensing patient-specific vials

• Less waste!
Evaluation Questions

1. Describe a positive workflow impact for pharmacy technicians of patient-specific dispensing of insulin

Answer: Less time spent inspecting refrigerators and managing floor stock

2. Which of the following are correct?
   When using multi-dose vials, the CDC recommends:
   a) They are dedicated to a single patient, whenever possible
   b) They are used for multiple patients to reduce waste
   c) They should not be kept or accessed in the immediate patient treatment area
   d) They should be kept in a secure location at the bedside

Answer: a & c