Florida Critical Access Hospital
Medication Safety Program

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Project Background

- Joint effort between State of Florida Office of Rural Health, FMQAI, and UF College of Pharmacy
- Funding source - Office of Rural Health (Bob Pannell/Joel Libby)
- Overall project goal – to improve the safety of medication use in Florida’s CAHs
- Currently completing project year 7
Methods

- Annual site visits
- Annual Gainesville Summit
  - Site visit summary report
  - CAH networking
  - Topic discussions
- Teleconference support
- Website development
- Medical staff meetings
Pharmacy Service

- Consultant Pharmacist with minimal involvement (3-10 hours/wk)
- Onsite Pharmacist (40 hours/wk)
- Remote Pharmacist coverage (24/7)
  - Cardinal
  - ePharmPro
  - Healthsystem (Shands, Florida Hospital)
- Combination of onsite and remote
RANK ORDER OF ERROR REDUCTION STRATEGIES

Forcing functions and constraints

Automation, computerization, bar code scanning

Standardization and protocols

Time out, checklists and double check systems

Rules and policies

Visual warnings (auxiliary labels)

Education/information

Be more careful, be vigilant
Medication Safety Infrastructure Improvements

- Pharmacy security (locks, nursing access)
- Implementation of Automated Dispensing Cabinets
- Pharmacist review of medication orders
- Removal of concentrated electrolytes
- Removal of heparin 10,000 unit/mL vials
- Storage and labeling of neuromuscular blockers
- Increase use of unit dose packaging
- Increase use of pre-mixed IV solutions
- Standardization of emergency drug supplies and references
- Availability of drug references
- Increase use of pre-printed, standardized medication orders
- Increase in medication error reporting and investigation
- Enhanced medication reconciliation process
PY7 – Engage Medical Staff

- Shift focus to clinical areas of opportunity while maintaining infrastructure gains
- Integrate presentation into existing medical staff meetings
- CAH to choose focus area for presentation
- Multiple potential focus areas:
  - Venous thromboembolism (VTE) prophylaxis
  - Inpatient diabetes management
  - Pain management
  - Antibiotic selection and duration
  - Evaluation of nephrotoxic medications
Barriers to acceptance

- Outsider (advantage and disadvantage)
- Knowledge
- Incentive
- Competing priorities
- Auditing and individualized feedback
VTE Prophylaxis

- Surgeon General “Call to Action”
  Issued September 2008
  Public Health Priority

- Every hospital develop a formal strategy that addresses prevention of VTE
  - Passive methods such as educational materials and meetings are NOT recommended as sole strategies
  - Locally developed strategy
  - Written, institution-wide policy
  - CPOE, pre-printed orders
  - Periodic audit and feedback

VTE Prophylaxis Initiative – Ideas for Evaluation and Follow-up

- Percent admissions with VTE risk screening
- Percent admissions with VTE risk re-screening
- Percent admissions with risk-appropriate prophylaxis selection
- Percent discharges on appropriate prophylaxis (agent and duration)
Sliding Scale Insulin Orders: (orders with a ☑ must be checked to activate)

1. **Blood glucose monitoring (choose one of the following):**
   - ☑ Before Meals  ☑ Before Meals and Hour of Sleep  ☑ every ____ hours
   If blood glucose 70 mg/dl or below, administer 4 oz of juice, recheck glucose every 30 minutes until greater than 70 mg/dl, and call MD if not rising for further instructions.

2. **Standard insulin regimens (select all that apply)**
   - ☑ Basal insulin – choose one of the following
     - ☑ LANTUS
       - ____ units subcutaneously at am
       - ____ units subcutaneously at pm
     - ☑ HUMULIN N
       - ____ units subcutaneously at am (only ½ of am dose if patient NPO in am)
       - ____ units subcutaneously at pm
     - ☑ Other: ________________________________

   - ☑ Prandial Insulin – choose one of the following
     - ☑ NOVOLOG (HOLD IF PATIENT IS NPO)
       - ____ units subcutaneously within 15 minutes of each breakfast meal
       - ____ units subcutaneously within 15 minutes of each lunch meal
       - ____ units subcutaneously within 15 minutes of each dinner meal
     - ☑ HUMULIN R (HOLD IF PATIENT IS NPO)
       - ____ units subcutaneously within 30 minutes of each breakfast meal
       - ____ units subcutaneously within 30 minutes of each lunch meal
       - ____ units subcutaneously within 30 minutes of each dinner meal

3. ☑ Sliding Scale Insulin coverage – choose one of the following (Optional, but if given, should be given before meals IN ADDITION to Prandial Insulin and should be the SAME INSULIN as PRANDIAL insulin)

4. **Physician will be notified on daily rounds if BS > 250 x 3 episodes in 24 hours.**

<table>
<thead>
<tr>
<th>Insulin Coverage:</th>
<th>☑ HUMULIN R (Regular)</th>
<th>☑ Humalog</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scale (mg/dL)</td>
<td>☑ Low Dose</td>
<td>☑ Moderate Dose</td>
</tr>
<tr>
<td>Less than 70</td>
<td>Give 4 ounces of juice</td>
<td>Give 4 ounces of juice</td>
</tr>
<tr>
<td>70 – 150</td>
<td>0 units</td>
<td>0 units</td>
</tr>
<tr>
<td>151 – 180</td>
<td>1 units</td>
<td>2 units</td>
</tr>
<tr>
<td>181 – 200</td>
<td>2 units</td>
<td>4 units</td>
</tr>
<tr>
<td>201 – 250</td>
<td>3 units</td>
<td>6 units</td>
</tr>
<tr>
<td>251 – 300</td>
<td>4 units</td>
<td>8 units</td>
</tr>
<tr>
<td>301 – 350</td>
<td>5 units</td>
<td>10 units</td>
</tr>
<tr>
<td>351 – 400</td>
<td>6 units</td>
<td>12 units</td>
</tr>
<tr>
<td>Greater than 400</td>
<td>Notify Physician</td>
<td>Notify Physician</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>☑ Patient Specific</th>
<th>Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scale (mg/dL)</td>
<td></td>
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MD Signature: __________________________________________
Date: ___________________ Time: __________

PATIENT LABEL
Data Ascertainment

- Generated list of patients who were charged for capillary glucose monitoring
- Consecutive list of 30 patients in fall 2007 and another 30 patients in fall 2008 after implementation of standardized insulin order set
## Results

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of Glucose Readings</td>
<td>394</td>
</tr>
<tr>
<td>Hyperglycemic Event $\geq 150$ mg/dL</td>
<td>63</td>
</tr>
<tr>
<td>Hyperglycemic Event $\geq 200$ mg/dL</td>
<td>39</td>
</tr>
<tr>
<td>Severe Hyperglycemia ($\geq$ one glucose reading $\geq 400$ mg/dL)*</td>
<td>4</td>
</tr>
<tr>
<td>Prolonged Hyperglycemia (at least three consecutive glucose readings $\geq 250$ mg/dL)*</td>
<td>8</td>
</tr>
<tr>
<td>Total Number of Blood Glucose Readings $\geq 150$ (%)</td>
<td>191 (48.5%)</td>
</tr>
<tr>
<td>Total Number of Blood Glucose Readings $\geq 200$</td>
<td>114 (28.9%)</td>
</tr>
<tr>
<td>Average Time in Hyperglycemia ($\geq 150$) during the time of glucose readings per patient</td>
<td>50.80%</td>
</tr>
<tr>
<td>Average Time in Hyperglycemia ($\geq 200$) during the time of glucose readings per patient</td>
<td>25.96%</td>
</tr>
</tbody>
</table>
Re-Evaluation after Implementation of Order Set

- Percent time in BG < 150 mg/dL
  - 2007: 39.9%
  - 2008: 40.9%
Diabetes Management: Next Steps

- Individualized feedback
- Investigate root causes of hyperglycemia
  - Protocol inadequate
  - Physician compliance
  - Nurse compliance
  - Patient compliance
The Future – Project Year 8

- Continue annual site visit and summit
- Continue supporting ongoing clinical projects with data retrieval and analysis
- Incorporate chart review into site visits to better determine list of new medication-related quality improvement projects