Automated Dispensing Cabinet Optimization

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Baylor University Medical Center
• Annual Hospital admissions: 190,619
• Licensed beds: 916
• Average Daily Census: 750

Background
Automated Dispensing Cabinets (ADC)
• Computerized storage devices for medications within steps of point of care
• Total # of ADCs: 121 • Profiled: 50 • Non-Profiled: 71
Benefits of ADC
• Provides automatic inventory maintenance
• Immediate delivery of therapy
• Patient safety (i.e., removing correct strength of IV)
• Waste of medication accounted
• Medication Security: limited access
• Billing on dispense of medication

Proper Utilization of ADCs
• Identifying high inventory turn medications by unit
• Inventory methodology: mirrored vs. non-mirrored
• Dispense Setting: countback, expiration documentation, etc.

Purpose & Objectives
Purpose
• Optimized utilization of ADCs hospital wide for timely delivery of medications and medication safety
• Goal: Decrease from 2.85 to 1.5 doses dispensed from central per patient per day (adjusted by daily census)
Primary Objective
• Identify utilization of ADCs hospital wide
• Review number of doses from central pharmacy
• Review utilization of each medication in each cabinet in the last 90 days
Additional Objectives
• Identify override list for safety
• Review medications mapping from EHR to ADCs
• Identify and end user workflow efficiency
• Review # of medication retrievals per ADCs on multiple ADCs on unit
• Utilization of additional software for end user
• Reduce turn around time and missing doses

Methods
Analysis
• Reviewed 90 day central pharmacy dispenses
• Reviewed 90 day dispenses from each ADC
• Identify daily dispenses from central per daily census
Plan Do Check Act (LEAN Methodology)
• ADC Optimization plan created on phase approach
• Unit pharmacists and management reconciled ADC and central dispenses inventory
• Daily dashboard created to monitor metric
• Reviewed turn around time and missing doses post optimization
• Identified next steps for continual optimization

Optimization Phases
<table>
<thead>
<tr>
<th>Phase</th>
<th>Service</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase I: March 2016</td>
<td>IU</td>
<td>41, 49, 36, 21W, 49, 28, 7R</td>
</tr>
<tr>
<td>Phase II: April 2016</td>
<td>Oncology</td>
<td>42c, 50, 6c, 7C, CTEC, Ahereros, OPH</td>
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<tr>
<td>Phase IV: June 2016</td>
<td>CV</td>
<td>A, B, C, D, E, C1, C1, FT, Trage</td>
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<tr>
<td>Phase V: June 2016</td>
<td>ED</td>
<td>W/C, W/C, W/C, 7TN, 7TN, 7TN</td>
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<tr>
<td>Phase VI: July 2016</td>
<td>Ancillary</td>
<td>IU, IU</td>
</tr>
</tbody>
</table>

Metrics
GOAL: 1.5 central fill doses per patient per day

<table>
<thead>
<tr>
<th>MONTHLY</th>
<th>Central Doses</th>
<th>Metric</th>
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<tbody>
<tr>
<td>Received</td>
<td>Processed</td>
<td>Avg. Census</td>
</tr>
<tr>
<td>September</td>
<td>1617</td>
<td>1377</td>
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<tr>
<td>October</td>
<td>1279</td>
<td>1261</td>
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<td>1195</td>
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<tr>
<td>February</td>
<td>1250</td>
<td>1255</td>
</tr>
</tbody>
</table>

Optimization Results by Phases

Analysis/Phases
- ADC dispense
- Central fill
- ADC dispense efficiency
- Central fill efficiency
- Total dispense efficiency

Conclusion
Automated Dispensing Cabinets Optimization is a much needed plan to create high efficiency performance from high dollar capital.

Optimizations
Automated Dispensing Outcomes
• Increased # of ADC doses dispensed from 52% to 77%
• Decreased pharmacy technician "STAT" runs
• Increased workload of zone technicians loading ADCs
• Decreased time to administer to patient

Automated Dispensing Outcomes
Hospital Expansion and Movement of Units
• Drug Shortages
• High use profiles

Plan: Discharge
• Initiation of review of non-profiled ADCs
• Identifying solutions and liquids to be unit dosed and stored
• Review turn around time and missing medications direct

Conclusion
Authors of this presentation have the following to disclose concerning potential financial or personal relationships with commercial entities that may have a direct or indirect interest in the subject matter of this presentation:

Next Steps
• Initiating review of non-profiled ADCs
• Identify solutions and liquids to be unit dosed and stored
• Review turn around time and missing medications direct
• Identify stocking methods to automate expiration process

Disclosure
Authors of this presentation have the following to disclose concerning potential financial or personal relationships with commercial entities that may have a direct or indirect interest in the subject matter of this presentation: