Closed Loop Electronic Medication Management: A New Paradigm?

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August 2016
**Closed Loop Electronic Medication Management (CLEMM)**

The HIMSS EMR Adoption Model™ (EMRAM) identifies the levels of EMR capabilities required for Stage 6 & 7 as:

“The closed loop medication administration with bar coded unit dose medications environment is fully implemented. The eMAR and bar coding or other auto identification technology, such as radio frequency identification (RFID), are implemented and integrated with CPOE and pharmacy to maximise point of care patient safety processes for medication administration. The “five rights” of medication administration are verified at the bedside with scanning of the bar code on the unit does medication and the patient ID.”
Technology Enabled – Doctors

- Computerised Provider Order Entry (CPOE)
- Clinical Decision Support System (CDSS)
- Medication Reconciliation (MREC)
Technology Enabled – Pharmacists

- Recommended Dispensing Units in Low-Volume Retail Pharmacies (UDP)
  - Reduction in medication inventory
  - Control over inventory shrinkage and diversion
  - Potential reduction in medication errors i.e. product selection errors
  - Patient profiling = integration with CPOE
  - Reduction in medication turn around time
**Technology Enabled – Nurses**

**CareCompass**

**Registration Wizard (MAW)**

<table>
<thead>
<tr>
<th>Patient</th>
<th>Date of Birth</th>
<th>Gender</th>
<th>Allergies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient 1</td>
<td>01/01/1990</td>
<td>Male</td>
<td>no</td>
</tr>
<tr>
<td>Patient 2</td>
<td>02/02/1991</td>
<td>Female</td>
<td>yes</td>
</tr>
</tbody>
</table>

**Activity Timeline**

- **Omeprazole**: 10:00 AM, 1:00 PM
- **Loperamide**: 2:00 PM, 5:00 PM

**BCMA led to decreased time on medication administration and increased time on direct patient care in ICU**

Medication errors ↓58%, but timing errors did not change significantly

**Journal of Health Care**
Patient Safety and Clinical Outcomes

- SSHB BCMA trends ➔ HIMMS 7 = 95%

Bar Code Med Administration (BCMA)
% medication administrations with a +ve patient AND med bar code scan

<table>
<thead>
<tr>
<th>Area</th>
<th>Jan 16</th>
<th>Feb 16</th>
<th>Mar 16</th>
<th>Apr 16</th>
<th>May 16</th>
<th>Jun 16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actual (ALL areas)</td>
<td>95%</td>
<td>95%</td>
<td>95%</td>
<td>95%</td>
<td>95%</td>
<td>95%</td>
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<tr>
<td>Target (HIMSS 7)</td>
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</tbody>
</table>

- Alston: 63%
- Ingram: 61%
- Periop: 65%

66% 63% 59% 59% 63% 62%
I’m worried that health care has become too impersonal, Doc.

Nonsense... just relax and lie back on the bar code scanner.