CPOE and the Clinical Laboratory: A Case Study

Concord Hospital Laboratory
Concord, NH

Stephanie Payeur, MT(ASCP)
Cathy Ahrens, MT(ASCP)
Today’s Objectives

- Define CPOE
- Discuss the scope of a CPOE implementation
- Review Concord Hospital’s implementation plan
- Discuss impacts experienced by the lab throughout the process
- What have we learned by going through this implementation?

About Concord Hospital

- 295 bed hospital
- 16,000+ admissions per year
- Centers of Excellence: Cancer Care, Orthopaedics, Cardiac Care, Women’s Health, Urologic Care
- 66,800+ E/R visits-highest volume in the state
- ‘Healthcare’s Most Wired’ Honors 5 years in a row by H&HN
About Concord Hospital Lab

- 1.5 million billable tests per year
- 70% outpatient/non-patients
- 30% inpatients
- 170 employees
- 24/7 operation
- LIS Support- 3 lab employees, 1 IT analyst
- LIS System-SoftLab

CH Clinical Systems

- HIS –McKesson Horizon Clinical products
  - Horizon Expert Orders – HEO – trade name for McKesson’s CPOE system
  - Horizon Care Board – order tracking
  - Horizon Care Organizer - worklists
  - Horizon Meds Manger – Pharmacy system
  - STAR
  - Physician Portal-web portal
Clinical Systems cont.

- LIS – Soft Computer Systems products
  - SoftLab/Mic-Lab & Microbiology
  - SoftQC- QC module
  - SoftSec-Security module
  - SoftBank-Blood Bank
  - SoftPath- Surg/GYN/MedCyto/Autopsy
  - SoftAR-billing to HIS and Clients

What is CPOE?

- Computerized Provider Order Entry
  - Program that allows care providers to enter patient orders directly into the system electronically, without transcribing onto a written chart (laboratory, radiology, respiratory, pharmacy, dietary etc)
CPOE Quality Agenda for Concord Hospital

Concord Hospital embraces CPOE as a long-term transformational process that continuously improves our ability to give our patients the right care at the right time.

Why CPOE?

- Enable providers and nursing to enter all patient orders electronically
- Decrease time between when an order is written and when order is completed
- Decrease order clarifications and call backs.
- Deliver real time alerts and reminders
- Eliminate illegible hand written orders
Valium, Vibramycin, or Solumedrol?

Lorabid or Cardura?
<table>
<thead>
<tr>
<th>DATE &amp; TIME ORDERED</th>
<th>PHYSICIAN'S ORDERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>11/9</td>
<td>Vaginal douching 1x mg 2 pill twice a day</td>
</tr>
<tr>
<td></td>
<td>10 mg C a day</td>
</tr>
<tr>
<td></td>
<td>Penicillin 70/80, 25 U/kg-M (1609 PM)</td>
</tr>
<tr>
<td></td>
<td>16 units of insulin or 160?</td>
</tr>
<tr>
<td></td>
<td>Propranolol once twice a day</td>
</tr>
<tr>
<td></td>
<td>Protonix 40mg a day</td>
</tr>
<tr>
<td></td>
<td>Magnesium strong once a day</td>
</tr>
</tbody>
</table>

Lab Order in HEO
Concord Hospital Transfusion Orders
Red Blood Cell and Blood Product Transfusion Orderables

- patient.name
- patient.age
- weight
- room

Indicate Ordering Priority:
- Order Blood Products for Immediate Use
- Order Blood Products Ready and On Hold for Surgery / OR
- Order Blood Products To Be Given for Change in Patient Condition (e.g., Transfuse if hematocrit < 30%)
- For RN use: RN Ordering Blood Products.

Continue >>>

Indicate type and screen status:
**Type and screen order will assure blood for your patient will be available immediately when ordered. If antibodies are detected, two units of blood will be cross-matched and reserved.**

- Type and Screen has been ordered in the last 3 days.
- Type and Screen order is not needed.
- HEO ADC VAAN DISMIL will display type and screen order under 'Blood Products' section if previously ordered.
- Type and Screen has not been ordered in the last 3 days.
- Previous order status is unknown.

Continue >>>
Blood Bank iForm

Concord Hospital Transfusion Orders
Red Blood Cell and Blood Product Transfusion Orderables

Select a Blood Product for Transfusion:

- Red Blood Cells

Indications:
- Pre-transfusion HGB: \( g/dL \) or Pre-transfusion HCT \( % \)

- Chronic anemia with Hgb < 8 g/dL or Hct < 24 %
- Clinical evidence of symptomatic anemia
- Other indication:

Product:
- Leukoreduced RBCs
- Irradiated Leukoreduced RBCs

CPOE Implementation Team

- ITS
  - Project Management, Analysts
- Physicians
  - Physician Champions
- Nursing
  - CPAD (Clinical Practice Application Development)
- Pharmacy
- Key Clients
  - Laboratory, Radiology, Respiratory Therapy
Implementation Process

First Steps
- Implemented Care Board – 10/06
- Implemented Care Organizer – 10/06
- Implemented Horizon Meds Manager – 12/06

Next Step
- Moved from Horizon Order Management (Care Manager) to Horizon Expert Orders – 05/07

Phased Rollout –
- Rolled out to all Nursing Units over a 12 week period. May through July of 2007.
  - Nurses and Secretaries entering all orders in HEO- Approximately 400 users
- Rolled out to selected MD ‘Early Adopters’ in September of 2007
  - New group every two weeks through late spring of 2008
  - 100% of MDs in specialty practices starting this month.
Implementation Process

- Suggested steps to follow:
  - Research journal articles and share your findings
  - Maintain close connection with implementation team (open communication, regular meetings)
  - Expect the unexpected (unintended consequences)
  - Think about process impacts and prepare for them

Implementation Process cont.

- Suggested steps to follow:
  - Keep the staff informed with regular meetings
  - Try things and don’t be afraid to adapt or change rapidly if necessary
  - Listen to your staff, encourage them to bring issues to your attention
  - Have an educational link on hospital intranet
**CH Lab Experiences**

- Ordering pattern changes (i.e. CK-MB, CDIF)
- ‘Their screen’ vs. ‘Our screen’
- Lab order outlines
- Process Improvement Opportunities
  - Electronic Pathology Orders
  - Blood Bank iForm
- Process changes
  - Stat draw notifications
  - Add-ons

**CH Lab Experiences cont.**

- Working with system quirks (1 minute wait)
- Alignment of orderable databases (HIS-LIS)
- Monitoring Order errors
- Monitoring number of venipunctures
- Monitoring duplicate orders (different providers)
- Customized Order Outlines (Infectious Disease, Neurology-CSF, ED)
- Order clarifications (i.e. cardiac window)
What have we learned?

- Lab needs to be involved very early
  - Hold regular meetings with team
  - Review proposed Lab Order Outlines
  - Unit Liaison from implementation team is very valuable
- Quick response time to issues/problems
- Continue with regular mtgs post-live
  - Every other month

What have we learned?

- Expect the unexpected
- Know your own organization systems design, work processes, anticipate possible problems before they happen
- Lab staff education
  - Process changes
  - Responding to staff feedback on process changes
Metrics

- Design measures to study impacts
  - Phlebotomy Rounding Policy
    - Measure Reduction in Venipunctures
- Physician Surveys
- Pathology Electronic Orders
  - Measure quality of data received [Dx, Clinical Info, Source details]
- Blood Bank iForm
  - Measure decreased product utilization due to built-in justification questions

What does the future hold?

- Continued Process Improvement Projects
  - Electronic Pathology Orders core group rollout-GI providers
  - Blood Bank iForm Education rollout
- Ongoing, regular meetings between Lab & CPAD/IT
- SoftID-bedside barcoding with hand-held devices
- Further fine-tuning of processes (i.e. merging orders, CC electronic results routing)
"If you want a second opinion, I'll ask my computer."

Contact Information

- Stephanie Payeur, MT(ASCP)
  - Laboratory Information System Supervisor
  - spayeur@crhc.org

- Cathy Ahrens, MT(ASCP)
  - Clinical System Analyst, Concord Hospital IT
  - cahrens@crhc.org