Leapfrog’s Computerized Prescriber Order Entry (CPOE) Standard

- Given the potential for CPOE to reduce serious medication errors and preventable adverse drug events, national experts in health care quality and patient safety advised The Leapfrog Group to select CPOE as one of its initial safety standards in 2001.

- The Leapfrog Group’s CPOE standard is based on extensive review of published research and recommendations from leading experts in patient safety, medication safety, and health information technology.

- In order to fully meet The Leapfrog Group’s CPOE standard, hospitals must:
  - Attest that at least 75% of all inpatient medications are ordered by a licensed prescriber through a CPOE system that includes decision support software and
  - Demonstrate, via a test, that their inpatient CPOE system can alert licensed prescribers to at least 50% of common, serious prescribing errors. (Applies to adult hospitals only.)
What is the CPOE Evaluation Tool?

- The Computerized Physician Order Entry (CPOE) Evaluation Tool is a remote simulation test embedded in the Leapfrog Hospital Survey online application.

- The ‘score’ earned by each hospital completing a CPOE Evaluation Tool is used to determine performance on Leapfrog’s CPOE Standard. As such, the Tool must be taken at least once per survey cycle (April 1st – December 31st).

- The tool must be completed by a team, including a licensed prescriber who ordinarily utilizes the hospital’s inpatient CPOE system.

- For hospitals, the tool provides important feedback on how well their CPOE system alerts prescribers to common, serious prescribing errors across a multitude of categories.
Development of the Tool

- The CPOE Evaluation Tool was developed by First Consulting Group with assistance from patient safety experts and the Institute for Safe Medication Practices.

- Original development was funded by the California HealthCare Foundation, Robert Wood Johnson Foundation, and the Agency for Healthcare Research and Quality (AHRQ).

- First put on the Leapfrog Hospital Survey in 2008, version 2.0 was launched in 2012, and version 3.0 is scheduled to be launched with the 2017 Leapfrog Hospital Survey thanks to funding from AHRQ for content, software, and technology updates.

- Original tool included an adult and pediatric inpatient test. The pediatric inpatient test was taken offline in 2012.
Funding for Tool Update – Safe EHRs Project

- Funded by AHRQ
  - Five years: 9/1/14 – 8/31/2019
  - Investigators – David Bates (Brigham and Women’s Hospital) and David Classen (University of Utah, Pascal Metrics)

- Project Aims
  - Aim 1: Evaluate national experience with the test
  - Aim 2: Update the content and technology of test
  - Aim 3: Develop new capabilities and domains for the test
Aim 1: Evaluate National Experience

- Retrospective analysis of the existing tool in years 1 to 3
  - Overall scores of over 800 hospitals
  - Individual scores for each domain
  - Detailed analysis on cohort of 176 hospitals taking test at least once a year 2009 – 2016

- Findings will inform Aim 2 and 3

- Evaluation of enhanced tool in years 4 and 5
Growth in participation and performance (pre-implementation)
Orders correctly handled by order checking category

% Handled Correctly

- Duplication
- Allergy
- Drug Drug
- Route
- Drug Dx
- Corollary
- Lab

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Aim 2: Update the Existing Tool

- Technical evaluation of platform

- Enhancements
  - Update based on current EHR versions of leading vendors
  - Latest formularies, labs, procedures
  - Update platform to share info on test results with vendors and Patient Safety Organizations (PSOs)

- Usability of assessment tool
Version 3.0

Updates to the Tool were informed by user feedback submitted by Leapfrog Hospital Survey participants, and include:

- Updating Test Patient Profiles (ICD-10) and Test Medication Orders
- Updating Formulary
- Updating Alerts
- New Literature
- New testing with large and small hospitals with leading EHR vendors

In addition, updates will include:

- New Technology
- Better Display
- Better Workflow
  - NEW RESPONSES-radio buttons
- Better Printing--PDF
- New Timer
- Category Updates
- New Scoring
- Updated instructions
- Updated observation sheet and electronic answer sheet
Aim 3: Enhance The Test

- **New Domains**
  - Central line infection prevention
  - Deep vein thrombosis (DVT) prevention
  - Reduce overuse of meds, labs, diagnostic test

- **New Capabilities**
  - Usability testing (i-MeDeSA) of clinical decision support
  - Novel testing for health IT related errors—Jason Adelman Tool
Future development will include new test categories

<table>
<thead>
<tr>
<th>Order Category</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHOOSING WISELY</td>
<td>INAPPROPRIATE ORDERING OF MEDICATIONS, LABORATORY TEST, RADIOLOGIC TESTS</td>
<td>ORDERING OF VIT D LEVELS IN LOW RISK PATIENTS</td>
</tr>
<tr>
<td>PREVENTION OF COMMON HOSPITAL COMPLICATIONS</td>
<td>APPROPRIATE ORDERING OF INTERVENTIONS TO PREVENT HOSPITAL COMPLICATIONS -- CLABSI OR DVT</td>
<td>ORDERING OF APPROPRIATE INTERVENTIONS FOR PATIENTS WITH CENTRAL LINES IN PLACE</td>
</tr>
<tr>
<td>USABILITY OF CLINICAL DECISION SUPPORT</td>
<td>EVALUATION OF USABILITY OF COMMON DECISION SUPPORT CAPABILITY</td>
<td>USE OF THE IMEDESA TOOL</td>
</tr>
<tr>
<td>EHR ERROR DETECTION</td>
<td>EVALUATION OF COMMON EHR ERRORS</td>
<td>USE OF THE ORDER REORDER RETRACT TOOL (Jason Adelman)</td>
</tr>
</tbody>
</table>
Taking the Tool

Please note that all screenshots used during the Town Hall Call were in DRAFT form and have been removed from this presentation for distribution purposes.
Overview of Testing Protocol

- **Timed test**
  - Four (4) hours to
    - download patients
    - enter patients and their profile information into hospital systems
  - Two and a half (2.5) hours to
    - enter medication orders into the inpatient CPOE system (must be completed by a licensed prescriber)
    - record any alerts or information on the paper observation sheet
    - complete the electronic answer sheet, affirm your responses, and submit

- A report is immediately generated that includes:
  - Score for each test category
  - Overall score on test (% correct of all potential orders on the test)
  - List of missed orders that could cause severe patient harm or inappropriate alerting (alert fatigue) – new in 2017

- Deception analysis & alert fatigue orders have been incorporated into test to ensure the integrity of the results
# Order Checking Categories

<table>
<thead>
<tr>
<th>Category of Potential ADE</th>
<th>Description of Test Orders in this Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drug Dose (Single)</td>
<td>Specified dose of medication exceeds safe range for single dose</td>
</tr>
<tr>
<td>Drug Dose (Daily)</td>
<td>Specified frequency of administration results in daily dose that exceeds safe range for daily dose</td>
</tr>
<tr>
<td>Drug Route</td>
<td>Specified route of administration is inappropriate and potentially harmful</td>
</tr>
<tr>
<td>Drug-Drug Interaction</td>
<td>Medications in pair of orders result in known harmful interaction when used in combination</td>
</tr>
<tr>
<td>Therapeutic Duplication</td>
<td>Medications in pair of orders overlap therapeutically (same agent or same class)</td>
</tr>
<tr>
<td>Drug –Allergy</td>
<td>Medication (or medication class) is one for which patient allergy has been documented</td>
</tr>
<tr>
<td>Drug Laboratory</td>
<td>Medication contraindicated based on documented laboratory test results (includes renal status)</td>
</tr>
<tr>
<td>Drug Monitoring</td>
<td>Medication for which the standard of care includes subsequent monitoring to avoid harm</td>
</tr>
<tr>
<td>Drug Diagnosis</td>
<td>Medication contraindicated based on documented problem/diagnosis</td>
</tr>
<tr>
<td>Drug Age</td>
<td>Medication contraindicated based on patient age</td>
</tr>
<tr>
<td>Alert Fatigue</td>
<td>Checks whether the hospital’s CPOE system generates warnings or information for slight or inconsequential</td>
</tr>
<tr>
<td></td>
<td>interactions that clinicians typically ignore</td>
</tr>
</tbody>
</table>
Before you start

- Review the CPOE Instructions and FAQs found online in Survey and CPOE Materials

- Complete a Sample Test, a shortened version of the Adult Inpatient Test

- Plan ahead - The Help Desk staff are available 9:00 am – 5:00 pm ET on weekdays only

- The Adult Inpatient CPOE Exam can only be taken once every 4 months within a survey year (new in 2017 – previously a 6-month waiting period)
Accessing the CPOE Tool

- Adult hospitals that indicate they have a CPOE system in at least one inpatient unit are asked to submit a CPOE Evaluation Tool.

- Hospitals cannot access the CPOE Evaluation Tool until they have completed, affirmed, and submitted Sections 1 and 2 of the online survey.
Accessing the CPOE Tool

2016 Leapfrog Hospital Survey Dashboard

- **Section 1:** BASIC HOSPITAL INFORMATION
- **Section 2:** COMPUTERIZED PHYSICIAN ORDER ENTRY (CPOE)
- **Section 3:** EVIDENCE-BASED HOSPITAL REFERRAL
- **Section 4:** MATERNITY CARE
- **Section 5:** ICU PHYSICIAN STAFFING (IPS)
- **Section 6:** NOF SAFE PRACTICES
- **Section 7:** MANAGING SERIOUS ERRORS
- **Section 8:** BAR CODE MEDICATION ADMINISTRATION
- **Section 9:** READMISSION FOR COMMON ACUTE CONDITIONS AND PROCEDURES
The first time you login to the CPOE Tool, you will need to complete the Organization and Contact Information.

Some of this information will be pre-populated from the Profile section of the online survey.

Once you have completed this section, click **Save and Continue**.
Selecting a Test

- After you select Save and Continue, you will be brought to the page where you select either the Sample Test or the Adult Inpatient Test from the drop-down menu.
# 7 Steps to complete a Sample or Adult Inpatient Test

<table>
<thead>
<tr>
<th>Time Limits</th>
<th>Assessment Steps</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steps 1 and 2 must be completed within <strong>4 hours.</strong></td>
<td><strong>Step 1</strong> (a) Print a list of Patient Descriptions and (b) log out.</td>
</tr>
<tr>
<td>Steps 3 – 6 must be completed within <strong>2.5 hours.</strong></td>
<td><strong>Step 2</strong> (a) Enter the patient information into your hospital’s production environment and (b) log back into the Assessment to confirm completion of this step and proceed to Step 3.</td>
</tr>
<tr>
<td>Note: Any remaining time from Steps 1 and 2 does not carry over to this portion of the test.</td>
<td><strong>Step 3</strong> (a) Print the Orders and Observation Sheet (includes a form to document observations during the assessment) and (b) log out.</td>
</tr>
<tr>
<td>We recommend leaving at least <strong>45 minutes</strong> to perform Step 5.</td>
<td><strong>Step 4</strong> (a) Have a physician who routinely orders medications for inpatients to enter and sign the test orders (order pairs) into the hospital’s EHR system (b) record any advice or information the prescriber receives from the system onto the Orders and Observations Sheet (c) discontinue the order(s) prior to proceeding to the next order and (d) log-on to the Assessment to confirm and proceed to Step 5.</td>
</tr>
<tr>
<td>Step 6 has no time limit but the step must be completed within the 2.5 hour time limit without closing the page in order to receive results and a complete evaluation status.</td>
<td><strong>Step 5</strong> (a) Record the responses from the Order and Observation Sheet onto the online form (b) review the online form to ensure it is correct and complete and (c) submit the online form.</td>
</tr>
<tr>
<td>Step 7 has no time limit.</td>
<td><strong>Step 6</strong> Affirm that recorded responses are correct and complete the Assessment. <strong>IMPORTANT NOTE:</strong> If you navigate away from this page without affirming then you will not be able to return and your test will be considered incomplete.</td>
</tr>
<tr>
<td></td>
<td><strong>Step 7</strong> Obtain and review your results.</td>
</tr>
</tbody>
</table>
Download Test Patients

Screenshot Removed
Print Medication Orders

Screenshot Removed
Submit Your Responses

Screenshot Removed
Affirmation of Accuracy

Screenshot Removed
Results and Scoring
Results

Screenshot Removed
Once you log out of the CPOE Tool, the “Take CPOE Tool” button will be replaced with a link to your overall score on the survey dashboard.
<table>
<thead>
<tr>
<th><strong>Rating</strong></th>
<th><strong>Description</strong></th>
</tr>
</thead>
</table>
| **Full Demonstration of National Safety Standard for Decision Support** | This hospital’s CPOE system alerts prescribers to most serious potential medication errors. The evaluation is considered complete. The results can be used for public reporting.  
- ≥20 results submitted for ADE orders in test set  
- Overall score for ADE test orders = ≥50% |
| **Substantial Demonstration of National Safety Standard for Decision Support** | This hospital’s CPOE system alerts prescribers to many serious potential medication errors. The evaluation is considered complete. The results can be used for public reporting.  
- ≥20 results submitted for ADE orders in test set  
- Overall score for ADE test orders = 31-49% |
| **Some Demonstration of National Safety Standard for Decision Support** | This hospital’s CPOE system alerts prescribers to some serious potential medication errors. The evaluation is considered complete. The results can be used for public reporting.  
- ≥20 results submitted for ADE orders in test set  
- Overall score for ADE test orders = 21-30% |
| **Completed the Evaluation** | This hospital’s CPOE system alerts prescribers to fewer than 40% of serious potential medication errors. The evaluation is considered complete. The results can be used for public reporting.  
- ≥20 results submitted for ADE orders in test set  
- Overall score for ADE test orders = < 20% |
| **Insufficient Evaluation** | Insufficient information to gauge the safety of this hospital’s CPOE system for public reporting but useful for local hospital quality improvement efforts. The evaluation is considered complete.  
- <20 results submitted for ADE orders in test set |
| **Timed out of Test** | This hospital did not complete the CPOE Evaluation within the allotted time. The hospital is eligible to re-take the evaluation in six months. The evaluation is considered to be incomplete. |
| **Failed Deception Analysis** | During the medication order evaluation, the responses that this hospital entered included potentially inaccurate results. Because the overall validity of the test results cannot be ensured at this time, they will not be made public. The evaluation is considered incomplete. The hospital is eligible to re-take the evaluation in four months. |
Overall score is based on **two** components:

- Percentage of medication orders entered into the CPOE System (Section 2 of the online survey tool)
- Results of the CPOE Evaluation Tool

Scoring categories from the CPOE Evaluation Tool will be updated for 2017.

### Score on CPOE Evaluation Tool

<table>
<thead>
<tr>
<th>Implementation Status (from Leapfrog Hospital Survey Questions #1-4)</th>
<th>Fully Implemented</th>
<th>Good Progress in Implementing</th>
<th>Good Early Stage Effort</th>
<th>Completed The Evaluation</th>
<th>Incomplete Evaluation (Failed deception analysis) or Did not complete an evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>75% or greater of all inpatient medication orders entered through CPOE System</td>
<td>Fully Meets the Standard</td>
<td>Fully Meets the Standard</td>
<td>Substantial Progress</td>
<td>Substantial Progress</td>
<td>Willing to Report</td>
</tr>
<tr>
<td>60-74% of all inpatient medication orders entered through CPOE System</td>
<td>Substantial Progress</td>
<td>Substantial Progress</td>
<td>Substantial Progress</td>
<td>Some Progress</td>
<td>Willing to Report</td>
</tr>
<tr>
<td>25-49% of all inpatient medication orders entered through CPOE System</td>
<td>Substantial Progress</td>
<td>Some Progress</td>
<td>Some Progress</td>
<td>Some Progress</td>
<td>Willing to Report</td>
</tr>
<tr>
<td>CPOE implemented in at least one inpatient unit but &lt;25% of all inpatient medication orders entered through CPOE System</td>
<td>Some Progress</td>
<td>Some Progress</td>
<td>Willing to Report</td>
<td>Willing to Report</td>
<td>Willing to Report</td>
</tr>
<tr>
<td>CPOE not implemented in at least one inpatient unit</td>
<td>Cannot take CPOE Evaluation Tool; hospital will be scored as “Willing to Report”</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
More information about the CPOE Tool will be posted on the Leapfrog Hospital Survey website and can be found in Prepare for a CPOE Tool, Survey and CPOE Materials, and Scoring and Results.

Leapfrog Hospital Survey Help Desk
https://leapfroghospitalsurvey.zendesk.com
Questions?