ED CPOE Experience

Matthew Denenberg, MD

Objectives

- Review how CPOE has impacted patient safety in the ED
- Review the basic safety benefits of CPOE
- Review the safety concerns associated with CPOE

Why Do CPOE?

- More than one million serious medication errors occur every year in U.S. hospitals
- Medication errors alone contribute to 7,000 deaths annually
- Financial costs: One ADE adds more than $2,000 on average to the costs of hospitalization. This translates to over $7.5 billion per year nationwide in hospital costs alone.

Why Do CPOE?

- Standardize process (checklist of items to remember for each condition)
- Real-time rules and alerts at ordering, signal drug interaction, allergy or dose errors
- Eliminate delays to downstream departments with real-time order processing
- Enable bar code medication administration
- Dose calculators and other electronic tools to assist in accurate dosing
- Order sentences eliminate sound alike drug errors
- Clearer communication between physicians, nurses, and pharmacists

Before CPOE

Paper orders and order sets

After CPOE

Home Folder with department-specific order sets/flow plans
Before CPOE

Order hieroglyphics?

After CPOE

Orders easily legible and found electronically.

Before CPOE

Hand Written orders sit in paper chart to be transcribed into Cerner.

After CPOE

Physician can order electronically from anywhere they can access Cerner.

Before CPOE

Pharmacist Transcribing handwritten, often illegible, medication orders.

After CPOE

Pharmacist reviews electronic orders in Pharmnet.
Before CPOE

Hand Written Discharge Instructions

After CPOE

Printed Electronic Discharge Instructions

Before CPOE

Hand Written Prescriptions

After CPOE

Printed (legible) prescription or prescription sent electronically to pharmacy (e-prescribe)

Previous clinical references

Cefazolin adults
**Difficulties experienced in ED**

- Culture change by providers
- Decreased direct communication
- Software limitations
- Education, there is a steep learning curve
- Real-time and order processing very quick
- Real-time evaluation with ability to update quickly
  - Clinical updates
  - Safety issues
  - Efficiency upgrades

**CPOE Safety Recommendations**

- Robust education before, during and after "Go Live" events
- Extensive IT support staff with real time response
- Hardware and software able to support CPOE
- Monitor before and after "go live" to research effectiveness
- Continuous review and updating of system to accommodate provider concerns and new clinical evidence
- Most importantly, monitor and correct unanticipated safety errors

**Spectrum ED Experience**

Over 200 physicians, extenders and nurses entering orders. Despite steep learning curve and frequent obstacles along the way, very few providers would elect to "go back".
Communication and Safety: The Pediatric Intensivist's Perspective

Rick Hackbarth, MD  
Pediatric Critical Care  
Helen DeVos Children's Hospital

Safety Culture and Communication

1. How safe are we?
   - Similar to a group of Children's Hospital PCCUs when compared by risk adjusted mortality and other measures.

2. How safe could we be?
   - Unknown

The ICU Environment

1. Complex, high stakes, high risk
   - Critically ill patients with rapidly evolving or changing pathophysiology
   - Frequent use of high risk medications (15 of the top 20 error prone pediatric IV medications)
   - Fast paced environment with multiple disciplines involved requiring frequent updates in communication that maintains fidelity across team members

Group Psychology

Group Perception = Reality ≠ Truth

- Galileo's Solar System
- Stock Market Variability
- Real Estate Crash

Disclaimers and Credentials

1. Disclaimers
   - I have no formal training in safety
   - I have no formal training in psychology
   - I am not an expert in communication
   - I'm still going to talk about all of them

2. Credentials
   - I'm old enough to have made lots of mistakes (experience)
   - Tend to be dissatisfied with the Status Quo and vocal about it
   - I'm a physician (least important perhaps completely irrelevant)

PICU Safety Attitudes Questionnaire

Results for 2007 and 2008
Safety Survey Results

- Does Safety Culture Matter?
- Does Communication Matter?

Survey Comments

- "Direct open communication about concerns is rare because interpersonal relationships are weak."
- "We don't work as a team and we have severe trust issues with one another."
- "I feel that there are certain "cliques" that exist and I am not a part of those and therefore my input is not considered worth listening to."
- "Professionalism has gone out the window. Accountability has gone out the window and everyone has this "I really don't care" attitude. I'm here to do my job and leave, don't care what others are doing but acting like "for some reason staff is not willing to confront each other and nothing's changed anyway" are common things I hear."

Safety Culture and Communication

- Individual accountability and desire for safety
  - A good start but leading by example is not enough
- Group accountability and teamwork
  - Essential for safety to have each others back and to ask for help

Why Safety Culture and Communication Matter

Group Perception = Reality

Safety Survey Results

- Communication is a problem
- Poor safety culture
- Impaired Teamwork -
  - Attitude of: I want to be safe, but I don't trust that my co-workers have that priority
- No sense of family

Safety Culture and Communication

- Just how important is a good team?
  - Cinderella team? Maybe
  - Few standouts
  - Strong team culture
  - Nearly won NCAA Championship against a more talented Duke Team
Joint Commission-2004 Perinatal Sentinel Events

Permanent injury or death root cause analysis of 47 cases
- Communication Issues (72%)
- Safety Culture (55%)
- Staff Competencies (47%)
- Orientation and Training Issues (40%)

You've Gotta Believe!

So what have we done about it?

- Focus on communication
  - In everyday practice
  - In mandatory PCCU staff safety updates across all disciplines
- Accentuate the positive
  - Quality improvement initiatives
  - Encourage staff involvement
- Great Expectations
  - Goals
  - Projects

Has it worked?

- The change in attitude seems palpable
- Time will tell with more objective measures

Communication Top 10

1. Communication is not just what you said, it's what I heard. It's a 2-way street.
2. Be direct. What do I need from you?
3. Feel free to break the ice if you're advocating for your patient. We can talk about it later.
4. Respect. If other issues have happened, let them go, you did the best you could.
5. If you've identified a problem, we've not done.
6. Not everyone wants to hear it if you know you're wrong.
7. Not everyone knows what's going on, if you need help.
8. Listen carefully to communication; accept the invitation.
9. Is there anything that you need from me to get your job done today? Is there anything we haven't covered?
10. Trust and Respect are the basis of any successful relationship.
11. Practice is worth building and worth taking.
12. Communication is hard work.
Acknowledgements

Thanks to Our Great Team at HDVCH
-The Future of Highest Quality and Safest Care in West Michigan

Helen Duvall, M.D.
children's hospital
Disclosure

Regrettably, I have nothing to disclose...

Objectives

To understand the importance of:
- Checklists in emergency situations
- Simulations and drills
- Team work in emergency situations

The Use of Checklists
Checklists
- Walk Around with Crew Change
- Before Start Engine
- Start Engine
- Before Taxi
- Taxi
- Take Off
- Level Off

Emergency Procedures Checklist
Engine failure or fire during flight
1. THROTTLE – CUT OFF
2. FIRE SWITCH – PULL
3. REFER TO CHECKLIST

Emergency Procedure Checklists (OB)
Shoulder Dystocia:
1. CALL FOR HELP
2. MCRORBERT'S MANEUVER
3. REFER TO CHECKLIST

Simulation and Drills

Simulation and Drills (OB)

Swiss Cheese Model
ARCC

A responsibility to protect in a manner of mutual respect – an assertion and escalation technique
Use the lightest touch possible...

- Ask a question
- Make a Request!
- Voice a Concern
- If no success

Use Chain of Command

99.9% is Not Always Good Enough

IRS would lose 2,000,000 documents every year
ATMs would make 37,000 errors every hour
Major plane crash every 3 days
12 babies given to the wrong parents every day
101 wrong medical procedures per day
2010 Perioperative Safety Goals

To have no Serious Safety Events occur.
To have open and valued communication amongst the Perioperative TEAM.
At each point of patient handoff, pertinent and up to date information is reviewed amongst care givers.
Consistent use of Perioperative safety tools such as the safety checklist, policies, safety rounding and safety audits.
Definitions of all points of patient care are limited.
Attention and focus of our work is directed toward the patient.
All regulatory expectations are met consistently.
Lessons learned and IH expectations are met consistently.
Share safety incidents with Perioperative Services members to improve care.
Increase awareness and educate.

Preoperative Checklist

On October 30, 1935 at Wright Air Field in Dayton, Ohio the first test flight of Boeing's Model 309 resulted in a fiery crash...
The crash was blamed on the Army Air Corps best test pilot Major Ployer P. Hill...
The plane was decidedly more complex than previous aircraft...
It was said that this plane was "too much airplane for one man to fly".

Preoperative Checklist

Insiders and other test pilots felt that the plane was flyable... They came up with a clever and simple idea... They created a pilot's checklist... They felt that aeronautics had become so complex that they could no longer rely on just the memory and experience of the pilot... however much an expert...

Preoperative Checklist

The rest as they say is history... U.S. history that is...
The checklist allowed for many successful and safe test flights... Model 309 became the B-17 "Flying Fortress"...
Army purchased almost 13,000 B-17s...
The B-17 gave the Allies a decided advantage over the skies of Europe and its bombing campaign had devastating effects across Nazi Germany...
Of course, checklists have been around for a long time...
Could this be a grocery list from ancient Egypt?

Our checklist was initially conceived because of our need to improve our SCIP numbers and to drive up perioperative safety...
It went along with our desire to "hardwire" some orders and to make sure they were carried out...
The work of the WHO and their landmark study in the NEJM also drove the issue...
The media and public opinion also played a role...

We formed our checklist by taking the best components of:
WHO and Gunderson Lutheran
Please refer to your handout for the details of the current Spectrum Health Preoperative Checklist...
This list is being constantly evaluated and improvements are being made...

Like in the B-17 example, medicine and nursing as a whole, particularly those involved in the field of surgery, have had to develop the ability to manage extreme complexity. Can this complexity be mastered? Yes. Checklists are not the total answer to the question but they can certainly help with the execution and the process of SAFETY. We need to overcome faulty memories and distraction... Checklists "install a kind of discipline of higher performance" and "provide a kind of cognitive net," says Atul Gawande in his book "The Checklist Manifesto: How to Get Things Right," 2009

**PREOPERATIVE CHECKLIST EQUALS PERIOPERATIVE SAFETY**

The list consists of 3 Phases
Some refer to these as "Pause Points"
- At sign in...Before induction of anesthesia
- Time out...Before skin incision
- Sign out...Before patient leaves the OR
Preoperative Checklist

Do-Confirm vs. Read-Do Checklists
We chose the Do-Confirm...
We expect those in the OR to perform their jobs from memory and experience, then as a team confirm that it has been done. *We’re striving for early and on-going communication*...
This has been found to be more professionally satisfying and does not lead to list "shortcutting" as eventually occurs with Read-Do Checklists.
Our Checklist is intended to increase and enhance communication among all OR team members...

Preoperative Checklist

The "Surgical Safety Checklist" as it is now known went "Live" Dec. 1, 2009...
Prior of going "live" it first underwent 6 wks of trials and adjustments to both document and process using both nursing and medical staff feedback...
"Go Live" consisted of mandatory use of the checklist and optional return of the physical list that highlighted issues both positive and negative as well as suggestions for improvement.
Large laminated versions (11x22 in) are now posted in all SH ORs as a visual reminder and guide for its use...

Preoperative Checklist: Next Steps

Any process or checklist changes deemed necessary by the recent feedback will be implemented on 2-1-10. Another "Go Live" date.
Staff communication regarding changes in expectations will be done in advance.
With next "Go Live" we will have mandatory return of all checklists... each checklist will have a patient sticker or be pre-printed with patient name. Feedback is vital optional. BUT...
We will begin to collect specific data regarding the level of team engagement in the process.
Again we will continue to collect any feedback from staff and report back to them...
We are planning a 120 day review of the process... additional changes will be made as feedback and data warrants...

Preoperative Checklist

Unintended consequence of Checklist?
Supply Chain recently raised a concern about the spike in volume of returned items from the OR starting in November and increasing in December...
This coincided with the implementation of Checklist trials... our feedback from staff included a disproportionate amount of comments about how to do the case in a more cost effective way...
We will monitor to see if this trend continues...

Preoperative Checklist

We began with several checklist "pilot trials" performed by surgeons and anesthesiologists...
This led to a refinement of our checklist...
More importantly it introduced the concept of the checklist to the OR staff and led to discussions amongst surgeons and anesthesiologists...
Preoperative Checklist

Progress? Herding cats...
Good acceptance among periop nursing staff...
Slower going but gaining momentum among surgical and anesthesia staff...
It will take persistence, more education, and continual communication to get full cooperation...
Even a year into the program, we are still a work in progress....refinements continue...