On the CUSP: Stop BSI

Learning From Defects

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Comprehensive Unit-based Safety Program (CUSP)

1. Educate staff on science of safety (www.safercare.net)
2. Identify defects
3. Assign executive to adopt unit
4. Learn from one defect per quarter
5. Implement teamwork tools

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Learning Objectives

- To understand the difference between first order and second order problem solving

- To address each of the 4 questions in learning from defects
  - What happened, why, what will you do to reduce risk, and how do you know it worked?

Safety Tips:

- Label devices that work together to complete a procedure
- Rule: stock together devices needed to complete a task

CASE IN POINT: An African American male ≥ 65 years of age was admitted to a cardiac surgical ICU in the early morning hours. The patient was status-post cardiac surgery and on dialysis at the time of the incident. Within 2 hours of admission to the ICU it was clear that the patient needed a transvenous pacing wire. The wire was threaded using an IJ Cordis sheath, which is a stocked item in the ICU and standard for PA caths, but not the right size for a transvenous pacing wire. The sheath that matched the pacing wire was not stocked in this ICU since transvenous pacing wires are used infrequently. The wire was threaded and placed in the ventricle and staff soon realized that the sheath did not properly seal over the wire, thus introducing risk of an air embolus. Since the wire was pacing the patient at 100%, there was no possibility for removal at that time. To reduce the patient's risk of embolus, the bedside nurse and resident sealed the sheath using gauze and tape.

SYSTEM FAILURES:	OPPORTUNITIES for IMPROVEMENT:
Knowledge, skills & competence. Care providers lacked the knowledge needed to match a transvenous pacing wire with appropriate sized sheath.	Regular training and education, even if infrequently used, of all devices and equipment.
Unit Environment: availability of device. The appropriate size sheath for a transvenous pacing wire was not a stocked device. Pacing wires and matching sheathes packages separately… increases complexity.	Infrequently used equipment/devices should still be stocked in the ICU. Devices that must work together to complete a procedure should be packaged together.
Medical Equipment/Device. There was apparently no label or mechanism for warning the staff that the IJ Cordis sheath was too big for the transvenous pacing wire.	Label wires and sheaths noting the appropriate partner for this device.

ACTIONS TAKEN TO PREVENT HARM:

The bedside nurse taped together the correct size catheter and wire that were stored in the supply cabinet. In addition, she contacted central supply and requested that pacing wires and matching sheaths be packaged together.

Problem Solving*

- First Order
  - Recovers for that patient yet does not reduce risks for future patients
  - Example: You do get the supply or you make do

- Second Order Problem Solving
  - Reduces risks for future patients by improving work processes
  - Example: You create a process to make sure line cart is stocked

*Anita Tucker

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What is a Defect?

Anything you do not want to have happen again

Sources of Defects

- Staff Safety Assessment
- Adverse event reporting systems
- Sentinel events
- Claims data
- Infection rates
- Complications

4 Questions to Learn from Defects

- What happened?
- Why did it happen?
- What will you do to reduce the chance it will recur?
- How do you know that you reduced the risk that it will happen again?

What Happened?

- Reconstruct the timeline and explain what happened
- Put yourself in the place of those involved, in the middle of the event as it was unfolding
- Try to understand what they were thinking and the reasoning behind their actions/decisions
- Try to view the world as they did when the event occurred

Source: Reason, 1990

What Happened?

Group work:

10 minutes

Talk about and understand what happened

Complete the “What Happened?” section of the Learning from Defects tool.

Why did it Happen?

- Develop lenses to see the system (latent) factors that lead to the event
- Often result from production pressures
- Damaging consequences may not be evident until a "triggering event" occurs

Source: Reason, 1990

Why did it Happen?

- Review the list of factors that contributed to the incident and check off those that negatively contributed and positively contributed to the defect

- ***Negative contributing factors*** are those that harmed or increased risk of harm for the patient

- ***Positive contributing factors*** limited the impact of harm

Why did it Happen?

Group work:

20 minutes

Complete the contributing factors section

Items may positively contribute, negatively contribute, or not apply (n/a)

These are examples but you may identify factors that are not listed, if so, write down

Why did it Happen?

Review the list of contributing factors and identify the most important factors related to this event.

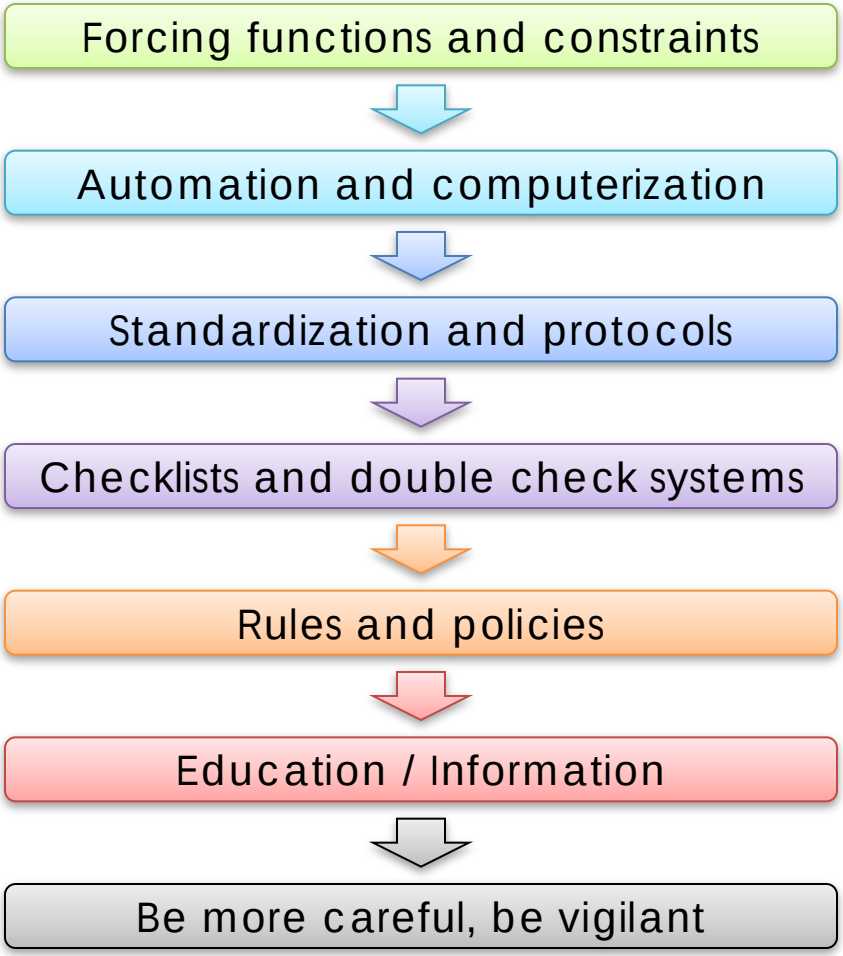
Rate each contributing factor on its importance to this event and future events.

What will you do to reduce the risk?

- Safe design principles
  - Standardize what we do
    - Eliminate defects
  - Create independent checks
  - Make it visible

- Safe design applies to technical and team work

Rank Order of Error Reduction Strategies



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Strength of Interventions

Weaker Actions	Intermediate Actions	Stronger Actions
Double Check	Checklists/ Cognitive Aid	Architectural/physical plant changes
Warnings and labels	Increased Staffing/Reduce workload	Tangible involvement and action by leadership in support of patient safety
New procedure, memorandum or policy	Redundancy	Simplify the process/remove unnecessary steps
Training and/or education	Enhance Communication (read-back, SBAR etc.)	Standardize equipment and/ or process of care map
Additional Study/analysis	Software enhancement/modifications	New device usability testing before purchasing
	Eliminate look alike and sound- a-likes	Engineering Control of interlock (forcing functions)
	Eliminate/reduce distractions	

Remember sometimes a weaker action is your only option.

Adapted from John Gosbee, MD, MS Human Factors Engineering

What will you do to reduce the risk?

Group work:
10 minutes

- Review the 2-3 most important contributing factors
- Develop an intervention to defend against these
  - Identify the strongest interventions that are feasible.
  - Rate each intervention for its ability to mitigate the contributing factor and the teams belief that the intervention will be implemented and executed

What will you do to reduce the risk?

Identify a metric that you can use to measure the impact of the intervention

Assign person and task follow up date

How do you know risks were reduced?

- Did you create a policy or procedure (weak)?
- Do staff know about policy or procedure?
- Are staff using the procedure as intended?
  - Behavior observations, audits
- Do staff believe risks were reduced?

How do you know risks were reduced?

- Once interventions have been implemented complete the “Describe Defect” and “Interventions” portion of section IV of the Learning from Defect Tool.

- Distribute to staff to rate:
  - the effectiveness of the implementation
  - how effective the intervention has been at reducing reoccurrence of the defect

Summarize and Share Findings

- Summarize finds (Case Summary – Appendix F)
- Share within your organizations
- Share de-identified with others in collaborative (pending institutional approval)

Critical Care Fellowship Program

	Defect	Interventions
Fellow 1	Unstable oxygen tanks on beds	Oxygen tank holders repaired or new holders installed institution-wide
Fellow 2	Nasoduodenal tube (NDT) placed in lung	Protocol developed for NDT placement
Fellow 3	Medication look-alike	Education, physical separation of medications, letter to manufacturer
Fellow 4	Bronchoscopy cart missing equipment	Checklist developed for stocking cart
Fellow 5	Communication with surgical services about night coverage	White-board installed to enhance communication
Fellow 6	Inconsistent use of Daily Goals rounding tool	Gained consensus on required elements of Daily Goals rounding tool use
Fellow 7	Variation in palliative care/withdrawal of therapy orders	Orderset developed for palliative care/withdrawal of therapy
Fellow 8	Inaccurate information by residents during rounds	Developing electronic progress note
Fellow 9	No appropriate diet for pancreatectomy patients	Developing appropriate standardized diet option
Fellow 10	Wrong-sided thoracentesis performed	Education, revised consent procedures, collaboration with institutional root-cause analysis committee
Fellow 11	Inadvertent loss of enteral feeding tube	Pilot testing a 'bridle' device to secure tube
Fellow 12	Inconsistent delivery of physical therapy (PT)	Gaining consensus on indications, contraindications and definitions, developing an interdisciplinary nursing and PT protocol
Fellow 13	Inconsistent bronchoscopy specimen laboratory ordering	Education, developing an order set for specimen laboratory testing

Am J Med Qual 2009;24(3):192-5.

Key Lessons

- Focus on systems not people
- Prioritize
- Use safe design principles
- Go mile deep and inch wide rather than mile wide and inch deep
- Pilot test
- Learn from one defect a quarter
- Answer the 4 questions

Action Plan

- Review the Learning from Defect tool with your team
- Review defects in your unit
- Select one defect per quarter to learn from
- Post the stories of risks that were reduced
- Share with others

Resources

National Project Website:

- www.onthecuspstophai.org
- click on “stop bsi”, then “manuals and toolkits” tabs for assistance with CUSP issues

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References

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