Improving Team Performance During the Pre-Procedure Time-Out

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ABSTRACT

A systems-based approach to improving healthcare requires strategies that measure performance at both the individual and small group level. The resulting information provides feedback on opportunities for improvement. In this study, we focused on a team activity that occurs during every invasive procedure, the pre-procedure timeout. A system for capturing and analyzing team performance was developed. Early results identified opportunities for improvement in the team's performance as well as the methods used to measure and analyze performance. The effectiveness of the resulting process changes have been assessed by continued data capture and analysis. While this initiative has led to measureable improvements in timeout performance, other benefits have also been observed .

PURPOSE

Value of pre-procedure checklists

- Shown to improve patient outcomes

Improving team performance

- **Step 1:** Development of a shared mental module
  - "Everyone working from the same script"
- **Step 2:** Capture and analyze data
  - "You cannot improve what you don't measure"
  - Allows verification but promotes learning through feedback
- **Step 3**: Provide feedback
  - Highlight opportunities for improvement
- **Step 4**: Repeat the cycle

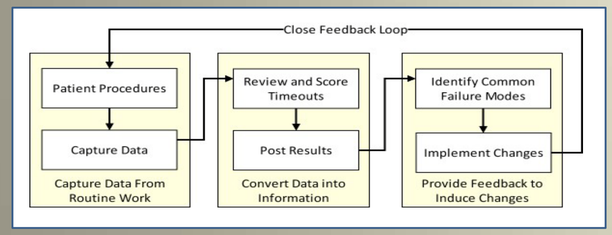

Figure 1: Process map for continuous process improvement. Data is routinely captured from patient procedures and analyzed to assess conformance to plan. Results are posted and reviewed to identify high priority failure modes and changes implemented. Repeated measures are used to assess the effectiveness of those improvement efforts.

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METHODS

Data Capture and Analysis

Pediatric Interventional Radiology (IR) suite was equipped with a "flight data recorder" that is used to record every case

Recordings from two randomly selected cases/week are reviewed to assess compliance with timeout protocol

- Scoring rubric was developed in Spring 2009
- Rubric was revised in Oct 2009 and May 2010

Feedback

Results posted as a run chart in the IR control room

- Results are updated each month
- Discuss opportunities for improvement at monthly meeting

Figure 2: Screen shot of video from the recording system (SimCapture)

RESULTS

Timeout Performance

Performance has improved - now rare to score <80

Scoring is quite stringent – timeout must be completed before pre-procedure ultrasound or sterile prep

Room used by other services – common factor in low scores

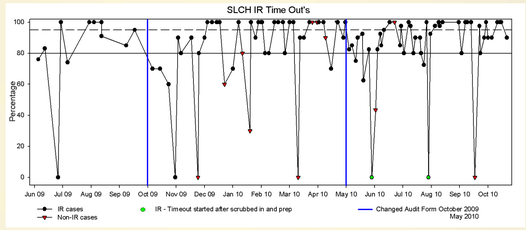


Figure 3: Timeout scores from the last 15 months. Vertical blue lines indicate when changes in the scoring rubric occurred. Common failure modes are indicated by colored symbols.

Timeout Efficiency

Efficiency varied

Common cause for inefficient timeout was time spent locating the consent form

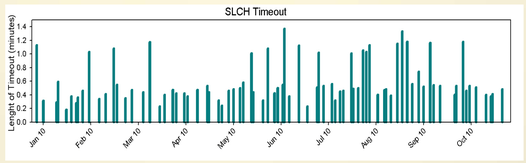


Figure 4: Time required to run the checklist. One advantage of the recordings was ability to extract this data. Average time was 0.60 min, Min was 0.18 min, Max was 1.40 min.

Improving the scoring system

Feedback led to revisions in scoring system

- First system (Fig 5) was too complicated
- Current system (Fig 6) has 10 items

Current system highlights attempts to optimize radiation use (Step Lightly, grid use, protective equipment)

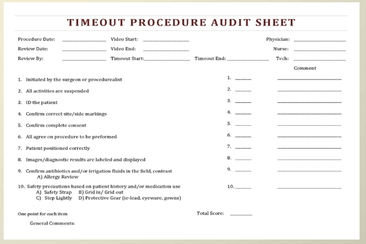
Current system emphasizes need for observable cues, especially speaking clearly for the audio recordings

SCORING SHEET –Time Out Process for Interventional Radiology

Subject # : Date video was recorded : Video Start:
Scored by Date video was scored : Clock Start:

Segments: *Abbreviations: Interventional Radiologist (IR), anesthesiologist (Anes), nurse (RN) and radiology technologist (RT).	Segment Points
1. IR verbally initiates timeout.	10 total
2. RN, RT, Anes stop other activities and verbally reply.	5 total
3. RT verbally states patient DOB, first and last names and patient procedure type.	30 total (10 /ID or procedure)
4. RN verbally confirms.	5 total
5. RT visualizes site marked and reports how it's marked and planned position.	15 total (5 /part)
6. RN verbally replies.	1 total
7. RN states that information agrees with consent form and procedure.	3 total
8. RN verbally calls out allergies.	5 total
9. IR verbally agrees with planned positioning and known allergies.	1 total
10. IR visualizes by verbally calling out medications in tray.	5 total
11. RN and RT verbally reply.	1 total
12. IR states that supplies and prior imaging studies are available.	2 total
13. IR states location of safety strap.	2 total
14. Anes verbally replies.	1 total
15. IR verbally calls out time out is complete.	5 total
16. RT, RN, Anes verbally reply.	1 total
17. Point taken away every time staff member moves away from procedure area (start with 9 points and lose a point for every second that a team member is not paying attention).	9 total
Overall score	Points Available 100 points

Figure 5: Initial scoring system for timeouts.



TIMEOUT PROCEDURE AUDIT SHEET

Procedure Date: _____ Video Start: _____ Physician: _____
Review Date: _____ Video End: _____ Nurse: _____
Review By: _____ Timeout Start:_____ Timeout End:_____ Techs: _____

		Comment
1. Initiated by the surgeon or proceduralist	1. _____	
2. All activities are suspended	2. _____	
3. ID the patient	3. _____	
4. Confirm correct site/side markings	4. _____	
5. Confirm complete consent	5. _____	
6. All agree on procedure to be performed	6. _____	
7. Patient positioned correctly	7. _____	
8. Images/diagnostic results are labeled and displayed	8. _____	
9. Confirm antibiotics and/or irrigation fluids in the field, contrast A) Allergy Review	9. _____	
10. Safety precautions based on patient history and/or medication use A) Safety Strap B) Grid in/ Grid out C) Step Lightly D) Protective Gear (ie-lead, eyeware, gowns)	10. _____	

One point for each item Total Score: _____
General Comments:

Figure 6: Current scoring system

Problem areas and corrective action

- Item analysis (Fig 7)
  - Review of prior studies = opportunity to improve
- Discussion at monthly meetings led to change in workflow
  - Technologists pull up now routinely pull up prior studies

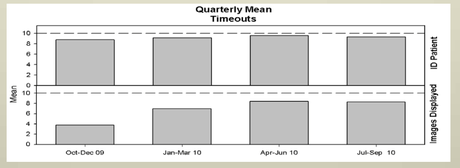


Figure 7: Item analysis shows that the score for reviewing prior studies improved markedly between June 2009 and April 2010

DISCUSSION

Acceptance

- Initial buy-in required on two levels
  - Recording procedures and scoring the timeouts
  - Incorporated these features into the opening of a new room
    - New staff: nurses and technologists
    - New workflow for physicians
- Timeout as an investment in quality patient care
  - Takes 30 seconds
    - Comparable to buckling children into car seats or using a bike helmet
    - Has caught multiple near misses
      - Heparin allergy, safety strap, lack of protective gear

Team building

- Everyone is on the same page at the start of the procedure
- "We do the best timeout in the hospital and have the data to prove it"
- Culture of safety

Importance of multiple analysis and feedback cycles

- Continually identify opportunities for improvement
- Lock in the incremental gains and avoid backsliding

CONCLUSIONS

Efforts to improve performance are investments

- Real resources are required
  - Time required to run the checklist
  - Funds spent to acquire the recording system
  - Time spent analyzing data and reviewing results
  - Time spent planning improvements

Investments provide returns

- Culture of safety
- Team morale – emphasize the good but feed the desire to improve
- Hard to measure the total return on investment
  - To Err is Human but what is the value of helping create systems that
    - Minimize error frequency
    - Diminish the severity of errors when they inevitably occur
    - Detect errors before they harm a child

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