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REMOTE VIDEO AUDITS OF OPERATING ROOM PRACTICES SUSTAINABLY IMPROVE PATIENT SAFETY PROCESSES AND OPERATING ROOM THROUGHPUT

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Abstract:

Background

Objective performance data for processes essential to patient safety and OR efficiency, such as surgical time out (STO), OR cleaning, and OR throughput, are challenging to obtain. When collected by OR stakeholders, these metrics are often biased and time consuming to collect¹. Video auditing has been described in the OR and beyond to improve the quality of care by influencing behavior, analyzing adverse events, and encouraging best practice^{2,3}. This quality improvement initiative uses an off-site, third party video audit service to provide objective data on compliance with STO and OR cleaning, as well as OR efficiency metrics, integrating real time feedback to optimize team performance.

Methods

Video only feeds from the eight OR's at Forest Hills Hospital, NY are analyzed in real time by Arrowsight Inc. After a baseline data collection period, OR staff were educated on the 'best practice' for STO and OR terminal/overnight cleaning (TC). Feedback on compliance with best practices, as well as OR throughput metrics, are displayed electronically throughout the OR suite (Fig 1,2) and distributed in daily and weekly reports. In addition, text messages alert practitioners and OR staff to changes in OR status. The video, intentionally 'blurred' to limit facial recognition, is erased after review, and only data on team performance is retained. Inter-rater variability of audit staff was calculated.

Results

With IRB approval, data from the first 4 weeks of video auditing were compared to 4 weeks of recent data for STO/TC compliance and 2 weeks of data for throughput performance (Table 1). Use of an STO 'check list', an adequate duration of STO, and attention to STO by the OR team improved to near 100%. Compliant TC consistent with guidelines improved from 12% to 99%. Average first case starts improved by 19 minutes, and 4.8/23.6 min of non-surgical time was saved per case before/after noon, which equates to 52 min per OR (3 sched cases/OR/day). The intra-class correlation coefficient for agreement of time segments among 3 video auditors assigning timestamps was 1, and similarly high for pass/fail criteria of required elements of the STO/terminal cleaning (Fleiss Kappa statistic =1.00).

Conclusion

Initial results suggest remote video performance feedback produces meaningful improvements in compliance with safety processes and OR efficiency, especially after noon, due to more effective communication/team dynamics. We anticipate efficiency gains may be improved with further refinement. The impact of video auditing on reducing preventable patient harm (ie. wrong patient/site surgery, surgical site infections) and provider and patient satisfaction remains to be studied.

1. Overdyk F. et. al. Anesth Analg 86; 1998.

2. Hu Y, et. al. Ann Surg 256(2); 2012.

3. Makary M. JAMA 309(15); 2013.



Disclosure: Material support provided by Arrowsight Inc.

Real Time Current Shift OR Data					
Patient Safety >95%			Operating Room Efficiency		
Sign-ins	98%		Cleaning Stop – Room Sterile	+4	
Timeouts	93%		Room Sterile-Pt. in room	+14	
Sign-outs	77%		Pt. Exit-cleaning start	+2	
			1 st Case Start Time Ave.	-6	
			Today's Performance vs. 7/1-7/7	+41	
OR #	Patient Safety	OR Efficiency Today vs 7/1-7/7	OR #	Patient Safety	OR Efficiency Today vs 7/1-7/7
1	68%	-7	5	88%	4
2	94%	6	6	93%	-7
3	97%	2	7	100%	+5
4	91%	-5	8	97%	-2

Safety Metrics Before/After Remote Video Audit + Feedback

Metric	Baseline	After Feedback
Surgical Time Out (STO) % Compliance		
Each team member is attentive to STO	88%	100%
STO performed after surgical drape is up	97%	100%
STO minimum duration of 60 seconds	83%	99%
Terminal OR Cleaning % Compliance		
Minimum cleaning time (60min - 1 cleaner; 40min - 2 cleaners)	9%	97%
% of tasks completed:PPE; wipe equipment, scrub/dry floor, repo equip, clean walls/waste	12%	99%

OR Thruput Metrics pre/post Remote Video Audit & Feedback

Metric	Baseline n=243	After Feedback n=150	Baseline n=168	After Feedback n=90
	Before 12 noon	Before 12 noon	After 12 noon	After 12 noon
First Case Start Delay	18.9	0.6	N/A	N/A
Room ready -> Pt in Room	19.5	13.8	32.1	18.6
Pt in Room -> Start Surgery	21.2	25.3	25.6	26.1
Drape down --> Pt exit	13.3	13.2	15.9	14.1

Pt out of room -> Room cleanup start	3.0	-0.1	2.5	0.7
Room clean up (start-stop)	16.5	16.9	17.6	16.0
Non surgical time	73.5	69.2	93.7	75.5

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