The Utility of Mobile Technology to Analyze Efficiency and Improve Operational Performance in the Endoscopy Unit

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INTRODUCTION

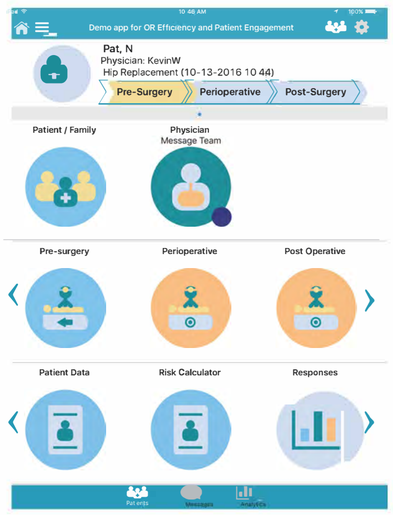
The principles of operations management and healthcare information technology (IT) may be used together to evaluate and enhance operational performance in endoscopy centers.

Previously, our group published the largest publically available endoscopy unit analysis. This "time and motion" assessment was done via data collection using a paper chart flowsheet. (1)

In this study, we aim to implement a mobile app software solution and test its ability to gather endoscopy unit data and analyze efficiency in the endoscopy unit. Ultimately, we hope to validate the use of a mobile app to analyze endoscopy unit efficiency in order to perform targeted operational interventions to reduce overhead cost savings.

METHODS

The study was conducted over a 5-week period at a UCLA outpatient community-based endoscopy center. Endoscopy unit staff members were each given an iPad device to input operational check points involving patient flow through the endoscopy unit in real time.



A variety of performance metrics were tracked for efficiency, including:

- True Completion Time (TCT) (scheduled procedure start time to the time the patient exited the room post-procedure),
- On-time starts (endoscope entry occurring within10 minutes of the scheduled time of procedure), and
- Mean delay (time from this 10-minute mark to endoscope entry) for all cases studied.

Patented software(2) used for this study was provided by www.coremobileinc.com

RESULTS

We analyzed 168 patients who underwent a total of 249 procedures during the study period [42 EGD, 154 Colonoscopy, 51 EGD+Colonoscopy, 2 Flexible Sigmoidoscopy]. A total of 5 endoscopists were included in the study.

- The TCT was 47 minutes.
- Room turnover time was 10 minutes across all cases studied.
- 93% of procedures had on-time starts, with a mean delay of 2 minutes.
- The average procedure duration was 39 minutes.

(before scheduled time)	**Mean Times *(minutes)*** **(N=249 procedures)**
Arrival before scheduled procedure time	(36)
Scheduled procedure time to in-suite time	(24)
Time in suite to start of sedation	8
Start of sedation to scope entry	6
Average procedure duration	39
Scope removal to suite exit	13
Suite exit to ready for D/C	34
Suite turnover time	10
% on-time starts	93%
Mean delay	2
True Completion Time	47

SIGNIFICANCE

- Use of a previously studied methodology to analyze efficiency with a fundamental approach.
- Application of the True Completion Time (TCT) metric in real-time data collection and analysis.
- Deployment of an easy to use interface for a wide range of staff as end users.

CONCLUSIONS

The use of mobile app technology is a feasible method to implement real-time tracking and management of operational efficiency in the endoscopy center.

This technique of efficiency analysis offers potential advantages compared to paper charting including automation and the potential for real-time data analysis and workflow modifications.

This software-based technology may facilitate the implementation of large-scale operational efficiency and process improvement projects aimed at enhancing workflow.

REFERENCES

(1) Kaushal, et al. Using efficiency analysis and targeted intervention to improve operational performance and achieve cost savings in the endoscopy center. Gastrointest Endosc 2014;79:637-45.

(2) Tekwani, Chandra. Core Mobile, Inc. US Patent No. 8,606,923; 9,071,649 B2; Pending patents 61/780,999; 61/921,946