

UK Clinical Study

The Hidden Burden of Endoscopy Failure

Source: Halai A, Mohamed Z, Munuswamy P, et al. (November 19, 2022) *The Hidden Burden of Equipment Failure in Endoscopy: Uncovered and Improved With Digital Technology*. *Cureus* 14(11): e31664. doi:10.7759/cureus.31664

Introduction

A growing and aging population has accelerated the backlog of patients awaiting endoscopic procedures. Improving service is needed to reduce this growing burden. The full impact of faulty endoscopes on services, except repair costs, is not well documented.

Researchers defined the standard traditional processes with broken endoscopes, to measure the hidden burden of endoscope failure on services, including staff time, efficiency costs and staff morale, create a model to estimate the total cost of endoscope failures and to report outcomes of staff experiences using a digital reporting tool for equipment failure.

The study was conducted over 6 months at the endoscopy and decontamination units of 3 hospitals, which are part of Mid and South Essex NHS Foundation Trust. Faulty endoscopes were reported to the hospitals' Medical Equipment Management Services (MEMS) team and Olympus Medical UK & Ireland (Olympus), with whom the hospitals each had a maintenance contract.

The study was performed during day shifts and staff were observed in all areas including endoscopy rooms, decontamination rooms, corridors and administrative rooms.

Conclusion and results

This study demonstrated the immense hidden burden of faulty endoscopes. Given the current challenges to endoscopy recovery, digital testing and reporting tools may present an attractive means to minimize disruption to endoscopy services driven through improved equipment maintenance.

With traditional processes, **one faulty endoscope generated 54 tasks on average, consuming 8 hours 53 minutes of staff time or £325 in efficiency costs**, costing the NHS trust £82,979 per year. 60% of staff reported a negative effect on morale when dealing with broken endoscopes.

Independent Study on Endoscopy services and equipment failure

Traditional processes for reporting faulty endoscopes can be labour-intensive, unit-specific and paper-based. These studies have shown **digital tools can lead to better data collection and benefits such as "efficiencies in workflow and improvement in communication."**

Traditional Reporting

The first 2 months of the study focused on defining the standard processes that were traditionally followed when a broken endoscope gets reported to MEMS and Olympus.

"Routine tasks" were identified that occurred every time an endoscope breaks, such as decontamination, as well as "extra tasks" which occurred ad hoc, such as requesting a loan endoscope. A Time Motion Study was then conducted to measure how long it took staff to complete each of the tasks in minutes.



Digital Reporting

In the latter 4 months, a digital reporting tool was used to replace traditional reporting processes. This digital tool enabled staff to report broken endoscopes directly to MEMS and Olympus, replacing all paper processes and phone calls. Hospital staff had full visibility of every issue reported and status updates via an online dashboard.

Staff Satisfaction

Two staff surveys were conducted - one before the implementation of the digital reporting tool and one after the study ended - to further understand the impact on services. The first survey asked about the traditional methods of reporting, and the second about the impact of digital intervention.

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‘One broken endoscope consumed 8 hours 53 minutes of staff time on average and 13 hours in a worst case scenario.’

Results

2 hospitals reported faults directly to Olympus. The third sent faulty endoscopes to MEMS, who then reported to Olympus. This difference impacted staff time consumed significantly. Tasks performed could be grouped into ten main stages . **Directly reporting to Olympus required up to 52 tasks and reporting via MEMS required up to 58 tasks.** One broken endoscope wasted 22.5 minutes of clinical time, consumed 8 hours 53 minutes of staff time on average and 13 hours in a worst case scenario. Broken scopes have a clear negative impact on clinical time, efficiency, staff morale and bottom line.

Stage	Number of Tasks	Staff Time Consumed (Mins)	Efficiency Cost (£)
1. Endoscope Fails	7	31	25
2. Clinical Impact	1	113	101
3. Decontamination of faulty endoscope	7	62	31
4. Reporting to endoscope maintenance provider	5	53	30
5. Faulty endoscope collected	4	44	18
6. Request more information or updates	3	3	2
7. Loan endoscope arrives	8	60	30
8. Repaired endoscope returns	5	68	34
9. Returned endoscope decontamination	6	60	33
10. Loan endoscope returned	8	41	20
Total	54	533	325

Staff Morale

A survey revealed that 80% of staff reported they experienced problems with endoscopes. 90% felt an endoscope breaking impacted clinical services. **When a fault occurs, 60% of staff says their morale gets affected.**

Repairs needed / year	Hours wasted	Cost in time / year
255	2267	£82,979

‘Broken scopes have a negative impact on clinical time, efficiency, staff morale and bottom line.’