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Letter to the Editor

A management dashboard to boost operating theatre utilisation, productivity and profitability



Britain's National Health Service faces the difficult task of maintaining high quality healthcare with increased public demand and reduced funding [1].

High-volume surgery poses an excellent arena for the application of a management dashboard – a virtual tool to improve theatre utilisation and productivity [2]. We designed a RAG (red, amber, green) rated dashboard for ophthalmic surgery using Microsoft Excel to retrospectively analyse service line reporting data over a three month period using the following metrics: “list start time”, “list finish time” and “surgical productivity ratio (SPR)”. SPR is a ratio of time spent operating against time available to operate.

We RAG rated the metrics against predetermined parameters for “ideal”, “reasonable” and “poor”, then incorporated cost data using service line reporting from the hospital accounting department. “Ideal” described list start/finish times less than 10 min of scheduled time and SPR of above 0.80; “reasonable” described list start/finish times between 10 and 20 min of scheduled time and SPR between 0.70 and 0.80; “poor” described list start/finish times over 20 min of scheduled time and SPR under 0.70. The morning list is scheduled as 08:30–12:30 and the afternoon list 13:30–17:30.

In this three month period, 5.8% of list start times were ideal, 23.1% reasonable and 71.2% poor. 17.3% of list finish times were ideal, 10.6% reasonable and 72.1% poor. 35.6% of SPRs were ideal, 28.9% reasonable and 35.6% poor.

Total theatre costs incurred were £1,937,749. Out of 836 session hours available, 358 h and 17 min were not spent operating (SPR = 0.57). There were 120 periods of 47 min or longer. These periods could be used for cataract operations within scheduled session times – a potential £91,880 of additional revenue.

Regression analysis demonstrated a significant linear relationship between number of minutes the morning list overran and number of minutes the afternoon list started late, where the morning list overran by 30 min or more ($p = 0.001$; $r^2 = 0.656$). This knock-on effect and associated overtime charges can be avoided by starting and finishing the morning list on time.

Furthermore, the dashboard displayed the individual surgeons' operations and identified patterns of recurring late theatre starts at certain points in the working week. In one instance, this was due to a consistently overbooked morning outpatient clinic. Another was due to the surgeon travelling from a different hospital for an afternoon operating list. Individual surgeons can compare operating

time per procedure and share best practice wherever significant discrepancies arise. The dashboard also allows management to identify and quantify the financial implications of consultants supervising trainees, who were typically slower in all operations, and strategically allocate fewer numbers of patients onto these lists.

In summary, our dashboard demonstrated significant potential to improve theatre utilisation, productivity and profitability and encouraged action within the department. We recommend the use of RAG rated operating theatre dashboards by clinicians and managers nationally to help improve these measures.

Conflict of interest statement

The authors declare no conflicts of interest.

Author contribution

Dr Sohaib Rufai: ethics application, study design, data collection, data analysis, write up.

Mr Peter Cronbach: data collection, data analysis.

Mr Philip Alexander: study design, data analysis, revised manuscript.

Mr Stephen Lash: study design, data analysis, revised manuscript.

Guarantor

Dr Sohaib Rufai.

Ethics approval

Approved by University of Southampton Faculty of Medicine Ethics Committee (Ethics ID: 4044).

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