Introducing The Productive Operating Theatre programme in urology theatre suites

Record Status
This is a critical abstract of an economic evaluation that meets the criteria for inclusion on NHS EED. Each abstract contains a brief summary of the methods, the results and conclusions followed by a detailed critical assessment on the reliability of the study and the conclusions drawn.

CRD summary
This study evaluated The Productive Operating Theatre (TPOT) programme, implemented in two urology operating theatres. The authors concluded that TPOT helped to identify key obstacles and produced improvements in efficiency measures, such as start and overrun times, and costs and patient satisfaction. The study was well reported, but not all costs were assessed, and the results are unlikely to be generalisable. The conclusion on effectiveness seems appropriate, but the cost-effectiveness cannot be assessed, due to the missing costs.

Type of economic evaluation
Cost-effectiveness analysis

Study objective
The objective was to evaluate a theatre improvement programme, implemented in two urology operating theatres.

Interventions
The intervention was The Productive Operating Theatre (TPOT) programme. This comprised a series of modules progressing from foundation, to enabler, to process. In foundation modules, executive and programme leaders liaised with staff and trust boards. Enabler modules consisted of group staff meetings, increased staff involvement, visual management processes, and increased communication. Process modules dealt with the entire surgical pathway from start-up to recovery. At the time of assessment the programme was at the enabler stage. This was compared with the same theatres before the introduction of the programme (no programme).

Location/setting
UK/hospital.

Methods
Analytical approach:
The outcomes from two urology operating theatres in London, before and after the introduction of TPOT programme, were compared. The outcomes were assessed at various points, from the introduction of the programme in September 2010 to the middle of 2011. The authors did not explicitly state the perspective.

Effectiveness data:
The primary outcome was the effect of TPOT programme on the start and overrun operating times. Start time was the start of anaesthetic administration, and measured by the number of days on which this occurred before 8.30am in the two urology theatres. Start times were recorded from September 2010 to June 2011, covering the period before and after a specific brief and debrief system was introduced in January 2011. The monthly overrun time was measured as the number of minutes in excess of 30 minutes past the standard finish time. These were compared for the months in 2011 when TPOT programme was running and the months in 2010 when it was not. Patient satisfaction was measured by questionnaires, with 21 structured and three open questions. Questions were content-validated by expert opinion. The questionnaires were issued to 54 patients returning after surgery for follow-up between December 2010 and March 2011. The delay in the transfer of patients from recovery to the ward was measured for one month by auditing 10 wards.

Monetary benefit and utility valuations:
Not applicable.
Measure of benefit:
The health benefit was measured by improved start and overrun times, and patient satisfaction.

Cost data:
The cost of the monthly overrun was measured between January 2010 and June 2011. The cost was calculated at £7.50 per minute based on fixed overheads and staffing costs. Costs were reported in UK £.

Analysis of uncertainty:
The outcomes were compared for the two urology theatres.

Results
Before the introduction of the briefings (September to December 2010) the percentage of operating lists starting on time ranged from 14 to 20 in theatre one and 16 to 27 in theatre two. After the introduction of briefings (January to June 2011) the percentage rose to between 37 to 55 in theatre one and 16 to 55 in theatre two. There was a 39 to 41% increase in operating lists starting on time, involving 1,365 cases.

There was a reduction in monthly overrun times by 832 minutes between March 2010 and March 2011. The cost of the monthly overrun decreased from September 2010 to June 2011 by £3,030 in theatre one and £510 in theatre two.

From the 21 structured questions, patients were satisfied with the level of care (77%), staff hygiene (71%) and information provided (72%), but 11% were dissatisfied with the staffing levels. In total, 90% of patients felt they had enough time to discuss their health and medical history with the surgeon; 35% felt that their pain was less than expected; 60% perceived the staff team performance to be excellent; and 80% felt they were taken to the theatre as soon as necessary. From the three free-text questions, 156 comments were positive and 84 were negative. Most of the negative comments related to the environment and facilities (13 comments) or staffing levels (nine comments).

Authors' conclusions
The authors concluded that TPOT programme helped to identify key obstacles and produced improvements in efficiency measures, such as start and overrun times, and costs and patient satisfaction.

CRD commentary
Interventions:
The intervention was clearly and comprehensively reported. No details of any programme in place before the introduction of TPOT programme were reported; the content of the comparator was therefore unclear.

Effectiveness/benefits:
The health outcomes were clearly defined, and the methods used to measure them were clearly reported and appropriate. The effectiveness results were clearly reported. Few characteristics of the patient population were reported.

Costs:
The authors appear to have adopted a hospital perspective, with a limited analysis of the costs. In particular, no intervention cost was included, which was a key limitation of the analysis. TPOT programme was likely to have had a substantial cost, since it involved a high level of staff participation, so it is possible that the intervention cost outweighed any cost savings. The price year was not reported. The overrun costs were clearly reported, and appear to have been based on an appropriate cost estimate.

Analysis and results:
The before-and-after design was valid, and the results were clearly reported. The variation in the outcomes between the two urology theatres indicated that there was likely be substantial variation between hospitals. This might make it difficult to generalise the findings to other settings.

Concluding remarks:
The study was well reported, but not all the costs were assessed, and the results are unlikely to be generalisable. The authors' conclusion on the effectiveness of the intervention appears to be appropriate, but conclusions on its cost-
effectiveness cannot be made due to the incomplete cost analysis.

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