SMART Theatres:

Review Audit of Estates Failures vs. SMART Theatres

Authors

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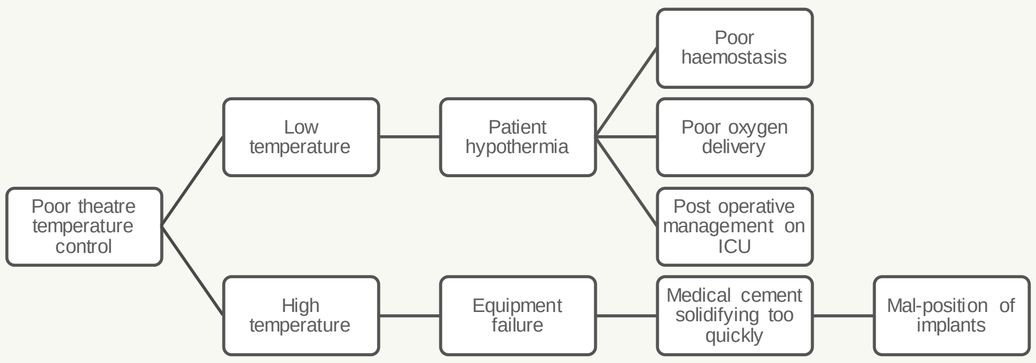
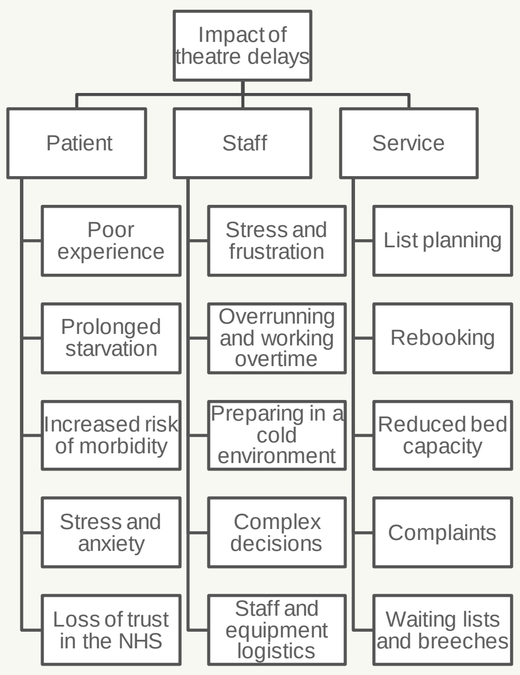
Introduction

It is well known that the NHS has a major infrastructure and estates crisis. In operating theatres this can have detrimental effects on patient care. Examples of this is a failure of temperature regulation:



There is minimal data captured on the impact of estates failures on patient outcomes. Healthcare teams must adapt to faults and ongoing repairs often leading to theatre downtime. This can be detrimental to patient care, staff experience and the wider service.

We currently do not understand the costs associated with estates failures in operating theatres in relation to wasted staffing costs, downstream costs and loss of revenue. To better our understanding of these costs we performed a retrospective audit.

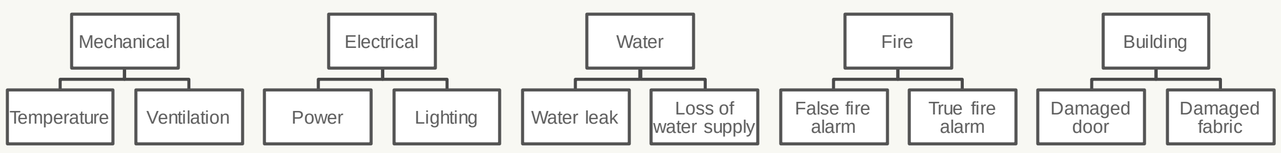


Aims

1. Retrospectively assess estates failures in theatres
2. Assess the impact on patients
3. Estimate the costs of lost productivity

Methods

At a major trauma centre in London there were 2,123 reported estates failures over two years (2021 and 2022). Each failure was assessed for the potential affect they would have had on operating capacity, staff utilisation and the cost of theatre downtime. Each reported failure was categorised:



We assessed each failure and estimated the likely theatre downtime and the associated costs. We predicted the number of case cancellations from theatre downtime with the following model:

<2 hours	1 patient cancelled from the list
2-4 hours	2 patients cancelled from the list
6 hours	4 patients and entire list cancelled
>24 hours	6 patients and entire list cancelled

Staffing costs were estimated using models modified to the level of theatre downtime and the potential for overruns. In long periods of downtime, the models presumed anaesthetists and scrub teams could be redeployed to other theatres. However, it was presumed that surgeons were unlikely to be redeployed.

Downstream costs relate to the costs associated with case cancellation. This includes the prolonged length of stay in hospital and the additional administrative workload rearranging the surgery.

Lost revenue costs was calculated by multiplying the average elective theatre tariff by an estimate of the number of estimated cancellations.

Results

Number of reported estates failures and associated theatre downtime in 2021 and 2022 at a Major Trauma Centre:

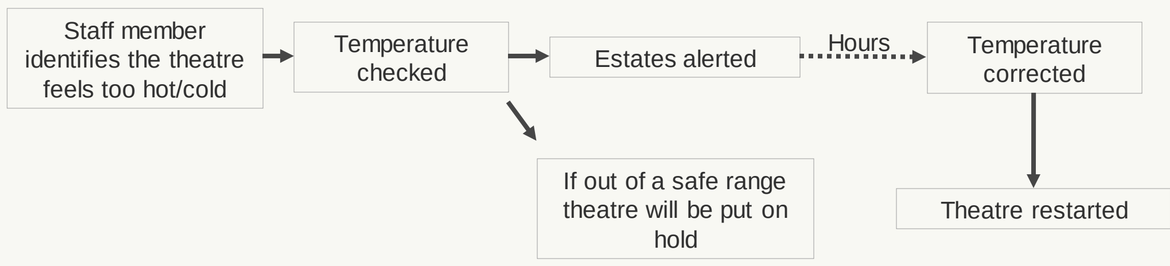
Theatre downtime (hrs)	Number of events
0	1606
2	238
4	242
6	36
24	1

Estimated Clinical Downtime Costs Per Year:

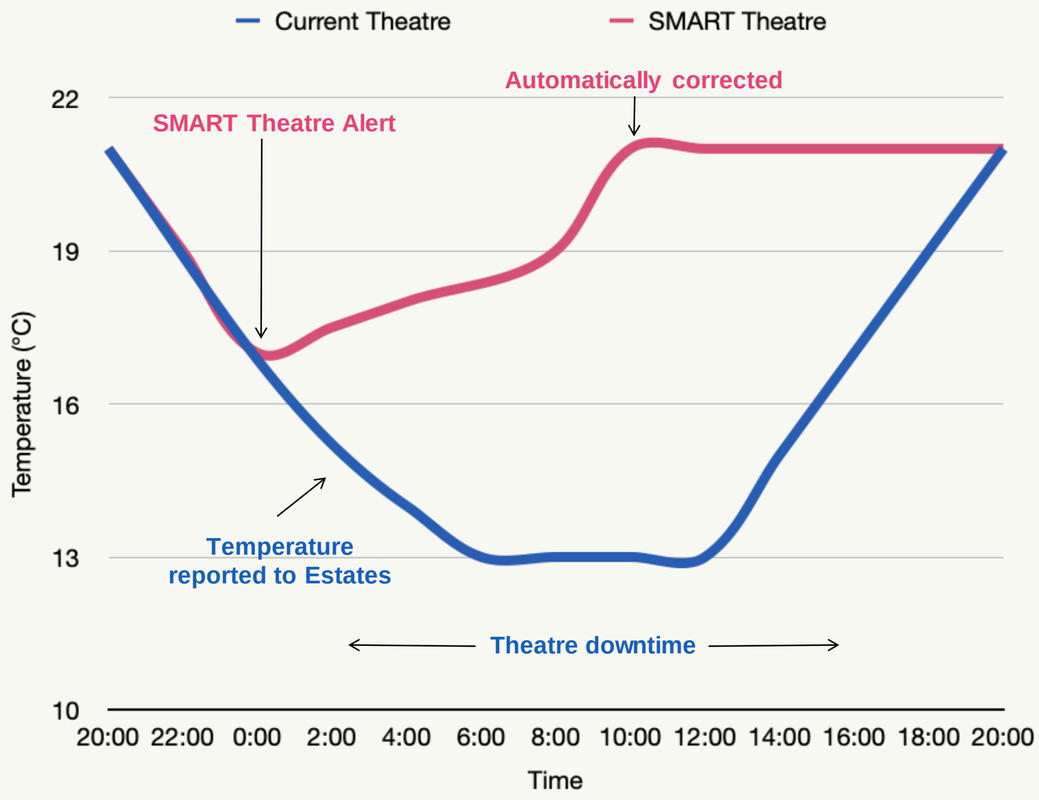
Staffing costs	£375k
Downstream costs	£205k
Lost revenue costs	£150k
Total costs	£730k

SMART Theatres

An example of how SMART Theatres may improve current processes is in theatre temperature control. Current process:



Whereas a SMART Theatre will sense a temperature change and automatically correct it. This has the potential to greatly reduce theatre downtime and overall reduce costs of estates failures.



Key Points

- Estates failures leading to theatre downtime are estimated to cost £730k per year in a Major Trauma Centre in London
- Current processes could be improved, and theatre downtime reduced with the introduction of SMART Theatres