

National Green Theatres Programme

Prògram Nàiseanta Lannsaireachd Uaine

Improving Theatre Efficiency Through The Use of Regional Anaesthesia and Block Rooms – Business Case

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Situation

Given the ongoing pressures facing the NHS, implementing new ways of working to tackle waiting lists and reduce waiting times for surgery are paramount.

The use of block rooms (or block areas, how these are configured at local level need not be prescriptive) to facilitate the use of regional anaesthesia has been shown to increase theatre efficiency. Performing anaesthesia in parallel with surgery, rather than in a linear fashion, improves theatre utilisation by increasing the number of procedures which can be carried out by reducing the down time between procedures¹.

This document applies only to surgeries being undertaken where regional anaesthesia is being performed.

Background

Historically operating theatre process has meant that each patient's surgery is completed prior to anaesthesia being administered for surgery on the next patient. This has the consequence of there being fallow periods in the operating theatres, whilst regional anaesthesia is established for the next patient.

Regional anaesthesia block rooms have been utilised successfully in North America for almost two decades. Evidence of their use in the UK is also now becoming more visible, and included in this are a number of sites in Scotland.

To inform the current piece of work a national audit of existing practice was undertaken, and a heat map outlining the findings can be found in Appendix 1. In summary block rooms have been implemented in 5 hospital sites across NHS Scotland. Work undertaken in NHS Greater Glasgow and Clyde^{2 3} and NHS Tayside⁴, as well as in City Hospitals Sunderland NHS Foundation Trust⁵ have been used to inform this document.

Performing regional anaesthesia on the subsequent patient in parallel with the ongoing surgery of the first patient optimises theatre utilisation and reduces to a minimum the down time between procedures, with the second patient being ready to be moved into theatre as soon as it is cleaned and prepped following completion of the previous surgery, as demonstrated in diagram 1 below.

¹ [Impact of Parallel Processing of Regional Anaesthesia with Block Rooms Kariem El-Boghdadly et al 2020.pdf](#)

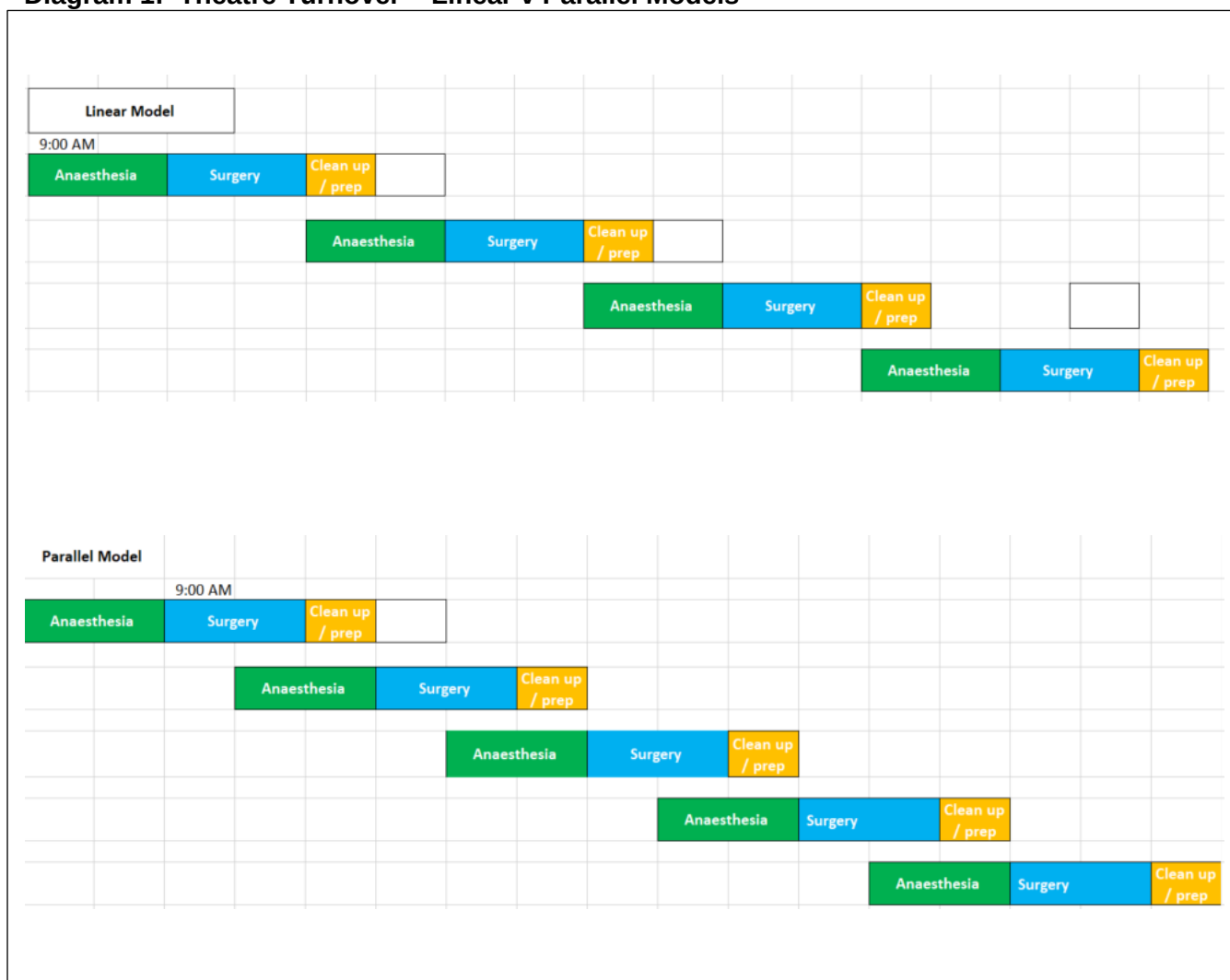
² [QEUH Block Room SBAR.pdf](#)

³ [Stobhill Day Surgical Unit Block Room Service Development.pptx](#)

⁴ [Block Room SBAR NHS Tayside.pdf](#)

⁵ [City Hospitals Sunderland NHS Foundation Trust Block Room Business Case Final.docx](#)

Diagram 1: Theatre Turnover – Linear v Parallel Models



The use of block rooms aligns in particular with Orthopaedics, as described in Sunderland, GG&C Stobhill and Tayside whilst in GG&C Queen Elizabeth University Hospital (QUEH), a number of additional specialties have been included, namely Trauma, Renal, Vascular and Emergency Theatres.

Evidence

Audits undertaken subsequent to implementation in Sunderland, Glasgow and Tayside all demonstrate efficiencies when block rooms are utilised.

- The Tayside study reports 1 additional case per day when running one list, one day per week.
- QUEH reports a time saving of 2 hours 15 minutes for a 4 case list and a time saving of 3 hours and 45 minutes for a 7 case list.

- Sunderland established a mean time saving of 2 hours and 3 minutes per day during their initial trial period.
- Stobhill, whilst not reporting efficiencies by way of hours saved, identified a 41% reduction in mean transition time between cases, an increase in theatre utilisation of 21%, and a reduction in time to discharge by 50 minutes per case.

Additionally in Stobhill the proportion of general anaesthesia cases fell from 73.5% to 11.8%, with regional anaesthesia cases increasing from 26.5% to 88.2%. Patient feedback captured during the audit period demonstrated very high levels of satisfaction, with 98% of patients rating the service as either **exceptional** or **very good**, and 95% of patients would recommend the service⁶.

The Stobhill study also gives consideration to the benefits to the wider surgical team, in particular nursing staff, who may be required to take on responsibilities that differ from their usual roles. Results of a survey undertaken 6 months post implementation highlighted an overall positive response, with the block room being considered to facilitate a better patient experience, an increase in theatre efficiency, improved team working and educational opportunities⁷.

These results align with those summarised by Boghdadly et al¹ who, having completed a systematic review of the evidence exploring the impact of these, concluded that the use of block rooms facilitated a time saving of 52 minutes per patient across theatre and recovery and an increase in patient throughput of 1.7 cases per day.

It is recognised that to maximise efficiencies block rooms function best when servicing multiple theatres. The number of additional cases can therefore be extrapolated from the baseline data provided above by factoring in the number of theatres being served by the block room and the number of days per week these are running.

Regional Anaesthesia also promotes same day discharge leading to reduction in inpatient requirement, and, when combined with a recovery trolley or reclinable chair option rather than a post-operative bed requirement, reduces on-the-day case cancellations due to bed scarcity. Data captured in QEUH between May and October 2020 highlighted 36% of upper limb fracture patients who were given regional anaesthesia were discharged within 5 hours of having surgery.

⁶ [Optimising Theatre Efficiency and Utilisation - Evaluating the Role of a Dedicated Block Room for Upper Limb Surgery.pdf](#)

⁷ [Benefits of a Regional Anaesthetic Block Room on Nursing Staff in an Awake Day Surgical Setting.pdf](#)

One consideration to be taken into account is local policy regarding the requirement for regional anaesthesia day cases to have an accompanying adult present to offer support for the first 24 hours following discharge, which may affect some patients being discharged. For example current policy in GG&C Stobhill is to **advise** that patients have someone with them when a regional block has been used as the sole form of anaesthesia, and patients are offered an overnight bed if they feel they cannot manage having to use a sling for 24 hours.

Benefits

Once established block rooms provide a number of benefits:

- Training opportunities for trainees and consultants
- Increases theatre efficiency – increased theatre time for surgery
- Reduces length of hospital stay and increases volume of day surgery undertaken
- Improved training opportunities for performing regional anaesthesia
- Improved patient experience
- Improved patient outcomes

Resource Requirements / Considerations

Potential efficiencies will be site specific and there are a number of dependencies which need to be factored in when considering the potential gains at local level, particularly around the type of procedures being undertaken and the current use of regional anaesthesia.

Buy in of the whole team is key, as is having the right skill mix and level of training for all staff assigned to working in the block room. This is particularly relevant if supervision of the patient with the established block during surgery is to be undertaken by the anaesthetic assistant (nurse or ODP), and it must be ensured that this group have appropriate training, distant supervision, and are supported with this extended role.

Forward planning is required to ensure that only cases suitable for blocks are added to block lists and that patients are prepared for having awake surgery in advance of their procedure. There is a requirement for an additional anaesthetic assistant to staff the block room, whilst the existing assistant monitors and documents the on-going surgery.

In addition the system needs buy-in from surgeons and whole anaesthetic departments, particularly where 'Duty Anaesthetists' may on the day be called on to deal with any emergency. Experience from centres currently implementing block room systems highlights that during times of staff shortages of either anaesthetists or anaesthetic assistants, block room staffing is often the first option to be forsaken, and careful

consideration should be given to the number of patients potentially affected by doing so before reallocating these staff.

The block room model is perhaps more suited to larger sites with a greater throughput of orthopaedic or vascular access cases, however with planning and widening the scope to include procedures using spinals for minor lower limb surgery or hernias etc, this has the potential for increasing the cohort of suitable patients and in turn the viability of a block room in smaller sites.

The majority of trial data presented here is based on the block room servicing one theatre list, running additional lists where possible will further increase efficiencies but will require additional planning to ensure adequate patient numbers.

Sustainability

The aim of the National Green Theatres Programme (NGTP) is to reduce the carbon footprint, energy consumption and waste generation within operating theatres across NHS Scotland.

The environmental impact of volatile anaesthetic agents and Nitrous Oxide (N₂O) is widely recognised and significant progress has been made in reducing their use across NHS Scotland. Desflurane is no longer available on the NHS Scotland National Procurement Framework, low-flow anaesthesia is being promoted and there is an ongoing N₂O mitigation and minimisation programme of work currently being undertaken.

NGTP recently commissioned a narrative review of the evidence comparing the environmental impact of regional versus general anaesthetic.⁸ There is evidence to support the assertion that regional anaesthesia has a lesser environmental impact than general anaesthesia, however caution is required as performing regional anaesthesia still requires the use of single use equipment and consequent waste generation.

Alignment with Wider Centre for Sustainable Delivery Workstreams

The Perioperative Delivery Group (PDG) was established as a workstream within the Modernising Patient Pathways Programme of CfSD in November 2023 and tasked with developing a national approach to support driving efficiency and productivity within perioperative services.

Outputs from this piece of work are the recently published Framework for Perioperative Services in Scotland⁹ and accompanying set of national principles, one of which is the Protecting Planned Care Principles.¹⁰ Principle 2 of the Protecting Planned Care Principles – *Seek Innovative Approaches for the use of Space*

⁸ [The Environmental Impact of Regional Anaesthesia V General Anaesthesia A Narrative Review.docx](#)

⁹ [A Framework for Perioperative Services in Scotland](#)

¹⁰ [Protecting Planned Care Principles](#)

and the Environment – references the use of block rooms when considering alternative locations for the administration of anaesthesia.

Whilst the NGTP focus is ultimately on the reduction of carbon emissions it is recognised that the primary benefits in establishing block rooms are in the efficiencies that can be achieved, with one of the co-benefits being the green dividends gained through the reduction in waste, use of general anaesthesia and bed occupancy.

With this in mind it is recommended that teams seeking to implement block rooms within their hospitals should make use of the Framework for Perioperative Services in Scotland and its accompanying self assessment tool¹¹.

The options analyses shared in Appendix 2 below may also assist planning.

¹¹ [Framework for Perioperative Services in Scotland - Self Assessment Tool](#)

Appendix 1: NHS Scotland Block Room Heat Map

Block Rooms National Picture	Currently In Use	Previously In Use	See No Need	Would Consider / Sees Benefits	Challenges
NHS Ayrshire and Arran					Resources
NHS Borders					
NHS Dumfries and Galloway		Anaesthetic room used as block room for renal access lists			Not enough suitable cases, resources
NHS Fife					
NHS Forth Valley					Not enough suitable cases
NHS Golden Jubilee					Doesn't fit with current practice
NHS Grampian					Resources
NHS GGC North Sector					Resources/investment and space
NHS GGC South Sector					
NHS GGC Clyde Sector					Resources
NHS Highland					Not enough suitable cases
NHS Lanarkshire – Monklands					Doesn't fit with current practice
NHS Lanarkshire - Hairmyres					Concerns re decrease in skill mix
NHS Lanarkshire - Wishaw					Resources
NHS Lothian					
NHS Orkney					
NHS Shetland					
NHS Tayside					
NHS Western Isles					

Appendix 2: Options Analysis

Options Appraisal – Sunderland

Option		For	Against	Resourcing		
				Staffing Requirement	Physical Space	Equipment
1.	No block room	Familiar and accepted	No efficiency gains potential	No additional staff required	No additional space required	No additional equipment required
		No requirement for change	Waiting list pressure			
		No set up / ongoing costs				
2.	Block room	Greater efficiency	Set up costs	ODP / Recovery nurse	Repurposing an area within the theatre suite	Dedicated Ultrasound
		Reduced waiting times	Not enough approp patient cohort to sustain			
		Proven clinical and patient benefits	Which leads to failure to embed			
		Training opportunities	Staff first to be pulled away to cover other areas			

Options Appraisal – QEUH

Option		For	Against	Resourcing		
				Staffing Requirement	Physical Space	Equipment
1.	No Block Room	Familiar and accepted	Less efficient	No additional staff required	No additional space required	No additional equipment required
		No requirement for change	Waiting list pressure			
		No set up / ongoing costs				
2	Full Time Block Room (Full days Mon – Fri)	Efficiency savings (1- 2 patients per day)	Greater staffing commitments	1 x Anaes Consultant 1 x Anaes Assistant (ODP/Nurse)	1 x area to perform block 1 x adjacent area for monitoring post block	Dedicated Ultrasound
		Experienced block anaesthetist presence EVERY day for performing and teaching blocks	Block room gets pulled when pressure for beds			
		Surgeon / theatre buy- in as consistent block anaesthetist presence	Block room staff get reallocated when staffing pressures			
		Training opportunity				
3.	AM only Block Room (5 x ams)	5 day cover remains with all associated benefits	Reduced efficiency savings	0.5 x Anaes Consultant 0.5 x Anaes Assistant (ODP/Nurse)	1 x area to perform block 1 x adjacent area for monitoring post block	Dedicated Ultrasound
		Reduced staffing requirement	Reduced training / teaching opportunities			