

**FUTURE OPTIONS FOR
CRITICAL CARE IN LANARKSHIRE**

14 September 2005

Report of Critical Care Working Group

Executive summary

The Critical Care Working Group, comprising consultants from General Surgery, General Medicine, A & E and Anaesthetics, nursing staff and general management, was formed at the request of the CEO to provide a view of the future provision of Critical Care services across the three acute hospital sites of NHSL (Hairmyres, Monklands and Wishaw General Hospitals). In addition to the work carried out by the Group, additional information is included in this paper setting out, in some detail, models for Anaesthetic staffing. This has not been discussed with the wider Anaesthetic community or the Working Group to date.

The terms of reference given to the group were:

- Emergency and trauma surgery is to be focussed on one site
- Full emergency medical receiving is to continue on three sites
- A full range of elective surgery is to be provided on three sites.
- Provision of Critical Care services on three sites but not necessarily the same service on three sites.
- There should be a single consensus view and come from a perspective of anaesthetic services being a single Lanarkshire wide resource.

This was considered as Option 1 and this paper sets out the implications of this clinically and financially.

There were major issues identified as arising from this option, centred on clinical risk, costs and consultant acceptability. The group therefore went on to look at a 2 site option (Option 2) for critical care services and based on the evidence available, determined that this would be the most clinically and cost effective option for critical care services in the future. The group recognised that this would impact on other major services such as acute receiving for surgery, trauma and medicine and also for A & E.

Given that Option 2 would clearly involve more detailed planning of emergency services throughout NHS Lanarkshire, the group therefore considered the interim measures required to sustain critical care/anaesthetic services on all three acute sites and to determine how long such interim measures could be sustained. It was concluded that the status quo would be sustainable until 2008/9 although a number of staffing problems require to be addressed as a matter of urgency and some developments require implementation in the near future to facilitate a sustainable long-term solution.

Drivers for change

The General Surgeons initially highlighted the need for change. However, the remit of the original option appraisal group for surgical services was restricted to retaining medical receiving and ITU on 3 sites. This group recognised that some or all of the drivers for change apply to all of the acute specialities and the current pattern of service provision across the emergency services may be unsustainable in the long term.

Drivers:

- The European Working Time Directive (full implementation by 2009)
- Modernising Medical Careers (foundation & seamless training)
- Increases in consultant workload associated with appraisal, training and revalidation.
- Public expectation of a consultant based service
- Medical developments in Acute and Critical Care Management that are labour intensive.
- Difficulties in recruiting and retaining staff with specialty shortfalls

Current provision of Critical Care Services

Critical Care provision is divided into 3 levels of care, which are well recognised and have previously been defined by the Critical Care Delivery Group.

Levels 1 & 2 are generally being referred to as High Dependency Unit Care (HDU). There are no designated Level 1 facilities in Lanarkshire.

Level 2 HDU has a varying level of availability throughout Lanarkshire for both medical and surgical patients. Within the context of this proposal, the group were asked to pay particular attention to the need for level 2 medical patients. The only formal HDU provision for medical patients is a 4-bedded unit in Wishaw General, but while this has enhanced nurse staffing, it has no dedicated medical staff resource.

Monklands Hospital has a designated 6 bed surgical HDU with appropriate nurse staffing and medical care provided by the relevant surgical specialty team.

Both Wishaw and Hairmyres Hospitals have surgical HDU facilities within a combined ITU/HDU facility. In Wishaw medical care is provided by the surgical team, whilst in Hairmyres the medical care is provided by the anaesthetic team also responsible for the care of the ITU patients.

Hairmyres and Monklands also have specialist HDU surgical facilities available for the care of Thoracic and ENT/Oral-max patients. Specialist surgical teams support these.

Level 3 care is generally referred to as Intensive Care (ITU) and each acute hospital has 5 beds with a facility to expand to 6 beds in the winter months. It is the norm, within ITU's in the UK to be run by a consultant led team with dedicated sessional time for these

duties and whilst there are some units with Consultant Physician or Surgeons involved in the team, it is almost exclusively Consultant Anaesthetists who undertake these duties. It is the size of and case mix within ITU that determines the size of the team required to provide 24/7 care for the patients.

Regular daytime sessions tend to be carried out by those consultants with a special interest in ITU. At present out-of-hours cover is provided by a hybrid on-call system with both emergency theatres and ITU being covered by one Consultant and one Trainee Anaesthetist. The out-of-hours and weekend duties are covered from the entire pool of Consultant Anaesthetists who will also have duties within emergency theatres and elective sessional commitments.

Any changes to the size and case mix within ITU cannot be looked at in isolation, as they will have a significant knock-on effect to the ability to cover emergency theatres and the elective programme.

Impact of reorganisation

Critical care is a service that is provided to the most unwell patients in our acute hospitals. There are 3 main user groups for ITU care:

- Acute medical receiving/A & E
- Acute surgical receiving
- Major scheduled surgery

There was agreement within the group that any proposal for reconfiguration of these users should address:

- The configuration of provision of ITU care within each hospital following changes in emergency receiving
- The configuration of the Consultant workforce and job plans
- The configuration of the junior workforce with specific reference to service provision / training balance
- The provision of out-of-hours anaesthetic services for General Surgery, Paediatrics, Trauma and Maternity
- The anaesthetic provision for elective surgical theatre services
- The provision of an inter-hospital transfer service if required

The detailed anaesthetic staffing implications of the above factors are available in the accompanying paper.

Although they are not as inextricably linked to anaesthetic led critical care services, it was also agreed that the group should address:

- The configuration of provision of level 2 (HDU) care within each hospital
- The configuration of the nursing workforce

Consideration of the Option within the Terms of Reference (Option 1 – Single Site Receiving for Emergency Surgery)

Impact on Provision of Level 3 Care within each Hospital

In Scotland, the intensive care units are audited using the Scottish Intensive Care Society database. The data is available for local use and can determine the need for level 3 care from any one specialty.

Taking the proviso that each of the 3 sites were to retain ITU facilities to support Emergency Medical Receiving and A & E, and that there would also be a need for level 3 support for major scheduled surgery, it is possible to determine the requirements for ITU in each of the now very different ITU's. (This has been set out in detail in a separate review of NHSL Intensive Care/High Dependency Care)

ITU Bed Requirement

	Site A	Site B	Site C
Emergency surgery	7.1	-	-
Emergency medicine/A & E	1.7	2.6	2.5
Scheduled surgery	0.5	1.7	-
TOTALS	9.4	4.3	2.5

These calculations were based on the following assumptions:

- Existing patterns of use on each site (numbers & bed days utilised)
- Transfer of a percentage of medical admissions to co-locate with general surgery (GI haemorrhage)
- Some scheduled surgery co-located with emergency surgery (ENT & Maxillofacial)
- All other scheduled surgery on one site, although this could be split between two sites without altering the implications
- Whilst the smaller two units could also accommodate level 2 surgical HDU beds, no allowance has been made for the need for level 2 surgical HDU beds on the emergency site which would need to be independently staffed

The centre for acute surgical and trauma receiving will require a bed increase of level 3 beds to 10 Critical Care beds with a proportionate reduction of these beds on the other two sites.

The immediate effect of increasing one ITU to this size is that it exceeds the recommended number of beds that can be looked after by one medical team (normally 8 beds). The presence of any ITU on each of the other sites still requires the existing staffing levels for one team, despite being much smaller units. The total requirement for

NHS Lanarkshire would be four distinct teams instead of the current three. In addition the workload in the larger unit would preclude cross cover of emergency theatre activity out of hours.

There are also major concerns for the two smaller units and their long-term sustainability. It is recognised that maintenance of skills and the ability to teach and train depends on the size of the critical care unit; specifically the numbers and case mix of patients.

Options for Alternative Patterns of Care

Given this much reduced need for ITU on one or two sites and the need for increased staffing at the emergency site, the group considered whether it would be possible for another group to supply the critical care, anaesthetic and airway skills required if it became impossible to supply a resident on-call anaesthetist. i.e. If an Intensive Care Unit were to close.

The committee considered 4 groups;

- Consultant physicians
- Junior Medical Staff
- Accident and Emergency staff
- Nurse Critical Care Practitioners

There was general agreement that the skills required were not readily transferable, requiring significant training times to acquire, and there was no appetite by any group of clinicians to adopt any of these options.

The committee considered Nurse Critical Care Practitioners could play a major role during times when immediate senior cover would be available, but not as an isolated practitioner during the “out-of-hours” service.

Closure of an Intensive Care Unit with an outreach resuscitation and retrieval service was considered. However, there is no manpower efficiency saving with this model. In addition this model was rejected as an inefficient (indeed poor) model for providing seamless patient care.

The Physicians on all three sites were unanimous in their agreement that acute medical receiving could not continue without a resident anaesthetist on site to carry out immediate resuscitation and follow-on Level 3 Critical Care. They concluded that this would be a major clinical risk and not conducive with modern medicine.

Impact on the Anaesthetic Consultant Workforce and Job Plans

As previously indicated, any reconfiguration of the emergency surgical service to a single site would require not only a reconfiguration of the critical care service but the whole anaesthetic service. Anaesthetists also provide services for

- Acute Surgical Emergencies & Trauma
- 24/7/52 Obstetrics anaesthetic services
- Elective sessional commitments

A full breakdown of the required anaesthetic staffing is attached at appendix 1 (this has been prepared by Dr Jane Burns). These calculations are made on the following assumptions:

- 2 all-day theatres will be required to support emergency surgical receiving with one theatre staffed on a sessional basis to 12.00 midnight and thereafter available overnight for extreme emergencies
- 2 all-day theatres will be required to support emergency trauma activity with one theatre staffed on a sessional basis to 8 pm
- 2 emergency theatres available at weekends, one until 9 pm and the other until 12 midnight
- Overnight 12 midnight to 9 am in Lanarkshire, there will need to be one emergency theatre team available plus obstetrics, but there will also need to be additional theatre staff availability at any site carrying out major elective surgery
- The existing requirement for elective sessions will remain the same
- All consultants continue on a 12-session contract (currently not the case)

Some aspects of the change are difficult to quantify but on best evidence 51 WTE anaesthetic consultants would be required to service the rotas (Consultant expansion of 9.5 WTE). This is against a background of current recruitment and retention difficulties: by September there will be 5 WTE unfilled posts across NHSL.

Some shortfall in provision for elective surgery may be anticipated, as there are already some consultants who have elected to drop extra-programmed activities (EPA's).

Impact on Junior Anaesthetic Workforce and the Service Provision/Training Balance.

Whilst there are currently sufficient trainees and career grade staff posts to support this option for reconfiguration, it would create a number of possibly insurmountable problems. Trainees would be required to spend 18 months of a two-year anaesthetic training programme in ITU, not anaesthetics. The current anaesthetic training is already recognised as unsatisfactory and detrimental to training due to the amount of time SHO's spend covering critical care units. An increase such as this would clearly be unacceptable to the training authorities.

Regardless of reconfiguration there is a need to increase the amount of anaesthetic time available to them.

Options available to increase anaesthetic training time;

- Increase SHO's weekly hours from 48 to 56 hours (the additional hours to be allocated to theatre time) for 2 years.
- Employ Nurse Critical Care Practitioners to take over a major part of their daytime role thus releasing SHO's for theatre anaesthetic training. (Anticipated training & lead time – 2 years) Once these practitioners are in post, it will allow the reduction of trainee hours back to 48 by the 2009 deadline for full implementation of the EWTD in relation to doctors in training.

The Role of Critical Care Practitioners (CCP)

The Critical Care Practitioner would be expected to carry out tasks traditionally assigned to the SHO working in the Critical Care areas. A level of medical supervision would be required at consultant level.

Initial assumptions are that the CCP will take in the region of two years to be fully trained. This will involve a phased level of clinical responsibility overseen by the lead nurse and intensive care consultant mentor informed by the CCP level of competence.

Care pathways, standing orders, protocols and policies will direct the CCP role. A robust education programme and competency framework would be required to underpin all of these.

Full implementation of CCP would however only reduce anaesthetic trainee exposure to ITU to 14 months in two years and this is still excessive.

The Configuration of Level 2 Care within each Hospital

A level 2 sub-group was formed under the chairmanship of Dr. K Dagg who then reported back to the main committee.

There was agreement that there is overwhelming evidence to support the development of level 2 (HDU) medical care on each of the three sites. The NCEPOD Report "An Acute Problem" (2005), identifies the improvement in morbidity and mortality associated with Level 2 care.

Proposal for medical level 2 care

The group proposes that Level 2 medical care would be required on each of the sites. Recent needs assessment suggest 4 "Level 2" beds on each site.

Ideally, all Level 3 and Level 2 (Medical and Surgical) beds should be contained within the one unit however it was recognised this may not be possible due to the structural layout of the buildings.

Due to time constraints there was limited discussion on the level 2 requirements for surgery. However previous work carried out in this area would suggest that some

expansion of level 2 beds for surgery is required, particularly on the Hairmyres site. More detailed discussion is required in order to come up with robust proposals for this development.

It was agreed that, where possible, medical Level 2 beds should be aligned and closely associated with level 3 beds

In accordance with the NCEPOD report, the physicians felt strongly that there should be dedicated Consultant Physician sessions to cover Level 2 care. 24/7 cover would not be possible and therefore it was agreed that 10 consultant session per week should be made available in the first instance, covering Monday –Friday 9-5. This would be required across all 3 sites. This would enable a start on the infrastructure required to provide an efficient, improved, quality service based on protocols, guidelines and entry/discharge criteria.

Options for additional sessional provision

- Consultant Physician expansion
- Provision from the current consultant establishment by freeing up sessions elsewhere
- Consultant Anaesthetists with a specialist interest in Intensive Care Medicine
- Consultants in A & E with a background in Acute Medicine
- Combination with Acute Medical Receiving duties

The group agreed that as has been demonstrated at Wishaw, provision of beds without allocation of medical sessions does not lead to an effective Level 2 care.

The group also agreed that the creation of three four-bed units was a relatively inefficient use of medical and nursing resources.

Summary of Impact and Costs

Level 3 Care:

- Anaesthetic Consultant expansion, as a minimum to 51 WTE (additional 9.5 WTE)
- A reconfiguration of all anaesthetic services on all sites with a review of all consultant anaesthetist rotas and job plans will be required. This is likely to be unacceptable to a large number of the existing consultant establishment
- Increased SHO weekly hours to 56, with protected theatre time for the period that it takes to train the Critical Care Practitioners.
- Likely loss of training recognition for anaesthetic trainees
- Introduction of Nursing Critical Care Practitioners (allow 2 year training period).

Level 2 Care (Medical):

- Development of 4 medical Level 2 beds on each site with associated nursing and capital costs. (This does not assume “new bed” but enhancement of existing staffing complements)
- Provision of 10 consultant physician sessions per week per site (This was a view held strongly by physicians and needs further work to scope how this would impact in practise)
- Provision of junior medical staffing by reorganisation

Indicative revenue costs are detailed at table 1.

Table 1 - Revenue costs

Level 3	Cost per Annum £
<ul style="list-style-type: none"> • Additional Consultant Anaesthetist • Increased SHO hours (18 junior) • Critical Care practitioners (6 x H grade) 	<p>1,218,470</p> <p>250,000</p> <p>255,600</p>
Sub Total	1,724,070
Level 2 (medicine)	
<ul style="list-style-type: none"> • Additional Consultant Physicians* • Additional Nursing Staff – Qualified • Additional Nursing Staff – Unqualified 	<p>330,330</p> <p>364,931</p> <p>42,912</p>
Sub Total	738,173
Grand Total	<u>2,462,243</u>

*Further work is required to scope how this expansion of medical staff would work in practise.

Based on this information the group concluded that there would not be support for moving to this configuration for Critical Care/Anaesthetic Services. The group felt that this approach would undermine the delivery of good Critical Care services in NHSL

Options for 2008/9 (Option 2)

The working group considers that it will not be possible to provide level 3 care on 3 sites in the future and therefore went on to consider the options for Critical Care services from 2008/2009.

Moving to one site for all emergency services is unlikely to be an option due to capacity issues. Therefore the group would propose that we consider a move towards provision of Critical Care (and therefore all emergency services dependant upon them) on two sites.

Impact on Provision of Level 3 Care within each Hospital

Using the same methodology as before the requirements for ITU in this model would be;

ITU bed requirement

	Site A	Site B	Site C
Emergency surgery	3.3	3.3	-
Emergency medicine/A & E	4.1	4.1	-
Scheduled surgery	1.6	1.6	-
TOTALS	8.9	8.9	-

Although the size of the ITU's have increased to 9 beds on each site this is *just* over the recommended number for care by one team. In addition, it is anticipated that as at present, there would be this increased need only during the winter months. Given these factors, it should be possible to manage each unit with an enhanced team, a total of three teams across NHSL. This is a role that could be fulfilled by the Critical Care practitioners, managing Critical Care services with the existing allocated consultant sessions and no requirement for additional trainee doctor support in this model.

There would need to be separate provision for level 2 Surgical HDU beds, but this would depend on the major elective case mix as well as the need for 'step down' from level 3.

Impact on the Anaesthetic Consultant Workforce and Job Plans

A full breakdown of the required anaesthetic staffing is attached at appendix 2. These calculations are made on the following assumptions:

- One all-day theatre per site will be required to support emergency surgical receiving staffed on a sessional basis to 9 pm and available overnight for extreme emergencies
- One all-day theatre per site will be required to support emergency trauma
- 2 emergency theatres available per site at weekends, one until 5 pm and the other until 9 pm
- Overnight 9 pm to 9 am in Lanarkshire, there will need to be 2 emergency theatre teams available plus obstetrics

- The existing requirement for elective sessions will remain the same
- All consultants continue on a 12-session contract (currently not the case)

On best evidence 46 WTE Anaesthetic Consultants would be required to service the rotas (Consultant expansion of 3.5 WTE). These posts would be much more attractive to newly certified and existing consultants particularly those with a special interest in Intensive Care Medicine. In addition, in this model, it may well be possible for several of the current Associate Specialists to be full participants in the consultant rotas, reducing the need for consultant expansion and improving job satisfaction thus aiding retention of these experienced doctors.

There should be no shortfall in provision for elective surgery on 12 PA contracts (based on the current 26 week maximum wait target) but some shortfall will arise if more consultants elect to drop extra-programmed activities (EPA's). This will need to be remodelled alongside any future capacity plans.

Impact on Junior Anaesthetic Workforce and the Service Provision/Training Balance.

There is an increased requirement for trainees or career grade staff posts to support this option for reconfiguration but this is of the order of one WTE post when based on current models of care.

This would require trainees to spend 12 months of a two-year anaesthetic training programme in ITU. However, this could be reduced to 8 months by the introduction of CCP's and remove the need for any expansion of non-consultant numbers.

The recommendations for the introduction of CCP's remain unchanged from Option one.

The need for level 2 care for medical patients would now be spread across two sites and therefore be two 6-bed units that would be a more efficient use of medical and nursing resources.

As previously indicated, more work is required to scope the level 2 surgical requirements. This will be dependant on the configuration of surgical/trauma services.

Summary of Impact and Cost

Level 3 Care:

- Anaesthetic Consultant expansion to 46 WTE (additional 3.5 WTE)
- Critical Care Practitioners (6 x H Grade)

Level 2 Care:

- As set out in Option one.

Indicative revenue costs are detailed at Table 2.

Table 2 - Revenue costs

Level 3	Cost per Annum £
<ul style="list-style-type: none"> • Additional Consultant Anaesthetist • Critical Care practitioners 	448,910 255,600
Sub Total	704,510
Level 2 (Medicine)	
<ul style="list-style-type: none"> • As before 	738,173
Grand Total	1,442,683

Perceived Benefits of two-site critical care provision.

- Formation of two larger sustainable Critical Care Units.
- Provision of a better quality “seamless” critical cares service.
- Closer integration of specialities to provide more comprehensive care
- Improved on-site training opportunities
- The opportunity to attract consultants with a major interest in this field.
- Separation of the emergency and elective services
- Cost avoidance in out-of-hours workforce rotas and potential for efficiency savings.

Perceived disadvantages.

- Closure of acute receiving services on one site.

Clinicians have a vision to achieve Critical Care Units that integrate all levels of Critical Care delivery. This is aimed at providing high quality, flexible, seamless, comprehensive and integrated care for medicine and surgery.

There was strong agreement from the group that moving to the 2-site option would present major advantages for NHSL and, as such, is the preferred option for the future.

Interim Arrangements (Until 2008/9)

As previously identified, there was no agreement to continue to provide 3-site Critical Care services in the longer term. The group concluded, however, that given the magnitude of the changes proposed it would be reasonable to look at sustaining the existing model until new arrangements can be put in place.

Special attention is however required to the current difficulties experienced within obstetric anaesthesia. Regardless of the future options put forward, staffing of the maternity unit 24/7, remains an issue. The current pan Lanarkshire full rota involving SAS doctors does not provide prospective cover for leave and require regular locum input amounting to 40 hours per week. As a consequence there are occasions that 50% of out of hours work is provided by locum cover.

There are currently vacancies at staff grade level of 3.5 fte doctors. Measures are now in place to actively recruit to 4 fte posts from EC accession countries. If these posts are successfully filled using 12 session contracts, then the reliance on agency locums to provide resident emergency obstetric anaesthetic will be significantly reduced.

Key to this would be:

- Recruiting to existing consultant vacancies
- Securing middle grade staff to provide cover for obstetric anaesthesia
- Increasing junior doctors hours to 56 per week for 2 years.
- Introducing critical care practitioners

Indicative Revenue Costs are detailed at Table 3.

Table 3 - Revenue costs

Level 3	Cost per Annum £
<ul style="list-style-type: none">• Additional Junior Doctors Hours• Critical Care practitioners	250,000 255,600
Sub Total	505,600
Level 2 (Medical)	
<ul style="list-style-type: none">• As previous options but further debate is required regarding level 2 (HDU) beds for medicine during this period.	
Sub Total	738,173
Grand Total	<u>1,243,773</u>

Based on this information, it was concluded that continuing with 3-site working would be sustainable until 2008/9 subject to current staffing problems being addressed. It would also be essential that agreement is reached to increase junior doctors hours for a temporary period, whilst taking forward the training and introduction of Critical Care Practitioners.

Single site receiving

APPENDIX I

Site One

Possible First on call ITU rotation;

9 - 12 bed ITU = Double Team

Cover required;

2 x 12 hour shifts 9 am - 9 pm 7 days per week

1 x 12 hour shift 9 pm - 9 am 7 days per week (+ support from theatre 12HN shift)

8-person rota assumed all at training grades

NOTES:

- ◆ Each trainee has anticipated annual leave and study leave of 5 weeks plus 30 days (Total of 88 weeks absence = approx 2 WTE POSTS absent throughout the year)
- ◆ All trainees in this rota have passed the initial test of competency at 3 months of SHO training

AVERAGE HOURS OF WORK

	MON	TUES	WED	THURS	FRI	SAT	SUN	HOURS/ WEEK
A				12HD	12HD	12HD	12HD	48
B	12HD	12HD	12HD		TS			44
C	A/L	A/L	A/L	A/L	A/L	A/L	A/L	0
D	A/L	A/L	A/L	A/L	A/L	A/L	A/L	0
E	TS				12HN	12HN	12HN	44
F	12HN	12HN	12HN	12HN				48
G				12HD	12HD	12HD	12HD	48
H	12HD	12HD	12HD		TS			44

- ◆ 12HD = 12 hour shift daytime from 9am - 9pm + handover
- ◆ 12HN = 12 hour shift night time from 9pm - 9am + handover
- ◆ TS = teaching sessions (2 x 3.5hours) for trainees, NCS for SAS grades

- ◆ Average duty hours = 46 per week
- ◆ Longest continuous duty period 12hours+
- ◆ Shortest rest period 12 hours-
- ◆ Longest consecutive days with work 7 days over 2 consecutive weeks (minimum 48 hours off until next shift)
- ◆ 3 weekends in 8

Assuming a total pool of 31 trainees, each trainee would spend 3 months of every year in this rota, or 6 months in a 2-year rotation (not including ITU at other sites)

It would be exclusively ITU training during that time

Critical care trainees would reduce the exposure of anaesthetic trainees to ITU (replacing 4 anaesthetic SHO's with 4 critical care would reduce exposure of anaesthetic trainees to 2 months per year, or 4 months in a 2 year rotation)

Single site receiving

Site One

Possible First on call obstetric rotation;

Cover required;

1 x 12 hour shifts 9 am - 9 pm 7 days per week

1 x 12 hour shift 9 pm - 9 am 7 days per week

6-person rota **assumed all at SAS grade**

NOTES:

- ◆ Each doctor has anticipated annual leave and study leave of 6 weeks plus 10 days (Total of 42 weeks absence = approx 1.0 WTE POSTS absent throughout the year)

AVERAGE HOURS OF WORK

	MON	TUES	WED	THURS	FRI	SAT	SUN	HOURS/ WEEK
A	A/L	A/L	A/L	A/L	A/L	A/L	A/L	0
B	TD	TD						20
C					12HN	12HN	12HN	36
D	12HN	12HN	12HN	12HN				48
E				12HD	12HD	12HD	12HD	48
F	12HD	12HD	12HD					36

- ◆ 12HD = 12 hour shift daytime from 9am - 9pm
- ◆ 12HN = 12 hour shift night time from 9pm - 9am
- ◆ TD = theatre duties (2 x 3.5hours)

- ◆ Average duty hours = 38 per week
- ◆ Longest continuous duty period 12hours
- ◆ Shortest rest period 12 hours
- ◆ Longest consecutive days with work 7 days over 2 consecutive weeks (minimum 48 hours off until next shift)

- ◆ 2 weekends in 6

This rota has been calculated on the assumption that SAS grades will do these duties as trainees would require separate consultant cover that is not currently available. A bare minimum of 6 doctors would be required but in reality a minimum of 8 would be required for a sustainable rota. This would release daytime availability for elective sessions.

Single site receiving

Site One

Possible First on call theatres rotation (single site receiving):

Mon - Fri; 2 emergency surgical theatres 9 am - 5 pm

2 trauma theatres 9 am - 5 pm

one evening theatre 5 pm - 8 pm

one evening theatre 5 pm - 12 mn

overnight resident anaesthetic cover

Sat / Sun one theatre 9 am - 9 pm

One theatre 9 am - 12 mn

overnight resident anaesthetic cover

12 hour shifts

2 x 12HR day x 7; 1 x 12 HR night x 7; 2 x 9 HR day x 5

12-person rota assumed all at a mixture of trainee and SAS grade slots

- ◆ Each trainee has anticipated annual leave and study leave of 5 weeks plus 30 days (Total of 132 weeks absence = approx 2.5 WTE POSTS absent throughout the year)

AVERAGE HOURS OF WORK

	MON	TUES	WED	THURS	FRI	SAT	SUN	HOURS/ WEEK
A	TS				12HN	12HN	12HN	44
B	12HN	12HN	12HN	12HN				48
C	A/L	A/L	A/L	A/L	A/L	A/L	A/L	
D	A/L	A/L	A/L	A/L	A/L	A/L	A/L	
E	A/L	A/L	A/L	A/L	A/L	A/L	A/L	
F	TS				12HD	12HD	12HD	44
G	12HD	12HD	12HD	12HD				48
H	9HD	9HD	9HD	9HD	9HD			45
I	9HD	9HD	9HD	9HD	9HD			45
J	TS				12HD	12HD	12HD	44
K	12HD	12HD	12HD	12HD				48
L	TS	TS	TS	TS	TS			40

- ◆ Average duty hours = 45 per week
- ◆ Longest continuous duty period 12 hours + handover
- ◆ Shortest rest period 12 hours - handover
- ◆ Longest consecutive days with work 7 days over 2 consecutive weeks (minimum 48 hours off until next shift)
- ◆ 3 weekends in 12
- ◆ There would be training in elective surgery during this module, which would equate to 16 sessions (average, <2 per week).

**Single site receiving
Site Two (and Site Three)
Possible First on call ITU rotation;
6 bed ITU (and 3 bedded ITU)**

Cover required;

1 x 12 hour shifts 9 am - 9 pm 7 days per week

1 x 12 hour shift 9 pm - 9 am 7 days per week

8 person rota assumed all at SHO grade, but could be SAS grade slots

NOTES:

- ◆ Each trainee has anticipated annual leave and study leave of 5 weeks plus 30 days (Total of 88 weeks absence = approx 2 WTE POSTS absent throughout the year)
- ◆ All trainees in this rota have passed the initial test of competency at 3 months of SHO training

AVERAGE HOURS OF WORK

	MON	TUES	WED	THURS	FRI	SAT	SUN	HOURS/ WEEK
A				12HD	12HD	12HD	12HD	48
B	12HD	12HD	12HD		TS			44
C	A/L	A/L	A/L	A/L	A/L	A/L	A/L	0
D	A/L	A/L	A/L	A/L	A/L	A/L	A/L	0
E	TS				12HN	12HN	12HN	44
F	12HN	12HN	12HN	12HN				48
G	TS	TS	TS	TS	TS			45
H	TS	TS	TS	TS	TS			45

- ◆ 12HD = 12 hour shift daytime from 9am - 9pm
- ◆ 12HN = 12 hour shift night time from 9pm - 9am
- ◆ TS = teaching sessions (2 x 3.5hours) for trainees, NCS for SAS grades

- ◆ Average duty hours = 45.6 per week
- ◆ Longest continuous duty period 12 hours + handover
- ◆ Shortest rest period 12 hours - handover
- ◆ Shortest rest period 12 hours
- ◆ Longest consecutive days with work 7 days over 2 consecutive weeks (minimum 48 hours off until next shift)
- ◆ 2 weekends in 8

Assuming a total pool of 31 trainees, each trainee would spend 3 months of every year in this rota, or 6 months in a 2-year rotation

Critical care trainees would reduce the exposure of anaesthetic trainees to ITU (replacing 4 anaesthetic SHO's with 4 critical care would reduce exposure of anaesthetic trainees to 2 months per year, or 4 months in a 2 year rotation)

There would be training in elective surgery during this module, which would equate to 24 sessions (average 4 per week).

Single Site Receiving - Non Consultant Rotas

Site #1 ITU

	MON	TUES	WED	THURS	FRI	SAT	SUN	HOURS/ WEEK
SHO 1				12HD	12HD	12HD	12HD	48
SHO 2	12HD	12HD	12HD		TS			44
SHO 3	A/L	A/L	A/L	A/L	A/L	A/L	A/L	0
SHO 4	A/L	A/L	A/L	A/L	A/L	A/L	A/L	0
SHO 5	TS				12HN	12HN	12HN	44
SHO 6	12HN	12HN	12HN	12HN				48
SHO 7				12HD	12HD	12HD	12HD	48
SHO 8	12HD	12HD	12HD		TS			44

Site # 1 theatres

SHO 9	TS				12HN	12HN	12HN	44
SHO 10	12HN	12HN	12HN	12HN				48
SHO 11	A/L	A/L	A/L	A/L	A/L	A/L	A/L	
SHO 12	A/L	A/L	A/L	A/L	A/L	A/L	A/L	
SHO 13	A/L	A/L	A/L	A/L	A/L	A/L	A/L	
SHO 14	TS				12HD	12HD	12HD	44
SAS 1	12HD	12HD	12HD	12HD				48
SAS 2	9HD	9HD	9HD	9HD	9HD			45
SAS 3	9HD	9HD	9HD	9HD	9HD			45
SAS 4	TS				12HD	12HD	12HD	44
SAS 5	12HD	12HD	12HD	12HD				48
SAS 6	TS	TS	TS	TS	TS			40

Site #1 Obstetrics

SAS 7	A/L	A/L	A/L	A/L	A/L	A/L	A/L	0
SAS 8	A/L	A/L	A/L	A/L	A/L	A/L	A/L	0
SAS 9	TS				12HN	12HN	12HN	44
SAS 10	12HN	12HN	12HN	12HN				48
SAS 11				12HD	12HD	12HD	12HD	48
SAS 12	12HD	12HD	12HD		TS			44

Site #2 ITU

SHO 15				12HD	12HD	12HD	12HD	48
SHO 16	12HD	12HD	12HD		TS			44
SHO 17	A/L	A/L	A/L	A/L	A/L	A/L	A/L	0
SHO 18	A/L	A/L	A/L	A/L	A/L	A/L	A/L	0
SHO 19	TS				12HN	12HN	12HN	44
SHO 20	12HN	12HN	12HN	12HN				48
SHO 21	TS	TS	TS	TS	TS			45
SHO 22	TS	TS	TS	TS	TS			45

Site #3 ITU

SHO 23				12HD	12HD	12HD	12HD	48
SHO 24	12HD	12HD	12HD		TS			44
SHO 25	A/L	A/L	A/L	A/L	A/L	A/L	A/L	0
SHO 26	A/L	A/L	A/L	A/L	A/L	A/L	A/L	0
SHO 27	TS				12HN	12HN	12HN	44
SpR 1	12HN	12HN	12HN	12HN				48
SpR 2	TS	TS	TS	TS	TS			45
SpR 3	TS	TS	TS	TS	TS			45

Single Site receiving, 2 or 3 ITU's
Trainee rotation - summary

Assuming a total pool of 31 trainees,
1 vacant post
42 slots in total of which 34 are available to trainees (SAS cover for obstetrics)
3 ITU rotas of 8 slots each
3 month spell in each per year
total of 18 months in ITU rotations
during 12 months of this, (2 blocks in each of site #2 and site #3) there would be exposure to elective surgery of an average of 4 sessions per week
there would be limited capacity to reduce the required input from anaesthetic trainees by replacing them with critical care trainees on site #2 and site #3, as there would be no anaesthetic support after 5 pm Mon - Fri or at weekends on these sites
Critical Care trainees at site #1 could be used; 6 critical care trainees could be used in place of anaesthetic trainees and this would reduce the time spent in ITU on site #1 by each anaesthetic trainee to 2 months in a 2-year rotation
Total ITU would then be 14 months in 2 years

Assuming 4 SAS doctor slots
3 trainees in obstetrics spending 3 months in the 2 year rotation

Remaining trainees would share the theatre rota with 3 Staff Grades and 6/7 Assoc Spec, each trainee would spend 5 months of a 2 year rotation in this rota). Some Assoc Spec may be able to act in consultant roles, but few would be able to provide senior cover for theatres and obstetrics overnight, or to act as sole senior cover on site #2 or #3

2 ITU's in this model would reduce the ITU exposure to 8 months over 2 years, 6 months of which would have exposure to training in anaesthesia for elective surgery
Obstetrics would remain unchanged
General theatre duties would be 13 months in 2 years

**Two site receiving
Site One and Site Two
Possible First on call ITU rotation;
9 bed ITU x 2**

Cover required;

2 x 12 hour shifts 9 am - 9 pm 7 days per week

1 x 12 hour shift 9 pm - 9 am 7 days per week (+ support from theatre 12hn shift)

8 person rota assumed all at SHO grade, but could be SAS grade slots

NOTES:

- ◆ Each trainee has anticipated annual leave and study leave of 5 weeks plus 30 days (Total of 88 weeks absence = approx 2 WTE POSTS absent throughout the year)
- ◆ All trainees in this rota have passed the initial test of competency at 3 months of SHO training

AVERAGE HOURS OF WORK

	MON	TUES	WED	THURS	FRI	SAT	SUN	HOURS/ WEEK
A				12HD	12HD	12HD	12HD	48
B	12HD	12HD	12HD		TS			44
C	A/L	A/L	A/L	A/L	A/L	A/L	A/L	0
D	A/L	A/L	A/L	A/L	A/L	A/L	A/L	0
E	TS				12HN	12HN	12HN	44
F	12HN	12HN	12HN	12HN				48
G				12HD	12HD	12HD	12HD	48
H	12HD	12HD	12HD		TS			44

- ◆ 12HD = 12 hour shift daytime from 9am - 9pm
- ◆ 12HN = 12 hour shift night time from 9pm - 9am
- ◆ TS = teaching sessions (2 x 3.5hours) for trainees, NCS for SAS grades
- ◆ Average duty hours = 46 per week
- ◆ Longest continuous duty period 12hours + handover
- ◆ Shortest rest period 12 hours - handover
- ◆ Longest consecutive days with work 7 days over 2 consecutive weeks (minimum 48 hours off until next shift)
- ◆ 3 weekends in 8

Assuming a total pool of 31 trainees, each trainee would spend 3 months of every year in this rota, or 6 months in a 2-year rotation (double for 2 ITU's)

It would be exclusively ITU training during that time

Critical care trainees would reduce the exposure of anaesthetic trainees to ITU (replacing 4 anaesthetic SHO's with 4 critical care would reduce exposure of anaesthetic trainees to 2 months per year, or 4 months in a 2 year rotation i.e. 8 months including both ITU's)

Two site receiving

Site One

Possible First on call obstetric rotation;

Cover required;

1 x 12 hour shifts 9 am - 9 pm 7 days per week

1 x 12 hour shift 9 pm - 9 am 7 days per week

6-person rota **assumed all at SAS grade**

NOTES:

- ◆ Each doctor has anticipated annual leave and study leave of 6 weeks plus 10 days (Total of 42 weeks absence = approx 1.0 WTE POSTS absent throughout the year)

AVERAGE HOURS OF WORK

	MON	TUES	WED	THURS	FRI	SAT	SUN	HOURS/ WEEK
A	A/L	A/L	A/L	A/L	A/L	A/L	A/L	0
B	TD	TD						20
C					12HN	12HN	12HN	36
D	12HN	12HN	12HN	12HN				48
E				12HD	12HD	12HD	12HD	48
F	12HD	12HD	12HD					36

- ◆ 12HD = 12 hour shift daytime from 9am - 9pm
- ◆ 12HN = 12 hour shift night time from 9pm - 9am
- ◆ TD = theatre duties (2 x 3.5hours)

- ◆ Average duty hours = 38 per week
- ◆ Longest continuous duty period 12 hours + handover
- ◆ Shortest rest period 12 hours - handover
- ◆ Shortest rest period 12 hours
- ◆ Longest consecutive days with work 7 days over 2 consecutive weeks (minimum 48 hours off until next shift)

- ◆ 2 weekends in 6

This rota has been calculated on the assumption that SAS grades will do these duties as trainees would require separate consultant cover that is not currently available. A bare minimum of 6 doctors would be required but in reality a minimum of 8 would be required for a sustainable rota. This would release daytime availability for elective sessions.

Two site receiving

Site One and Site Two

Possible First on call theatres rotation (single site receiving):

Mon - Fri; 1 emergency surgical theatre 9 am - 5 pm
 1 trauma theatre 9 am - 5 pm
 one evening theatre 5 pm - 10 pm
 overnight resident anaesthetic cover
Sat / Sun one theatre 9 am - 5 pm
 One theatre 9 am - 9 mn
 overnight resident anaesthetic cover

12-hour shifts

1 x 12HR day x 7; 1 x 12 HR night x 7; 1 x 9 HR day x 5

12 person rota assumed all at SHO grade, but could be SAS grade slots

- ◆ Each trainee has anticipated annual leave and study leave of 5 weeks plus 30 days (Total of 132 weeks absence = approx 2.5 WTE POSTS absent throughout the year)

AVERAGE HOURS OF WORK

	MON	TUES	WED	THURS	FRI	SAT	SUN	HOURS/ WEEK
A	TS				12HN	12HN	12HN	44
B	12HN	12HN	12HN	12HN				48
C	A/L	A/L	A/L	A/L	A/L	A/L	A/L	
D	A/L	A/L	A/L	A/L	A/L	A/L	A/L	
E	A/L	A/L	A/L	A/L	A/L	A/L	A/L	
F	TS	TS	TS	TS	TS			45
G	TS	TS	TS	TS	TS			45
H	TS	TS	TS	TS	TS			45
I	9HD	9HD	9HD	9HD	9HD			45
J	TS				12HD	12HD	12HD	44
K	12HD	12HD	12HD	12HD				48
L	TS	TS	TS	TS	TS			45

- ◆ Average duty hours = 45 per week
- ◆ Longest continuous duty period 12 hours + handover
- ◆ Shortest rest period 12 hours - handover
- ◆ Shortest rest period 12 hours
- ◆ Longest consecutive days with work 7 days over 2 consecutive weeks (minimum 48 hours off until next shift)
- ◆ 2 weekends in 12
- ◆ There would be training in elective surgery during this module, which would equate to 44 sessions (average 4.8 per week).

Two Site Receiving - Non Consultant Rotas

Site #1 ITU

	MON	TUES	WED	THURS	FRI	SAT	SUN	HOURS/ WEEK
SHO 1				12HD	12HD	12HD	12HD	48
SHO 2	12HD	12HD	12HD		TS			44
SHO 3	A/L	A/L	A/L	A/L	A/L	A/L	A/L	0
SHO 4	A/L	A/L	A/L	A/L	A/L	A/L	A/L	0
SHO 5	TS				12HN	12HN	12HN	44
SHO 6	12HN	12HN	12HN	12HN				48
SHO 7				12HD	12HD	12HD	12HD	48
SHO 8	12HD	12HD	12HD		TS			44

Site #1 theatres

SHO 9	TS				12HN	12HN	12HN	44
SHO 10	12HN	12HN	12HN	12HN				48
SHO 11	A/L	A/L	A/L	A/L	A/L	A/L	A/L	
SAS 1	A/L	A/L	A/L	A/L	A/L	A/L	A/L	
SAS 2	A/L	A/L	A/L	A/L	A/L	A/L	A/L	
SAS 3	9HD	9HD	9HD	9HD	9HD			45
SAS 4	TS				12HD	12HD	12HD	44
SAS 5	12HD	12HD	12HD	12HD				48

Site #1 obstetrics

SAS 6	A/L	A/L	A/L	A/L	A/L	A/L	A/L	0
SAS 7	A/L	A/L	A/L	A/L	A/L	A/L	A/L	0
SAS 8	TS				12HN	12HN	12HN	44
SAS 9	12HN	12HN	12HN	12HN				48
SAS 10				12HD	12HD	12HD	12HD	48
SAS 11	12HD	12HD	12HD		TS			44

Site #2 ITU

SHO 12				12HD	12HD	12HD	12HD	48
SHO 13	12HD	12HD	12HD		TS			44
SHO 14	A/L	A/L	A/L	A/L	A/L	A/L	A/L	0
SHO 15	A/L	A/L	A/L	A/L	A/L	A/L	A/L	0
SHO 16	TS				12HN	12HN	12HN	44
SHO 17	12HN	12HN	12HN	12HN				48
SHO 18				12HD	12HD	12HD	12HD	48
SHO 19	12HD	12HD	12HD		TS			44

Site #2 theatres

SHO 20	TS				12HN	12HN	12HN	44
SHO 21	12HN	12HN	12HN	12HN				48
SpR 1	A/L	A/L	A/L	A/L	A/L	A/L	A/L	
SpR 2	A/L	A/L	A/L	A/L	A/L	A/L	A/L	
SpR 3	A/L	A/L	A/L	A/L	A/L	A/L	A/L	
SAS 12	9HD	9HD	9HD	9HD	9HD			45
SAS 13	TS				12HD	12HD	12HD	44
SAS 14	12HD	12HD	12HD	12HD				48

+7 training weeks @ 45 hours per week (9 x 5 Mon - Fri)

Two Site receiving, 2 ITU's
Trainee rotation - summary

Assuming a total pool of 31 trainees,
38 slots in total of which 32 are available to trainees (SAS cover for obstetrics)
2 ITU rotas of 8 slots each
3 month spell in each per year
total of 12 months in ITU rotations
there would be some capacity to reduce the required input from anaesthetic trainees by replacing them with critical care trainees on site #1 and site #2 as there would be anaesthetic support 24*7
Critical Care trainees could be used; 6 critical care trainees could be used in place of anaesthetic trainees and this would reduce the time spent in ITU on each site by each anaesthetic trainee to 2 month per year
Total ITU would then be 8 months in 2 years
There may also be scope for the introduction of critical care nurse practitioners in this model

Assuming 4 SAS doctor slots
3 trainees in obstetrics spending 3 months in the 2-year rotation

Remaining trainees would share the theatre rota with 3 Staff Grades and 3/4 Assoc Spec, each trainee would spend 13 months of a 2 year rotation in this rota).
The general rota would have 4 - 5 training sessions per week
Some Assoc Spec may be able to act in consultant roles, in this model providing senior cover for theatres and/or obstetrics overnight as there would also be separate consultant cover for ITU