

A snapshot of neonatal services and workforce in the UK

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Introduction

Neonatal care in the UK is organised into fifteen managed clinical networks; hospitals within a region work collectively to provide high quality neonatal care for all babies within their catchment. Services covered by neonatology include support for newborn babies requiring resuscitation at delivery and during the early postnatal period, and critical care services for sick preterm and term neonates and their families. Critical care services include intensive care (IC), high dependency (HD) care, and special care (SC). Intensive and high dependency care take place within neonatal units, whereas special care can take place within neonatal units or, increasingly, in other settings where a mother or the whole family can be resident with their baby, e.g. transitional care. The importance of parents and families as partners in their baby's care is increasingly recognised and neonatal units are encouraged to increase family involvement in care through quality improvement programs such as UNICEF Baby Friendly Initiativeⁱ and the Bliss Baby Charterⁱⁱ.

Hospitals provide three different types of neonatal service for their local population^{iii,iv}. Neonatal Intensive Care Units (NICUs) provide intensive care (IC) for the smallest and sickest babies for the whole region, in addition to high dependency (HD), special care (SC) & transitional care (TC) for their local population. Local Neonatal Units (LNUs) provide short term IC and HD/SC/TC services for their local populations; Special Care Units (SCUs) provide short term IC/HD, and SC/TC for their local population. The different types of neonatal services have varying medical and nurse staffing requirements, and standards for these are set by British Association of Perinatal Medicine (BAPM)^{v,viii}.

Shortages in neonatal medical and nurse staffing have been highlighted in previous national reports including the NHS England (NHSE) and Department of Health and Social Care (DHSC) (2019) report *Implementing the Recommendations of the Neonatal Critical Care Transformation Review (NCCR)*^{vii} and the National Neonatal Audit Programme (NNAP) annual report (2019)^{ix}. The NCCR report recommended neonatal networks and services should produce a gap analysis of medical and nurse staffing and that workforce transformation was needed, working closely with Health Education England (HEE) and the RCPCH. The Getting It Right First Time (GIRFT) programme is supporting the implementation of the Neonatal Critical Care Transformation Review (NCCR) and worked in conjunction with the RCPCH to develop this snapshot survey to provide an 'on the ground' picture of shortages and day-to-day realities for people working in neonatology.

The current study was conducted on a weekday and weekend day in September 2019. One hundred and ninety-one neonatal services (58 NICUs, 87 LNUs and 46 SCUs) in the UK were contacted, requesting staffing and activity information at a departmental level. In addition, we requested that all individuals working on Tier 1, 2 and 3 medical rosters on the days of the snapshot complete information about their shift. This included workload and responsibilities and their opinions on safety, governance, staff support and wellbeing during the shift. Results from this snapshot were reported back to neonatal services in January 2020 through individual benchmarking reports produced by the GIRFT team. This report summarises the findings at a national level.

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- i UNICEF (2016). Baby Friendly neonatal standards. <https://www.unicef.org.uk/babyfriendly/baby-friendly-resources/implementing-standards-resources/neonatal-guide-to-the-standards/>
 - ii Bliss (2015). Bliss Baby Charter. <https://shop.bliss.org.uk/shop/files/BlissBabyCharterbookletforprintLR.pdf>
 - iii Department of Health (2009). Toolkit for High Quality Neonatal Services <http://www.londonneonatalnetwork.org.uk/wp-content/uploads/2015/09/Toolkit-2009.pdf>
 - iv NHS Commissioning (2015). NICU Service Specification: Neonatal Critical Care <https://www.england.nhs.uk/commissioning/spec-services/hpc-crg/group-e/e08/>
 - v BAPM (2014). Optimal Arrangements for Neonatal Intensive Care Units in the UK. <https://www.bapm.org/resources/31-optimal-arrangements-for-neonatal-intensive-care-units-in-the-uk-2014>
 - vi BAPM (2010). Service Standards for Hospitals Providing Neonatal Care. <https://www.bapm.org/resources/32-service-standards-for-hospitals-providing-neonatal-care-3rd-edition-2010>
 - vii BAPM (2018) Optimal arrangements for local neonatal units and special care units in the UK. <https://www.bapm.org/resources/2-optimal-arrangements-for-local-neonatal-units-and-special-care-units-in-the-uk-2018>
 - viii NHSE and DHSC (2019). Implementing the Recommendations of the Neonatal Transformation Review. <https://www.england.nhs.uk/publication/implementing-the-recommendations-of-the-neonatal-critical-care-transformation-review/>
 - ix RCPCH (2019) National Neonatal Audit Programme annual report 2019. <https://www.rcpch.ac.uk/resources/national-neonatal-audit-programme-annual-report-2019>

Primary findings

Rota and staffing levels:

- Overall, 10% neonatal units had gaps in medical staffing with 5% of these shifts covered by locums. Gaps were highest for Tier 1 and Tier 2 staff on the weekday (14%) and weekend day (7%) with few gaps at night (1-2%)
- 15% of neonatal units had gaps in nurse staffing.
- There were twice as many gaps in medical and nursing rotas in NICUs compared with LNUs and SCUs and wide regional variation in medical and nurse staffing gaps.
- There is poor compliance with BAPM medical standards across all neonatal units. Standards are more likely to be met in NICUs; highest compliance for all units was on weekday daytime shifts.
- 79% of nursing shifts met the numerical BAPM staffing standard, being lowest in NICUs (60%) and highest in SCUs (94%). 88% of shifts met the QIS standard, and this was similar across all designations.
- There is wide variation in the numbers of junior doctors available relative to occupied intensive care/high dependency cots.

Weekend working:

- Neonatal units provide a predominantly non-elective service and bed day activity is unchanged at weekends. However, there are less admissions, deliveries, and other planning and supporting activities occurring at weekends.
- Weekend medical staffing levels are around two thirds of weekday levels for all NICU medical Tiers. For LNUs, this was the case for Tier 1 and 2, and for SCUs this was the case for Tier 1 staff. BAPM compliance was lower at weekends (60% NICUs, 40% LNUs)
- Lower numbers of medical staff felt there was sufficient medical and nursing staff to manage safely at the weekend compared with the weekday, particularly in LNUs and SCUs.
- Medical staff in LNUs and SCUs reported lower levels of enjoyment and higher levels of stress, anxiety and feeling overloaded at work at the weekend compared with the weekday.
- There was less administrative support available at weekend and only 52% of staff felt there was sufficient administrative staff to manage the service safely at the weekend.

Multi-disciplinary team and medical staff activity:

- Allied Health Professionals (AHPs) and other support services were available in less than half of neonatal units during the week and were almost completely absent at weekends.
- Only one fifth of NICUs and a tenth of LNUs/SCUs had a psychologist available to support families during the weekday, and no services were available at weekends.
- Only 35% of units reported that midwives had performed all or most of the Newborn Infant Physical Examination (NIPE) checks on well term babies during the survey period. NIPE checks were more likely to be done by midwives in NICUs.
- Medical staff reported more blood tests performed by non-medical personnel in NICUs than LNUs and SCUs.
- Neonatal staff attended 43% of all deliveries as a first responder for resuscitation.
- Only 49% of Tier 1 and Tier 2 staff had a break of 30 minutes or more. Breaks were more common in NICUs.

Recommendations

This snapshot, undertaken prior to the COVID-19 pandemic, highlights ongoing problems with staffing within both the medical, nursing and Allied Health Professional workforce in neonatology. Medical staffing demonstrates low levels of compliance with BAPM staffing standards as well as a 10% gap in rotas, with half of these gaps filled by locums. Medical rota gaps occurred predominately in daytime shifts. Although this could be a chance finding, it is consistent across both days of the snapshot and suggests that staffing on night-time rotas (which is significantly lower than daytime rotas) is prioritised to support safe care, which may come at the expense of weekday medical training opportunities. Neonatal nurse staffing demonstrated a 15% gap in rotas and low compliance with BAPM nursing standards, which was most marked in NICUs.

A number of concerns were identified around weekend working including safe medical, nursing and administrative staffing levels, higher stress and overworking in LNUs and SCUs and non-availability of the wider multidisciplinary team. Medical staffing levels and compliance with BAPM staffing standards is much lower at weekends, particularly in LNUs; this should be a priority. In addition, a review of current junior doctor activities both during the week and at weekends is warranted given current variations in practise. This should include NIPE checks (which for normal infants should be performed by the woman's midwife^x), routine blood tests, attendance at deliveries and timing and frequency of breaks. The development of the wider multi-disciplinary team, including the Allied Health Professionals, pharmacy, and psychology services and other support roles, e.g., phlebotomy, Physician Associates, is required to ensure a holistic, safe and high quality neonatal service for the future.

Nursing and medical rotas

- All units should strive to achieve BAPM nursing standards as there is good evidence of improved outcomes with higher nurse to patient staffing ratios.
- All units should strive to achieve BAPM medical standards with particular focus on improving weekend daytime medical cover in LNUs.
- Units should review medical workload and activities particularly at weekends in light of concerns regarding higher stress, anxiety and feelings of overload at weekends.
- Neonatal Networks should review medical and nursing staff requirements against current activity and any reconfiguration planned in the context of the NCCR. A regional workforce strategy should be developed by Neonatal Networks in conjunction with relevant local Health Education boards, Local Maternity Systems, and national bodies including RCPCH and the Royal College of Nursing (RCN).
- Neonatal units should review medical and nurse staffing requirements using the snapshot, local and national benchmarking data e.g. National Neonatal Audit Project, GIRFT datapacks. Plans should align with neonatal network requirements for the service.

Multidisciplinary team and medical staff activity

- All units should review the roles and responsibilities of the whole multi-disciplinary team, including role of AHPs, pharmacy, psychology and other support roles such as phlebotomy and Physician

x NHSE (2016). Better births: Improving outcomes of maternity services in England. <https://www.england.nhs.uk/publication/better-births-improving-outcomes-of-maternity-services-in-england-a-five-year-forward-view-for-maternity-care/>

Associates; workforce transformation is required to provide a good quality service for the future.

- All units should review the role and availability of administrative and clerical support in neonatal services including weekend working requirements.
- Tier 1 doctors should perform NIPE checks for unwell infants in the neonatal unit and review babies in the postnatal wards when problems are detected. NIPE checks for well term babies should be performed by the midwife and should not be a routine part of the Tier 1 medical role.
- Blood tests and other routine procedures on neonatal units should be minimised to reduce painful experiences for infants. These procedures should be shared amongst the multi-disciplinary team in order to time procedures to suit the needs of the baby where possible.
- All units should have agreed guidelines for which deliveries require neonatal attendance and practise should be regularly audited to prevent unnecessary attendance.
- Units need to work harder to create a culture where medical staff are expected to take breaks in line with the BMA junior doctor contract and RCPCH trainee charter. Organisation of workload, communication with staff groups and mini audits with feedback to all colleagues can be helpful to try to reinforce this habit. This has become even more important since the arrival of COVID-19.

Findings

Who is available to deliver neonatal care?

Medical staff

We asked respondents to indicate the number of staff who had been scheduled to work in advance compared to the number of staff who actually worked, on each day. The difference between these two figures then gives an indication of staff shortages on the days of the snapshot survey.

Overall, across both days of the snapshot survey, 5% of neonatal units had staffing levels below those rostered. However, gaps were much more significant for Tier 1 and Tier 2 rotas, with a 14% rota gap on the weekday day shift and a further 7% gap on the weekend day shift. By contrast, gaps in night-time Tier 1 and 2 rotas were low (1-2%). There were more than twice as many gaps in daytime rotas in NICUs (17%) compared with LNUs (8%) and SCUs (6%). Gaps were lower for Tier 3 rotas (2%) but were similarly higher in NICUs (4%) compared with LNUs (2%) and SCUs (1%). Figure 1 shows the gaps in rotas for all Tiers on weekday and weekend day shifts.

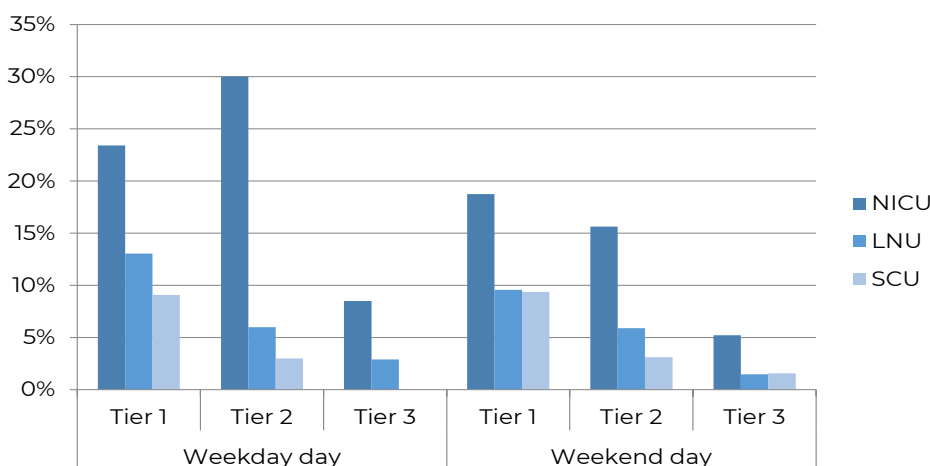


Figure 1. Percentage shifts below rostered levels at each medical Tier in NICUs, LNUs and SCUs on weekday and weekend daytime shifts.

Medical locums

Overall, 93% of shifts were as rostered and 5% were locum shifts (Tier 1: 3%, Tier 2: 7%, and Tier 3: 6%). The vast majority of locum shifts were due to gaps in the rota (4%) with less than 1% due to sickness or maternity/paternity cover. The average number of locums per unit was 0.4.

Staff on medical rotas

Junior doctors made up 76% Tier 1 rota (NICU 74%, LNU 81%, SCUs 68%). Foundation trainees made up a larger proportion of Tier 1 staff in SCUs (25%) compared with LNUs (13%) and NICUs (5%). Advanced Neonatal Nurse Practitioners (ANNP) made up a higher proportion of Tier 1 staff in NICUs (17%) compared to LNUs (10%) and SCUs (5%). Three units had Enhanced Neonatal Nurse Practitioners (ENNP) rostered on Tier 1 roster.

Junior doctors made up 69% tier 2 rotas (NICU 72%, LNUs 73%, SCUs 52%). Staff grade, Associate specialist, and Specialty (SAS) doctors made up a higher proportion of Tier 2 support in SCUs (36%) compared to LNUs (14%) and NICUs (12%). ANNPs contribute 11% overall to the Tier 2 rota. Specialty Training (ST) level 1 to 3 doctors made up 10% SCU, 7% LNU and 4% NICU Tier 2 workforce. Consultants acted down on 14 tier 1 and 2 shifts in 9 units (4 NICU, 9 LNU and 1 SCU shift).

The Tier 3 workforce was consultants except for two ST8 trainees acting up and two SAS doctors.

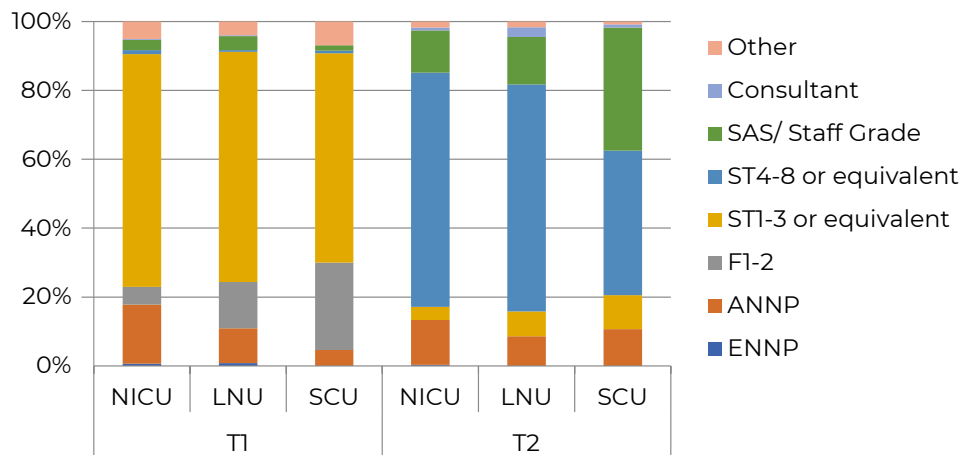


Figure 2. Type of staff on duty for Tier 1 and Tier 2 rotas

A further breakdown of all junior doctors on duty is shown in Figure 5. Foundation doctors and GP trainees are a small part of the workforce in NICUs (4%) compared to LNUs (25%) and SCUs (38%), whereas NICUs have higher proportions of clinical fellows/MTIs (27%). Paediatric trainees comprise 68% NICU, 56% LNU and 33% SCU junior doctors. Deanery trainees as a whole comprise 72% NICUs, 81% LNUs and 71% SCU junior doctors.

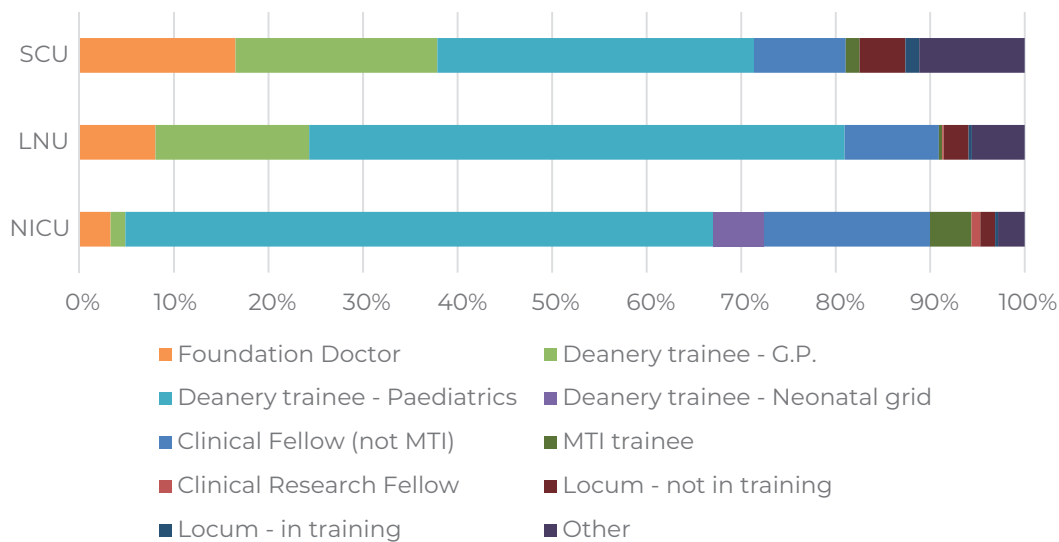


Figure 3. Deanery trainees and other junior doctors on duty

Nursing

Overall, across both days of the snapshot, 15% of neonatal units had staffing levels below rostered, with the majority of gaps in Band 5+ (21%). There were three times as many gaps in Band 5+ rotas in NICUs (40%), compared with LNUs (13%) and SCUs (10%). Staffing gaps were higher on the weekday and day shifts for NICUs and SCUs and the weekend and night shifts for LNUs.

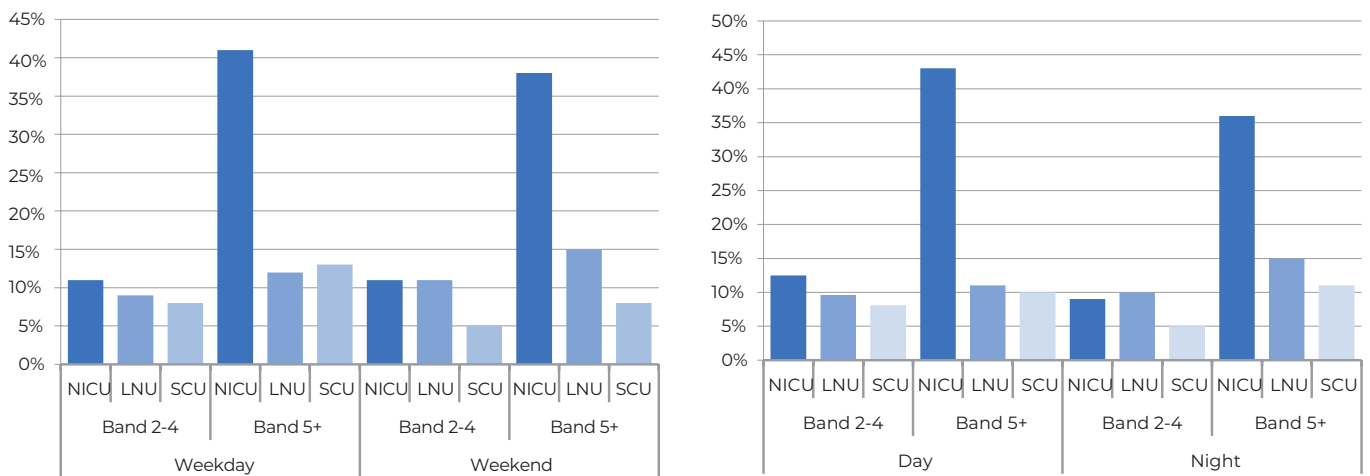


Figure 4. Percentage shifts below rostered levels for Band 2 to 4 clinical nurses and Band 5+ (including QIS) in NICUs, LNUs, and SCUs on a) weekday and weekend shifts and b) day and night shifts.

Medical and nursing staff: Regional variation in rostered and actual staffing

There is wide variation the percentage gap between rostered and actual medical and nurse staffing across the neonatal networks (Table 1). Medical rota gaps overall are largest in South London and East Midlands and in NICUs in South London, East Midlands and North West. Locum use was highest in Wales and Kent, Surrey and Sussex. Nurse staffing gaps overall are highest in East Midlands and the Northern England region and in NICUs in South West, East of England, East Midlands, North West and Northern England region. Rota gaps appear least common in the devolved nations; however, lower return rates outside England may make these results unreliable. In England, the lowest medical rota gaps were in North West London and Kent, Surrey and Sussex and lowest nursing rota gaps were in Thames Valley and Wessex.

Table 1. Percentage medical and nursing shifts below rostered numbers and locum use in neonatal networks during the snapshot

Network	% medical shifts below rota				% locum	% nursing shifts below rota			
	NICU	LNU	SCU	Total		NICU	LNU	SCU	Total
NORTHERN	8%		5%	6%	4%	50%		10%	25%
NORTH WEST	11%	1%		5%	5%	30%	14%		20%
YORKSHIRE AND HUMBER	6%	5%	8%	6%	8%	25%	13%	17%	17%
WEST MIDLANDS	8%	2%	0%	4%	9%	9%	13%	8%	10%
EAST MIDLANDS	13%	6%	0%	7%	2%	30%	25%	6%	22%
EAST OF ENGLAND	8%	3%	3%	4%	8%	46%	14%	0%	18%
THAMES VALLEY & WESSEX	8%	2%	6%	4%	2%	13%	4%	0%	6%
LONDON - NORTH CENTRAL & EAST	6%	8%	0%	6%	1%	21%	10%	0%	13%
LONDON - NORTH WEST	4%	0%	0%	2%	2%	19%	6%	25%	15%
LONDON - SOUTH	14%	7%	0%	8%	4%	29%	15%	13%	19%
KENT, SURREY & SUSSEX	6%	0%	0%	2%	10%	25%	13%	8%	15%
SOUTH WEST	8%	6%	3%	5%	5%	44%	13%	13%	18%
WALES	3%	0%	0%	2%	10%	20%	0%	0%	11%
SCOTLAND	2%	4%	0%	2%	4%	9%	0%	25%	8%
N IRELAND	0%	0%		0%	0%	0%	0%		0%
	Yellow 6-9%, Red ≥10%					Yellow 10-19%, Red ≥20%			

Administrative/clerical support

More than 80% NICUs and LNUs and 52% SCUs had administrative support during the day on the weekday with significant less administrative support available at the weekend. Night-time administrative support was only present in 9% NICUs and was not present in any LNUs or SCUs.

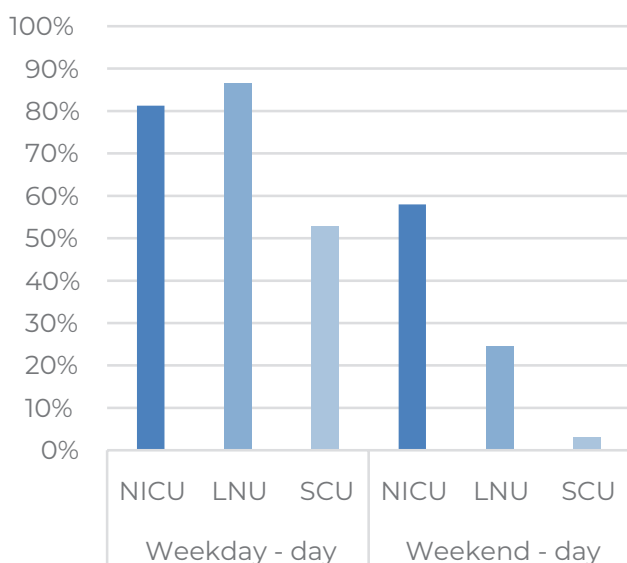


Figure 5. Percentage of units with administrative support

Other non-medical staff

A variety of other non-medical staff including AHPs are needed to provide a high quality holistic service for newborn infants and their families. Units reported generally low availability for any of these health care professionals (Table 2). Prescribing pharmacists, physiotherapists, dieticians, and speech and language therapists had the highest presence in NICUs and LNUs on weekdays. Psychology support was only present in 19% NICUs and 9-10% LNUs and SCUs. These staff were rarely available at the weekend.

Table 2. Percentage units that reported the presence of specific non-medical staff on the days of the snapshot

Non-Medical Staff	weekday				weekend		
	NICU	LNU	SCU		NICU	LNU	SCU
Phelbotomist	11%	1%	3%		2%	0%	0%
Physicians Assistant	2%	0%	3%		0%	0%	0%
Prescribing Pharmacist	41%	25%	9%		2%	4%	3%
Physiotherapist	35%	21%	16%		2%	0%	0%
Speech & Language Therapist	24%	24%	6%		0%	0%	0%
Occupational Therapist	7%	3%	3%		0%	0%	0%
Dietician	30%	31%	6%		0%	0%	0%
Psychologist	19%	10%	9%		0%	0%	0%

Do neonatal units meet BAPM staffing standards?

Medical standards

Staffing standards have been set for NICUs, LNUs and SCUs, and these standards are endorsed by national reports and service specifications [iii](#), [iv](#), [v](#), [vii](#), [viii](#). The percentage of units meeting the standard on each shift is shown in Table 3, 4, and 5. Grey boxes indicate that this element is for information only and is not part of the standard. Activity based standards are based on average yearly activity. For the snapshot we have looked at whether units met the standard if the equivalent averaged daily activity level is met in either 24-hour period of the snapshot. The snapshot may therefore miss units whose activity was lower than expected during the survey and may conversely include some units whose activity was higher than expected during the survey.

Neonatal Intensive Care Unit (NICU)

NICUs should have separate rotas from general paediatrics for all three Tiers of staff at all times. This was achieved by 94-96% units for all shifts except weekday night (85%). There was much lower compliance with activity dependent standards outside weekday daytime. Overall, 94% NICUs met the standards on the weekday daytime with much lower compliance on other shifts (49-65%).

Table 3. Percentage of NICUs complying with BAPM medical staffing standards during the snapshot

BAPM standards	Weekday day	Weekday night	Weekend day	Weekend night
Separate neonatology rota				
Tier 1	98%	94%	98%	96%
Tier 2	100%	94%	96%	96%
Tier 3	96%	94%	98%	94%
Tier 1, 2 and 3	94%	85%	96%	94%
Activity dependent standards				
2 x Tier 1 if >38 births over two days (equivalent 7000 births)	100%	50%	86%	71%
2 x Tier 2 if 14+ ICU over 2 days (>2500 ICU equivalent)	96%	43%	86%	43%
2 x Tier 3 if 14+ ICU over 2 days (>2500 ICU equivalent)	100%	N/A	24%	N/A
Proportion NICUs meeting ALL relevant standards	94%	49%	60%	65%

Local Neonatal Unit (LNU)

LNU standards require separate Tier 1 from the general paediatric rota 24/7, seven days a week. Whilst compliance was high on weekday daytime (97%), this dropped markedly for other shifts. The minimum Tier 2 standard requires separate Tier 2 from the general paediatric rota at least during the periods which are the busiest e.g. 09.00-22.00, seven days a week. Separate daytime Tier 2 cover was low on weekends particularly for smaller LNU services. There was low compliance with activity-based standards on weekday nights and weekends. Overall, 84% LNUs complied with the standards on the weekday daytime dropping to 40-45% on all other shifts.

Table 4. Percentage of LNUs complying with BAPM medical staffing standards during the snapshot

BAPM Standards	Weekday day	Weekday night	Weekend day	Weekend night
Tier 1 separate	97%	63%	80%	63%
Tier 2 separate during daytime duties 7 days/week if ≤8 IC/HD or ≤3 IC over 2 days (≈<1500 RC / <600 IC)	90%	29%	30%	26%
Activity dependent standards				
2 x Tier 1 if >38 births over 2 days (≈ 7000 births)	80%	0%	N/A	N/A
Tier 2 separate if >8 IC/HD or >3 IC over 2 days (≈ >1500 RC / >600 IC)	92%	48%	68%	50%
Tier 3 separate	91%	33%	48%	32%
Tier 3 separate if >10 IC/HD or >5 IC over 2 days (≈ 2000 RC/ 750 IC)	94%	53%	75%	44%
Proportion LNUs meeting ALL relevant standards	84%	45%	40%	45%

Special Care Unit (SCU)

SCU standards require separate Tier 1 from the general paediatric rota during the busiest part of the day during the week. This was achieved in 74% neonatal services. All other standards are activity dependent and 7 SCUs (21%) on the weekday and 6 (18%) on the weekend met the activity requirement for higher medical cover. Daytime cover was more likely to be provided for Tier 1 and 2 during the weekday in these circumstances but compliance was very low across all shifts. Overall, 68% SCUs met the basic BAPM weekday daytime requirement. Compliance outside weekday daytime only applied to 18-21% SCUs but was very low (17-30%) for those shifts.

Table 5. Percentage of SCUs complying with BAPM medical staffing standards during the snapshot

BAPM standards	Weekday day	Weekday night	Weekend day	Weekend night
Tier 1 separate	74%	21%	41%	16%
Activity dependent standards				
Tier 1 separate if 3 or more IC/HD over the two days ($\approx >365$ RC)	86%	29%	67%	17%
Tier 2 separate if 3 or more IC/HD over the two days ($\approx >365$ RC)	57%	29%	17%	17%
Proportion SCUs meeting ALL relevant standards	68%	29%	17%	17%

Nursing standards

Nursing standards are set by BAPM and these standards are endorsed by national reports and service specifications. Overall, 79% nursing shifts met the numerical staffing standard, being lowest in NICUs (60%) and highest in SCUs (94%). NICU and LNU shifts were most poorly staffed on weekend nights. Supernumerary nurses were present in three quarters NICUs and just over half of LNUs but very few SCUs. Overall, 88% shifts had $\geq 70\%$ nurses QIS on shift and this was similar across unit designations.

Table 6. Percentage of units complying with BAPM nursing staffing standards during the snapshot

	NICU	LNU	SCU	ALL
Percentage of units meeting BAPM nursing staffing standards				
Weekday day	60%	91%	97%	83%
Weekday night	60%	86%	97%	80%
Weekend day	67%	87%	93%	81%
Weekend night	54%	79%	90%	73%
ALL	60%	86%	94%	79%
Percentage of units with supernumerary nurse				
Weekday day	84%	71%	28%	66%
Weekday night	78%	51%	9%	50%
Weekend day	79%	52%	20%	54%
Weekend night	71%	45%	7%	46%
ALL	78%	55%	16%	54%
Percentage of units with 70% of Band5+ nurses QIS				
Weekday day	84%	87%	88%	86%
Weekday night	87%	87%	88%	87%
Weekend day	88%	93%	90%	90%
Weekend night	85%	94%	86%	90%
ALL	86%	90%	88%	88%

Do staff working on the medical rotas feel the neonatal service is safe and of good quality?

We asked all staff undertaking medical duties whether they felt there was sufficient medical, nursing, and administrative/clerical staffing to manage the service safely during the shift.

The percentage of staff who felt the service was safe all or most of the time fell from 89% for both medical and nursing on the weekday to 83% (medical) and 85% (nursing) at the weekend.

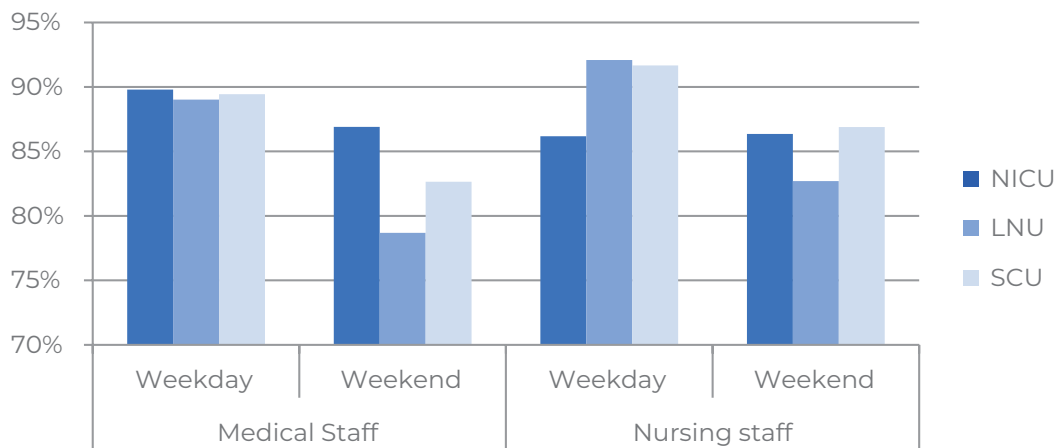


Figure 6. Percentage of medical staff working during the snapshot who felt there was sufficient medical and nursing staffing all or most of the time

Only 73% medical staff thought there was sufficient administrative support to manage the neonatal service safely all or most of the time on weekday shifts compared with 52% at the weekend. Positive responses were lower across all unit designations at weekends.

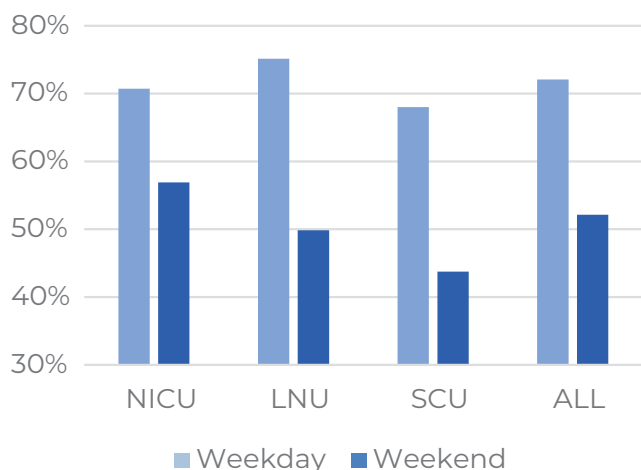


Figure 7. Percentage of medical staff working during the snapshot who felt there was sufficient administrative/clerical staffing all or most of the time.

Table 7 shows the medical staff responses to general patient safety and quality of service delivered during the snapshot which were consistently high.

Table 7. Medical staff responses to general patient safety.

	Response	weekday				weekend		
		NICU	LNU	SCU		NICU	LNU	SCU
Did you feel the patients you looked after during the survey period were safe?	All/most of the time	96%	99%	99%		97%	98%	96%
Did you feel patients in the areas you worked in received a good quality service during your shift?	All/most of the time	95%	97%	96%		95%	93%	93%

Are service and workforce planned according to demand?

Activity and staffing: weekdays and weekends

The table below shows the main clinical activity in NICUs, LNUs and SCUs across the two days in the snapshot survey. As a largely non-elective service, clinical activity is similar across weekdays and weekends particularly with regard to occupied bed days. There is a reduction in admissions and births seen across all three-unit designations which may be a chance finding but would also be expected, due to reductions in planned inductions or caesarean sections for high risk cases over weekends. There are also other elective and supporting activities which mostly occur during the week, including complex discharge planning, child protection, MDTs, governance, teaching, and training events.

Table 8. Admissions, births and bed day activity data^{xi} in NICUs, LNUs and SCUs during the snapshot

	NICUs	LNUs	SCUs	Total
Weekday admissions	92	90	34	216
Weekend admissions	79	84	20	183
% difference admissions	-14%	-7%	-41%	-15%
Weekday births	761	832	260	1853
Weekend births	624	640	208	1472
% difference births	-18%	-23%	-20%	-21%
Weekday IC bed days	341	43	7	391
Weekend IC bed days	330	53.5	5	388.5
% difference IC bed days	-3%	24%	-29%	-1%
Weekday HD bed days	338.5	191	29	558.5
Weekend HD bed days	363	176.5	21	560.5
% difference HE bed days	7%	-8%	-28%	0%
Weekday SC bed days	558	528.5	165.5	1252
Weekend SC bed days	579	545.5	152.5	1277
% difference SC bed days	4%	3%	-8%	2%

^{xi} Bed day activity is obtained by averaging the midnight to midnight (24-hour) bed day activity across each 2-day period covered by the snapshot

Average weekend staffing was approximately two thirds of weekday staffing for all NICU medical Tiers, LNU Tiers 1 and 2, and SCU Tier 1 (Figure 8). In contrast to medical staffing, nurse staffing was 1% higher at weekends compared with weekdays in NICUs and SCUs but was 12% lower in LNUs. Administrative support was significantly lower at weekends (Figure 7) and other non-medical staff were not present at weekends (Table 2).

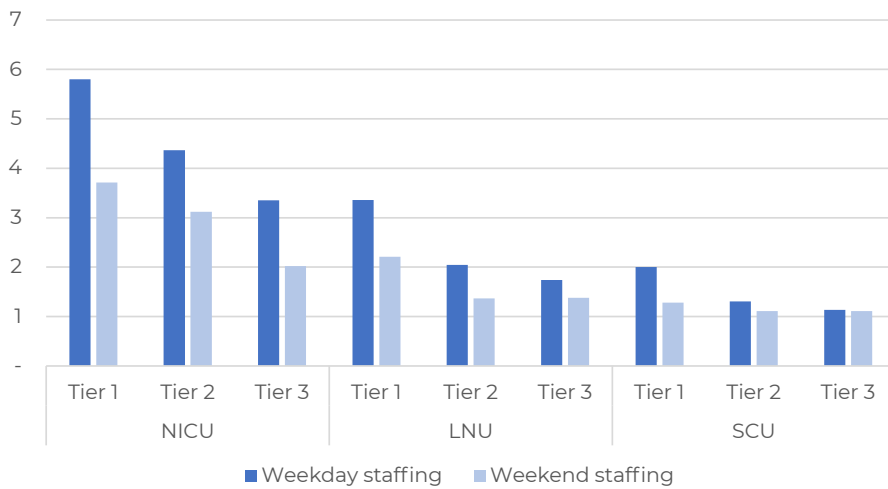


Figure 8. Average number of staff per shift in NICUs, LNUs and SCUs on the weekday and weekend

Activity and staffing: Bed day activity

As might be expected, there is a correlation between the number of Tier 1 and 2 staff available and the occupied intensive care/high dependency cots, but there is wide variation across services with similar activity. Activity levels during a snapshot may not be representative of a particular unit’s average activity so there will be some variation. In addition, medical staffing may be influenced by other factors including delivery rate, transitional/special care requirements and specialist services e.g. surgery, neonatal transport. Medical staffing will also be influenced by the availability of other staff groups e.g. midwives for NIPE, phlebotomy services, prescribing pharmacist. Weekday daytime have the most staff; night-time staffing is similar across the weekday and weekend.

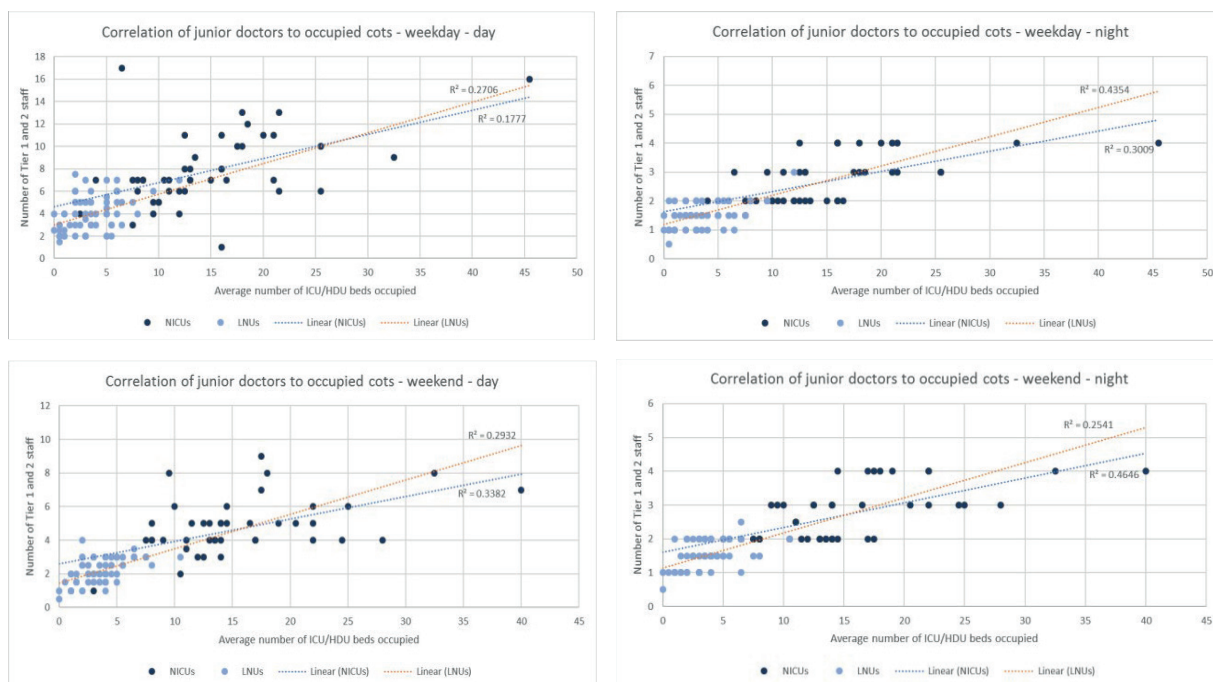


Figure 9. Correlation between number of Tier 1 and 2 doctors to occupied cots on a) weekday daytime b) weekday night c) weekend daytime d) weekend night. Where doctors cover general paediatrics and neonatology, half their time has been assigned to neonatology.

What activities are undertaken by medical and non-medical personnel?

Newborn Infant Physical Examination (NIPE)

The National Maternity Review *Better Births*^{xii} states that postnatal care should be led by the woman’s own midwife and this includes performing the Newborn Infant Physical Examination (NIPE). Departments were asked whether midwives performed NIPE checks on well term babies on the postnatal wards on the days of the survey. Only 56% NICUs said most or all these NIPE checks were done by midwives, with lower responses in LNUs and SCUs. No NIPE checks were performed by midwives in 30% LNUs and 40% SCUs.

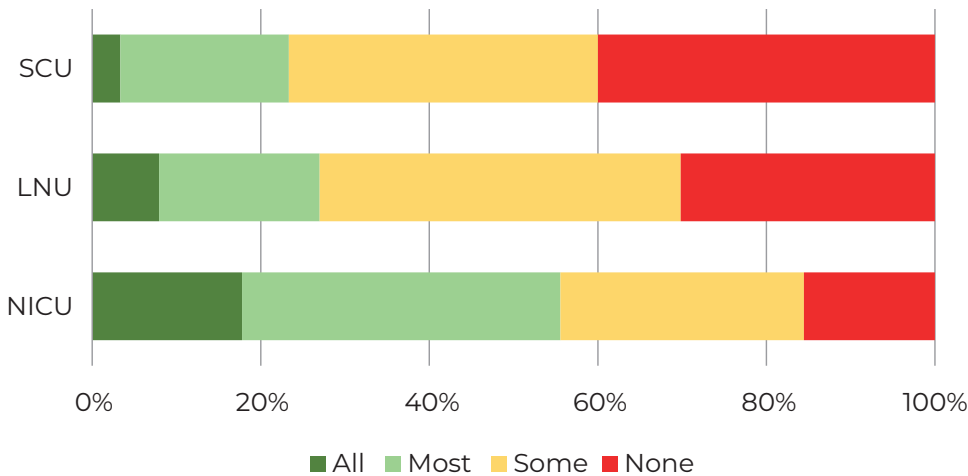


Figure 10. Summation of departmental responses to “Did a midwife do any NIPE checks for well term babies on the postnatal ward today?”

Delivery suite attendance for newborn resuscitation

Medical staff working in neonatal units are asked to attend the delivery suite when there is a high likelihood that a baby may require resuscitation following birth. Medical staff working on the rotas during the snapshot survey were asked to record the number of deliveries they attended, and this was compared with the deliveries over the same time period. 43% of deliveries were attended as a first responder and 15% as a second responder. Whilst the snapshot survey may not be fully representative, the percentage attendance was very high across all units on both days of the audit. Unnecessary attendance at deliveries is stressful for mothers and not part of the normal birthing process. Additionally, due to the immediate requirement for attendance, these calls interrupt other work being undertaken by these staff including practical procedures required in the neonatal unit which can lead to increased painful experiences for these neonates.

Blood tests

Medical staff were asked to estimate the proportion of blood tests performed by non-medical personnel. More blood tests were estimated to be performed by non-medical personnel in NICUs compared with LNUs and SCUs and this was similar across weekdays and weekends.

xii NHSE (2016). National Maternity Review: Better Births. Improving outcomes of maternity services in England. <https://www.england.nhs.uk/mat-transformation/implementing-better-births/mat-review/>

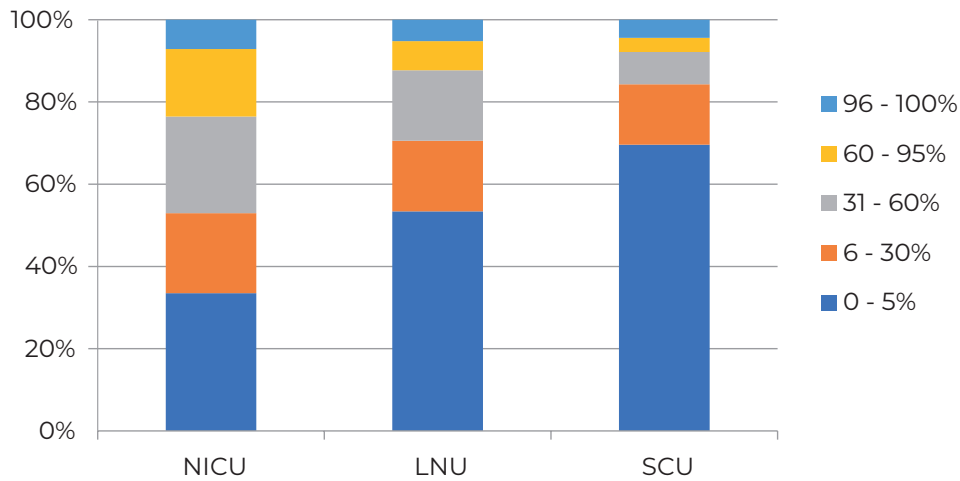


Figure 11. Summation of medical staff estimates for proportion of blood tests performed by non-medical personnel

Departmental questionnaires also asked whether nurses had undertaken specific procedures during the snapshot (Table 9). Nurses working on medical Tiers e.g. ANNP and ENNP, were excluded. Responses were similar for NICUs and LNUs across weekday and weekends. Less special care units reported nurses doing venepuncture, IV cannulation and bilirubin checks, all of which might reasonably be expected to occur frequently in SCUs as well as in NICUs and LNUs.

Table 9. Percentage services where the procedures above were performing by nursing staff

Procedure	weekday				weekend		
	NICU	LNU	SCU		NICU	LNU	SCU
Heel prick blood sampling	90.7%	94.1%	87.5%		88.9%	92.6%	78.1%
Venepuncture	22.2%	27.9%	15.8%		25.9%	26.5%	12.5%
IV cannulation	25.9%	32.4%	12.5%		20.4%	32.4%	9.4%
Arterial line sampling	50.0%	8.8%	3.1%		46.3%	7.4%	0.0%
UVC sampling	3.7%	0.0%	0.0%		9.3%	1.5%	0.0%
Bilirubin checks	75.9%	83.8%	56.2%		70.4%	76.5%	59.4%
Blood gas analysis	87.0%	86.8%	56.2%		75.9%	82.4%	40.6%
Long line insertion	0.0%	0.0%	0.0%		0.0%	2.9%	0.0%
UAC/UVC insertion	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%
LP	0.0%	1.5%	0.0%		0.0%	1.5%	0.0%
Intubation	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%
First responder for resuscitation	14.8%	10.3%	0.0%		13.0%	7.4%	3.1%
Cranial ultrasound	0.0%	1.5%	0.0%		0.0%	0.0%	0.0%

Are staff working on medical rotas in neonatal units well supported and cared for?

We asked all staff working during the snapshot some questions about their workload, support, and mental wellbeing during their shifts (Table 10). Staff in LNU and SCU reported lower levels of enjoyment and higher levels of stress, anxiety and feeling overloaded at work at the weekend compared with the weekday. Less difference was seen in responses across weekday and weekend for NICUs.

Table 10. Summation of individual responses to workload, support, and mental wellbeing

	Response	weekday			weekend		
		NICU	LNU	SCU	NICU	LNU	SCU
Did you enjoy being at work during the survey period?	All/most of the time	84%	84%	81%	81%	76%	71%
Did you feel overloaded with work during the survey period?	Some of the time/ not at all	90%	90%	88%	88%	81%	81%
Did you feel appropriately trained to carry out any unsupervised roles you performed during the survey period?	All/most of the time	93%	91%	88%	91%	89%	90%
For how much of their shift did you feel stressed or anxious during this shift?	Some of the time/ not at all	92%	94%	95%	91%	88%	89%

Shift lengths and proportion staff getting rest periods

Additional average working beyond shift times varied from 0 to 9 minutes across all shifts and all unit designations in the snapshot. Overall, across all shifts, 49% Tier 1 and 2 staff had a break of 30 minutes or more. NICUs had the highest proportion of breaks (54%), with 47% in LNUs and 45% in SCUs. There is not a requirement for breaks to be longer than 30 minutes for tier 3 staff; 36% Tier 3 staff reported no breaks.

Methodology and response rate

We contacted 191 neonatal services in the UK requesting staffing and activity information at a departmental level. In addition, we requested that all individuals working on Tier 1, 2 and 3 rosters on the days of the snapshot complete information about their shift, including workload and responsibilities as well as their opinions on safety, governance, staff support and well-being during the shift. We requested that these individual returns from staff were collated by someone relatively independent of the neonatal medical workforce. Each day of the snapshot therefore had two separate returns.

145 (76%) neonatal services responded to both the weekday and weekend departmental questionnaire and a further six responded only to either weekend or weekday departmental questionnaire (total 151; 79%). All four questionnaires were completed by 128 (67%) services.

Returns were highest for NICUs and across England. Responses may have been lower in the devolved nations as the GIRFT programme is less well known outside England.

Table 11. Response rate by service designation and nation.

	Weekday department summary	Weekend department summary	Weekday individual returns	Weekend individual returns
Response rate by designation				
NICU	85%	90%	88%	88%
LNU	78%	75%	74%	71%
SCU	67%	65%	52%	54%
Response rate by country				
England	85%	84%	79%	78%
Scotland	47%	47%	53%	53%
Wales	36%	46%	36%	46%
Northern Ireland	29%	29%	29%	29%
All responses				
UK	78%	77%	73%	72%

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The questionnaires were developed by the GIRFT Neonatology Team: Eleri Adams (GIRFT Clinical Lead), Gail Roadknight (GIRFT Project Manager), and Matt Colmer (GIRFT Data Analyst) with input from a clinical questionnaire advisory group of neonatologists, paediatricians, ANNPs and nurses from across the UK.

The GIRFT Neonatology team along with Edge Health are responsible for the data analysis for this report.

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