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Contents

Introduction.....	3
Membership of the RCP working party on safe medical staffing.....	4
Individual members.....	4
Declaration of members’ interests.....	5
Acknowledgements.....	5
Foreword.....	6
Executive summary.....	7
Key points.....	8
Aspects of modelling.....	8
Recommendations.....	9
Precepts and methodology.....	13
Medical staffing arrangements.....	13
Concepts and premises.....	13
Variation of clinical competence within the clinical Tiers.....	15
Timeliness of care.....	16
‘Seeing’ and ‘reviewing’ patients.....	16
Consultant-led and consultant-delivered services.....	17
Service delivery must explicitly support training.....	17
Evidence and data.....	17
Staffing calculations.....	18
Numbers of staff recommended on the wards and the medical workforce.....	19
Surge planning and escalation protocols.....	19
Audit of timely medical care.....	20
Limitations to our work – real and potential.....	20
Section 1: Patients presenting acutely to hospital with medical problems.....	21
In scope.....	21
Out of scope.....	21
Approach.....	22
Particular considerations.....	22
Medical input required to service the medical take.....	23
Recommended audit topics and standards.....	29
Section 2: Medical staffing of the medical wards by day, Monday to Friday.....	30
Daily tasks.....	31
The assessment of a new patient following transfer to a medical ward.....	31
Clinical tasks that arise following the admission of a new patient to a medical ward.....	32
Basic daily ward tasks.....	32
Formal ward rounds.....	32
Multidisciplinary team meetings and other informal clinical discussions.....	34
Meetings with families.....	34
Discharging a patient.....	34
The impact of length of stay.....	35
The impact of patient frailty, multiple comorbidity and cognitive impairment.....	35
The impact of high patient acuity and high care areas.....	35

A 30-patient medical ward	35
Recommended audit topics and standards.....	42
Section 3: Medical staffing of the medical wards by day on weekends and public holidays.....	43
From a system perspective.....	43
The WayWard Project	44
Standards of medical inpatient care on weekends and public holidays	45
Terminology of medical out-of-hours services.....	46
The work of the weekend medical ward team.....	47
Routine tasks	47
Schedule of work for the weekend medical team.....	48
Tier 1 clinicians	49
Tier 2 senior clinicians	49
Tier 3 consultants	50
Summary of recommended daily weekend staffing for a 30-bed medical ward	50
Interpretation of the staffing summary	50
Unscheduled tasks.....	51
Expected and predictable tasks.....	51
Expected but unpredictable tasks	52
‘External’ referrals from non-medical areas for medical input.....	52
Recommended audit topics and standards.....	52
Section 4: Medical staffing for hospital inpatients who need urgent medical care by day and by night	54
Weekend working.....	55
From a system perspective.....	55
The nature of out-of-hours work.....	56
Classifying the work of the medical team on-call.....	56
Current working patterns and the workload of the medical team on-call.....	58
Discussion	59
Summary of recommendations.....	59
Recommended audit topics and standards.....	60
References.....	61

Introduction

Patients have a right to expect safe, timely and effective medical care.¹ It is the role of the NHS to provide this care and adequate staffing is a primary factor in its provision.

Within the medical profession there is widespread concern that levels of medical staffing have fallen dangerously low. Annual census data from the Federation of the Royal Colleges of Physicians of the UK paint a worrying picture. From 2013 to 2018, more than one in five census respondents reported that gaps in trainees' rotas occurred so frequently as to cause significant problems in patient safety. Half of all advertised consultant appointments in acute internal medicine and geriatric medicine went unfilled due to a shortage of suitable applicants.²

The Francis Report into incidents at the Mid Staffordshire NHS Foundation Trust highlighted the importance of adequate numbers of staff in assuring safe patient care. The Royal College of Nursing (RCN) has since undertaken much work on staffing in relation to nursing.^{3,4}

But staffing problems are not confined to nursing alone. There is evidence that higher levels of medical staffing are associated with reduced mortality for medical patients.⁵ There are, however, no current benchmarks against which to judge safe medical staffing levels, particularly with regard to out-of-hours work.

The RCP should work with the NHS to provide guidance on acceptable staffing levels for a given workload, including the optimum number and appropriate grade of junior doctors necessary for a given volume of admissions, case mix, number of inpatients covered and support provided for other specialties.

(The medical registrar, Royal College of Physicians, 2013)⁶

Following this statement by the Royal College of Physicians (RCP) in 2013, and echoed by others including the Royal College of Physicians of Edinburgh and the National Institute for Health Research,^{7,8} this working party was tasked with defining benchmarks for staffing levels for a variety of clinical situations.

For further information on the background to safe medical staffing, please see Appendix 1 (the appendices to this report are available on the RCP website).

Membership of the RCP working party on safe medical staffing

The working party includes representation from:

- RCP Council and senior officers
- RCP New Consultants Committee
- RCP Trainees Committee
- RCP Patient and Carer Network
- core medical trainees (via RCP associate college tutors)
- Society for Acute Medicine
- Royal College of Nursing
- Faculty of Physician Associates
- WayWard Project of the University of Nottingham.

Individual members

- Dr Rhid Dowdle OBE, physician and cardiologist, Royal Glamorgan Hospital, Rhondda-Cynon-Taf; working party chair
- Dr John Firth, physician and nephrologist, Addenbrooke's Hospital, Cambridge; working party vice-chair
- Dr Nichola Ashby, professional lead for emergency, acute and critical care, Royal College of Nursing
- Dr Michael Azad, specialty registrar in medicine for older people, Nottingham University Hospitals NHS Trust; RCP Trainees Committee
- Dr Druin Burch, physician, John Radcliffe Hospital, Oxford; RCP New Consultants Committee
- Dr Mohsin Choudry, core surgical trainee; RCP national medical director's clinical fellow
- Dr Aveen Connolly, core medical trainee, Norfolk and Norwich University Hospital; RCP associate college tutor
- Dr Tom Cozens, acute physician, Royal Gwent Hospital, Newport; RCP New Consultants Committee
- Teresa Dowsing, past president, Faculty of Physician Associates
- Jean Gaffin OBE, representative, RCP Patient and Carer Network
- Dr Andrew Goddard, physician and gastroenterologist, Royal Derby Hospital; RCP registrar (now president-elect)
- Dr Harriet Gordon, physician and gastroenterologist, Royal Hampshire County Hospital, Winchester; director, RCP Medical Workforce Unit
- Suzie Hughes, lay chair, RCP Patient and Carer Network
- Professor Frank Joseph, consultant physician in diabetes, endocrinology and general internal medicine, Countess of Chester Hospital; RCP acute care fellow and Future Hospital officer

- Dr Mike Jones, acute physician, University Hospital of North Durham; director of training, Royal College of Physicians of Edinburgh; GIRFT national clinical lead for acute and general medicine
- Dr Abigail Moore, specialty registrar in respiratory medicine, London; clinical fellow to the RCP president
- Mr JP Nolan, head of nursing, Royal College of Nursing
- Dr James Pinchin, assistant professor, University of Nottingham; the WayWard Project
- Dr Jodie Sabin, clinical fellow in endocrinology and general medicine, Ysbyty Gwynedd, Bangor
- Suman Shrestha, professional lead for acute, emergency and critical care, Royal College of Nursing
- Dr Chris Subbe, acute physician and intensivist, Ysbyty Gwynedd, Bangor; Society for Acute Medicine
- Dr Mark Temple, physician and nephrologist, Birmingham Heartlands Hospital; RCP Future Hospital officer
- Dr Nigel Trudgill, physician and gastroenterologist, Sandwell and West Birmingham Hospitals NHS Trust; deputy director, RCP Medical Workforce Unit (now director)

Roles are given as at the point when members joined the working party.

Other individuals were invited to participate in areas where they have specific expertise.

Declaration of members' interests

Dr Andrew Goddard is a member of the British Society of Gastroenterology and was previously chair of the gastroduodenal section.

Dr John Firth is a member of the Renal Association and a member of the Association of Physicians. He is also editor-in-chief of the Medical Masterclass series (1st, 2nd and 3rd editions) which is published by the RCP, and editor of the *Oxford Textbook of Medicine* (4th, 5th and 6th editions).

Dr Rhid Dowdle has undertaken paid consultancy work for the University of South Wales in their evaluation of community cardiology projects in Wales. He is also a member and honorary fellow of the Society for Acute Medicine and the European Federation of Internal Medicine, and he is a fellow of the Royal College of Physicians of Edinburgh.

Dr Michael Azad is the Trent British Geriatrics Society regional chair.

Dr Mark Temple commenced the post of clinical ambassador (West Midlands), Getting It Right First Time (GIRFT), NHS Improvement in May 2018.

Dr Mike Jones is the Getting It Right First Time (GIRFT) national clinical lead for acute and general medicine, and he is director of training at the Royal College of Physicians of Edinburgh.

Acknowledgements

The members of the working party would like to thank the WayWard Project team for their help in providing data and illustrations.

Foreword

At the RCP, we are very proud of and committed to the NHS. Our fellows and members want to work in a health service that is as safe as possible for patients.

Since its inception, there have always been challenges in delivering safe medical care. But recently, recruitment of doctors has become one of the most pressing: our number has not kept pace with the number of patients needing care.

Patient care is now jeopardised by staff shortages and low morale. The RCP census shows that 45% of posts are going unfilled. Over half of consultants report frequent or often gaps in trainees' on-call rotas, with one in five saying that these vacancies lead to problems with patient safety. Almost a third of higher specialty trainees are now being asked to cover gaps in the core medical trainees' rota, and the same number say they would take a job outside medicine if they could turn back time.

The current situation can be traced back to events that took place shortly after the turn of the millennium:

- Modernising Medical Careers shortened the length of time that doctors spent in training, effectively reducing the number of trainees
- an increase in shift working led to lower staffing levels, especially out of hours
- changes to immigration rules removed the ability to make good any shortfall in staffing by recruiting from outside the UK.

All were doubtless well intentioned – particularly safeguards to protect doctors and patients from dangerously long hours – and any one might have been accommodated by the system if it had been implemented in isolation. But, coupled with inadequate increases in medical student numbers, they created a perfect storm that had a negative impact on the numbers of doctors in the medical workforce.

We established the safe medical staffing working party because we were concerned that these reductions in medical staff posed threats to patient care. The guidance in this report explores how the various core medical services of a hospital should be staffed to enable safe patient care.

The RCP recognises that the complex issue of safe medical staffing will not be resolved at a stroke, but this guidance is a significant step towards that objective. It will be useful for individual hospitals in calculating and continuously monitoring their needs. And it will help us to better understand the scale of the problem at a national level, and communicate it to policy makers.

Professor Dame Jane Dacre DBE
President of the Royal College of Physicians

Executive summary

There is much evidence that medical staffing to care for patients who attend or are admitted to hospital with medical problems is spread very thinly, and notably that the workload of the medical registrar on-call is inappropriately onerous, with implications for patient safety.

This report aims to help those planning and organising core hospital medical services to answer the question: ‘How many doctors or their alternatives, with what capabilities, do we need to provide safe, timely and effective care for patients with medical problems?’.

Inadequate levels of staffing may be indicated by the frequent implementation of escalation protocols, frequent exception reporting, and by reporting of clinical incidents. Such events should trigger a review of staffing, which can be aided by the various audit topics that are recommended at the end of each section of this report.

We consider the following National Institute for Health and Care Excellence (NICE) definition of safe nursing care to be equally applicable to safe medical care:

When reliable systems, processes and practices are in place to meet required care needs and protect people from missed care and avoidable harm.⁹

We consider that the core medical services of a hospital comprise four distinct areas of activity, each with its own staffing needs:

- the medical assessment and admission team
- the medical ward team
- the weekend medical ward team
- the medical team on-call (providing out-of-hours cover for inpatients with medical problems).

Some tasks and duties that were previously considered to be the domain of consultants and doctors in training are now being undertaken by non-training medical staff, and in some cases by non-medical personnel. It is therefore no longer appropriate to speak of work being done only by specific grades of doctors. To reflect this change, we have described clinical work as being undertaken by clinicians in three tiers:

Tier 1: Competent clinical decision makers – clinicians who are capable of making an initial assessment of a patient

Tier 2: Senior clinical decision makers – the ‘medical registrars’ – clinicians who are capable of making a prompt clinical diagnosis and deciding the need for specific investigations and treatment

Tier 3: Expert clinical decision makers – clinicians who have overall responsibility for patient care.

The three Tiers are explained more fully in the [‘Precepts and methodology’ section](#).

Key points

The results of the RCP Medical Registrar Survey (Appendix 2) and feedback from RCP members and fellows suggest that the out-of-hours workload of the medical registrar on-call is inappropriately onerous, with implications for patient safety.

The practice of a single medical registrar both leading the medical intake and providing on-call medical cover for the hospital is unlikely to be successful and contributes to the heavy out-of-hours workload of the medical registrar on-call.

It is essential that as much patient care as possible is delivered during the normal working day, rather than out of hours. We think that this is a key issue for patient safety, and the daytime staffing of wards should be such as to minimise ‘legacy’ work.*

Service must always support training and we have concerns that the significant increase in consultant-delivered care may limit the opportunities for trainees to acquire experience in decision making. We urge trusts to recognise trainees’ educational needs when implementing consultant-delivered services.

There must always be sufficient time available to speak with patients and their families and carers to ensure that all the relevant issues are known to the medical team who are caring for that patient. This is particularly important when a patient is unable to represent themselves adequately.

Aspects of modelling

The objective of this report is to describe the staffing that is needed to ensure safe, timely and effective medical care for patients in hospital. We have accepted the recommendations made in a number of reports from authoritative bodies regarding both weekend working and consultant involvement in direct patient care.

* ‘Legacy’ work includes tasks that, for a variety of reasons, are not completed during the working day but are left for the out-of-hours on-call team. They include many tasks that are predictable and that all patients will require to ensure a safe episode of care in hospital.

In the interests of safety, staffing calculations should be based on 80% of maximum activity.

We recognise that it has been estimated that 30–70% of medical staff time is spent on indirect patient care, including activities such as coordination, leadership and management of care. Our modelling assumptions take account of this indirect care either explicitly, as in our recommendations for ward staffing or implicitly, as in our recommendations for staffing the admission service and the urgent care service.

Effective mechanisms should be in place to continuously monitor for surges in activity that compromise safe patient care. It is essential that all hospitals should have agreed and effective escalation protocols for responding to such surges in activity.

Routine staffing requirements should be reviewed if escalation protocols are activated more than once a week on average.

Recommendations

We have presented our recommendations for staffing in the following formats.

- 1 We have estimated the number of hours that clinicians need to be present in a given situation.
- 2 Where practicable, we have offered examples of the staff needed to work these hours.
- 3 We have provided estimates of the workforce (ie the number of posts) needed to ensure that the staffing we have recommended can be available constantly for staff in Tiers 1 and 2. The workforce numbers take account of periods of leave and thus avoid predictable rota gaps and absences from the ward or admission teams.
- 4 We have not suggested workforce numbers for consultants, considering their more complex working arrangements.

Our recommended staffing numbers are intended to be indicative rather than definitive and they should always be validated or modified by the results of appropriate audit.

We consider that the timeliness of the provision of care is a good indicator of appropriate levels of medical staffing and should form part of any audit of adequate staffing.

Medical staffing for patients who present acutely to hospital with medical problems – the medical assessment and admission team

Consultant-led care, without an immediate consultant presence in the emergency department and acute medical unit (AMU) but with consultant-led post-take ward rounds

To assess 10 patients satisfactorily requires:[†]

Tier 1 time – 15 hours

Tier 2 time – 9.5 hours

Tier 3 time – 4.25 hours

Partly consultant-delivered care, with consultant presence and early involvement in the emergency department and AMU

To assess 10 patients satisfactorily requires:

Tier 1 time – 15 hours

Tier 2 time – 7 hours

Tier 3 time – 6.5 hours

Medical staffing of a 30-bed medical ward by day, Monday to Friday – the medical ward team

We have accepted the recommendations of the Academy of Medical Royal Colleges, NHS Improvement and NICE Guideline 94 regarding the routine schedule of work on medical wards.^{10–13}

We found little difference between the staffing requirements of wards that have lengths of stay of 4 days and 6 days.

Tier 1

- Tier 1 clinicians need to be present on the ward for 71 hours each week.
- Two Tier 1 clinicians are needed for most of the day, every day, irrespective of whether or not a formal ward round takes place.
- A workforce of 2.2 Tier 1 posts per ward is needed to provide this staffing.

Tier 2

- Tier 2 doctors need to be present on the ward for 30 hours each week.
- One Tier 2 doctor is needed for most of the day when there is a formal ward round and for half of the day on the other days.

[†] For a further explanation of workforce calculations, see *Appendix 3: Detailed calculations* on the RCP website.

- A workforce of at least one Tier 2 post per ward is needed to provide this staffing, depending on the Tier 2 doctors' commitments away from their base wards.

Tier 3

- Tier 3 consultants need to be present on the ward for between 20.5 and 24.5 hours each week.
- One Tier 3 consultant is needed for most of the day when there is a consultant ward round and for 2.5 hours on the other days.

Medical staffing to maintain a 30-bed medical ward by day on weekends and public holidays – the weekend medical ward team

We have accepted the recommendations of the Academy of Medical Royal Colleges in its document *Seven Day Consultant Present Care*.¹³ We found little difference in the weekend staffing requirements of wards that have either 20% or 40% of patients not needing routine clinical review over the weekend.

Tier 1

- A Tier 1 clinician needs to be present on every ward for 8 hours on each day of the weekend or public holiday.
- A workforce of 0.5 of a Tier 1 post per ward is needed to provide this staffing.

Tier 2

- A Tier 2 doctor needs to be present on every ward for 2 hours on each day of the weekend or public holiday.
- A workforce of 0.1 of a Tier 2 post per ward is needed to provide this staffing.

Tier 3

- One Tier 3 consultant is needed for 2 hours on every ward on each day of the weekend or public holiday.

Staffing for emergency medical care in the hospital by day and night – the medical team on call

Based on data from a variety of sources (Appendix 4) and modified by real-world reality checks, we estimate that to provide emergency care for inpatients who are covered by the on-call team:

Tier 1

- one medical Tier 1 clinician should be available throughout each 16-hour on-call period for every 100–120 beds covered by the on-call team
- a workforce of three Tier 1 posts is needed to provide this staffing.

Tier 2

Analysis of data from the RCP Medical Registrar Survey (Appendix 2) suggests that:

- small hospitals may be able to combine the roles of providing Tier 2 on-call medical cover of the wards and leading the medical assessment and admissions team
- most hospitals require a separate, dedicated Tier 2 medical registrar to provide on-call cover of the wards for 12 hours during the period of greatest activity every day (including the weekend), with another medical registrar leading the medical assessment and admissions team: this would require a workforce of 2.4 Tier 2 posts
- large hospitals probably need a separate dedicated Tier 2 medical registrar to provide on-call cover of the wards throughout the 24-hour period: this would require a workforce of 5 Tier 2 posts.

There needs to be significant research into this area, as there is a fundamental lack of high-quality evidence: most of what little evidence that is available is observational.

Precepts and methodology

This report aims to help those who are planning and organising core hospital medical services to answer the question: ‘How many doctors or their alternatives, with what capabilities, do we need to provide safe, timely and effective care for patients with medical problems?’.

Medical staffing arrangements

As medical staffing arrangements can be very complex, we have separated the elements of medical staffing into discrete components. Together these elements describe the overall needs of a medical service. The sections of this report therefore make recommendations for staffing in the following situations:

Section 1 – Medical staffing to care for patients who present acutely on the medical intake

The medical assessment and admission team

Section 2 – Routine medical staffing to care for medical inpatients by day, Monday to Friday

The medical ward team

Section 3 – Medical staffing to care for medical inpatients during weekends and public holidays

The weekend medical ward team

Section 4 – Medical staffing to care for hospital inpatients who need urgent medical care by day and by night

The medical team on-call

Concepts and premises

In producing this report, we have worked with the following concepts and premises.

Safe and effective patient care

Appropriate medical staffing should provide safe, timely and effective patient care, as required by the concept of ‘fundamental standards of care’.¹⁴ We consider the NICE definition of safe nursing care to be equally applicable to safe medical care:

When reliable systems, processes and practices are in place to meet required care needs and protect people from missed care and avoidable harm.⁹

Tiers of clinicians

Some tasks and duties that were previously considered to be solely the domain of consultants and doctors in training are now being undertaken by non-training medical staff, and in some cases by non-medical personnel.^{15,16} It is no longer appropriate to refer to work being done only by specific grades of doctors. To reflect this change, we have described clinical work as being undertaken by clinicians in three Tiers:

*Tier 1: Competent clinical decision makers*¹⁷ – clinicians who are capable of making an initial assessment of a patient

*Tier 2: Senior clinical decision makers*¹⁷ – the ‘medical registrars’ – clinicians who are capable of making a prompt clinical diagnosis and deciding the need for specific investigations and treatment

Tier 3: Expert clinical decision makers – clinicians who have overall responsibility for patient care.

Tier 1: Competent clinical decision makers – clinicians who are capable of making an initial assessment of a patient

These are the clinical staff who provide hands-on care for patients. Most are junior doctors in training, including: foundation trainees (FY), core medical trainees (CMTs), General Practice Vocational Training Scheme (GPVTS) trainees and Acute Care Common Stem (ACCS) trainees. They may also be non-medical staff such as physician associates, advanced nurse practitioners and other healthcare professionals who have equivalent clinical capabilities.

Within Tier 1 we recognise:

Tier 1A: Foundation year 1 doctors (FY1), who are not yet on the medical register. As they are not yet independently competent clinical decision makers, they must work under close supervision at all times.

Tier 1B: Independently competent clinical decision makers, fully registered doctors (including FY2s, CMTs, GPVTS and ACCS trainees) and non-medical staff with equivalent capabilities, all of whom require a lesser degree of supervision than a Tier 1A clinician.

Tier 2: Senior clinical decision makers – the ‘medical registrars’

The majority of these staff are more senior doctors in training: specialty registrars in higher training programmes or trainees in internal medicine Year 3. Some more experienced trainees who are at the end of their core medical training may also act in this role, as may some trust doctors and other non-training medical staff: specialty and associate specialist (SAS) doctors, such as specialty doctors and staff grade physicians. Passing all parts of the MRCP(UK) examination would normally be a requirement to work at this level.

Tier 2 doctors are able to manage the medical issues of the hospital out of hours as the most senior medical presence on site, with access to Tier 3 advice and support as required.

Within Tier 2 we recognise:

- Tier 2A: Some more experienced trainees who are at the end of core medical training or other equivalent training.
- Tier 2B: Specialist or specialty registrars in higher medical training programmes, or trainees in internal medicine Year 3. SAS doctors and trust doctors can work in Tier 2 at either level, according to their competencies, qualifications and experience.

For the sake of simplicity, we have used the term ‘medical registrar’ for all staff who are working in Tier 2 at either grade, irrespective of whether they are doctors in training or not.

Tier 3: Expert clinical decision makers – clinicians who have overall responsibility

Tier 3 clinicians have overall responsibility for the care of patients. They are currently consultants, associate specialists or specialty doctors above threshold 2.¹⁸

Variation of clinical competence within the clinical Tiers

There will be variation in capabilities between individuals, particularly within Tier 1, and also variation in the speed with which individuals of all Tiers carry out their work. Our assumptions about capability, speed of working and requirement to defer decision making to a higher Tier are based on the assumption of performance at the mid-point of each Tier.

Timeliness of care

The timeliness of the provision of care is a good indicator of appropriate levels of medical staffing. This is supported by the West Midlands Urgent Care Pathway Group, together with the Society for Acute Medicine (SAM).¹⁹ Illustrative examples are shown in Table 1.

Table 1 Recommendations for the timeliness of specific clinical interventions

Episode of care	Minimum time	Source
Assessment of a patient with a new NEWS2 of 7 or more by a Tier 2 or Tier 3 doctor	Immediate	<i>Clinical response to the NEWS trigger thresholds</i> ²⁰ RCP, London, 2017
Assessment of a patient with a new NEWS2 of 5–6, or 3 in any single parameter, by a Tier 2 or Tier 3 doctor	Within 15 minutes	<i>Acute care toolkit 6 – The medical patient at risk</i> ²¹ RCP, London, 2013
Initial assessment of a new patient by a clinician of any Tier	Completed within 4 hours of arrival on the AMU or referral in the emergency department	<i>Acute medical care – report of the Acute Medicine Task Force</i> ¹⁷ RCP, London, 2007
Routine Tier 3 secondary review of a new patient following initial assessment	<i>Within the working day</i> As soon as possible, but always within 6–8 hours	'Acute internal medicine and general internal medicine' in <i>Consultant physicians working with patients</i> ²² RCP, London, 2013
	<i>Outside the working day</i> As soon as possible, but always within 14 hours	

AMU = acute medical unit; NEWS2 = National Early Warning Score 2.

Formal handover of patients should take place between clinical teams.

Continuity of care is desirable, and the number of patient handovers should be minimised. When handovers cannot be avoided, they require protected time at the start and end of periods of duty.^{23–25}

'Seeing' and 'reviewing' patients

In this document, we consider the terms 'seeing' and 'reviewing' to have different meanings.

- To see a patient is to meet with the patient in person and to assess them physically, as well as reviewing information on their past and current status.

- To *review* a patient does not require physically meeting with them, but it involves considering the patient's past and current status, including information received from others.

Seeing a patient includes reviewing them, but a patient can be reviewed *in absentia*. The terms 'seeing' and 'reviewing' may not be used in the same way in other documents or reports.

Consultant-led and consultant-delivered services

Consultant-delivered care occurs when the consultant provides a substantial amount of the 'hands-on' medical care of the patient. Consultant-led care occurs when the consultant supervises and takes responsibility for the 'hands-on' clinical care of the patient that is delivered by others.

Consultants' patterns of work may require them to provide consultant-delivered care for one patient and consultant-led care for another. There will also be different degrees of consultant involvement in different episodes of consultant-delivered care.

Consultant-delivered care requires more consultant time with each patient than consultant-led care. While more consultants will be needed to deliver the same care safely if a consultant-delivered model is adopted, some service providers may find it an attractive model.²⁶

Service delivery must explicitly support training

There has to be a balance between service delivery and the need to train doctors. Appropriate levels of medical staffing should provide sufficient time for both formal and opportunistic teaching, and experiential learning, as described in the Temple report.²⁷

All trainees should be routinely involved in the senior review of patients for whom they have provided care. The greatest efficiency in service delivery might well be obtained in the short term if no training takes place, but this would be a Pyrrhic victory and would certainly be deleterious for service provision in the future. If doctors in Tier 1 are not trained, there will be no doctors in Tier 2; if doctors in Tier 2 are not trained, there will be no Tier 3 consultants.²⁸

Evidence and data

Our recommendations are based on the available evidence, combined with the experience and expertise of the working party members. We also consulted clinicians who are actively practising in the areas concerned.

There is a need for further study of medical staffing levels and their relationship to patient outcomes.²⁹ NICE reviewed the service delivery and organisation of acute care in its Guideline 94 and found that, even when it was able to make recommendations, much of the evidence base was of low quality.³⁰

Staffing calculations

The working day

We define the normal working day of a medical ward to be 9am to 5pm, Monday to Friday, excluding weekends and public holidays. These are the hours during which all support services are routinely available, both within the hospital and in the community. We recognise that increasing amounts of routine activity are planned to take place on the wards outside these hours.

The working week

We define the normal working week to be Monday to Friday, excluding weekends and public holidays. This may change in the future with the development of true 7-day working.

Weekend working

Daytime work over the traditional weekend and on public holidays presents similar issues for medical staffing. For the sake of simplicity, we have used the term 'weekend' to include both periods.

The working year (see Appendix 3)

We have allowed for annual leave and study leave when calculating the numbers of staff needed to meet the requirements for safe medical staffing. We have derived a leave-adjusted working year for the various clinicians who make up the medical workforce in Tiers 1 and 2.

Time spent on activities other than direct patient care

It has been estimated that 30–70% of medical staff's time is spent on activities such as coordination, leadership and management of care. Tipping *et al*, in a review of 13 time-motion or work-sampling studies, consistently found that activities indirectly related to patient care took more of hospital physicians' time than direct interaction with patients.³¹ Other studies have drawn similar conclusions.^{32–34} Our modelling assumptions take account of this issue when allocating the total time needed for particular tasks. In [Section 1](#) and [Section 4](#) of this report, this time for

indirect patient care is implicit in the calculations, in [Section 2](#) and [Section 3](#) it is expressed explicitly for the various Tiers.

Numbers of staff recommended on the wards and the medical workforce

We have presented our recommendations for staffing in a variety of forms:

- 1 The number of hours that clinicians need to be present in a given situation. This can be over a 24-hour period (the medical assessment and admissions team), during each 8-hour working day (the medical ward teams) or during a 16-hour out-of-hours period (the medical team on-call).
- 2 Where practicable, we have offered examples of the staff needed to work these hours, such as: two Tier 1 clinicians each working an 8-hour shift.
- 3 We have provided estimates of the workforce – the number of posts – needed to ensure that the staffing that we have recommended can be available constantly. The workforce numbers take account of periods of leave and thus avoid predictable rota gaps and absences from the ward or admission teams.

Our recommended staffing numbers are intended to be indicative rather than definitive and should always be validated or modified by the results of appropriate audit.

It must be remembered that, currently, a Tier 2 doctor can be expected to have duties away from their ward for one-third of their time: three sessions per week. This could increase to 2 days per week if the protected learning time required by the *Quality criteria for General Internal Medicine (GIM) and Acute Internal Medicine (AIM) Registrars* is implemented.³⁵

Surge planning and escalation protocols

There can be considerable variation in both the availability of clinical staff and the number of patients who require medical care. It is not, however, realistic to expect that sufficient staff to deal with all surges in demand in every clinical area can be rostered to work every day.

There should be sufficient flexibility in medical practice to accommodate some days that are busier than average. However, it is also essential that there are robust processes in place to respond to surges in activity that challenge safe and timely patient care.

To ensure continuing safe medical staffing, hospitals should:

- 1 calculate routine staffing requirements, for example for the care of patients who present acutely on the medical intake, on the basis of the number of patients on the 80th centile of daily demand
- 2 have effective mechanisms that monitor continuously for surges in activity that compromise safe patient care
- 3 have agreed and effective mechanisms for responding to such surges in activity
- 4 review routine staffing requirements if surge triggers are activated on a frequent basis (ie no more than once a week on average).

Audit of timely medical care

We have previously commented that we consider the timeliness of the provision of care to be a good indicator of appropriate levels of medical staffing. Hospitals should therefore carry out routine audits of the timeliness of the delivery of medical care in all contexts, using the examples suggested at the end of each section of this report.

Limitations to our work – real and potential

We have looked for evidence and found much anecdotal but little objective numerical data on staffing levels and their relationship to patient outcomes.²⁹

We have sought to describe only the staffing of what we consider to be the core services for inpatient care within a hospital. We have not attempted to include, for example, the staff required for essentially outpatient-based disciplines such as dermatology or specialties that are not normally involved with the acute medical intake.

We recognise that in some larger hospitals there may be parallel medical intakes in specialities such as cardiology. The RCP Medical Registrar Survey (Appendix 2) demonstrated that one-third of respondents' hospitals had resident cardiology registrars. This makes it likely that there is some degree of selected cardiology intake that we have not captured.

Section 1: Patients presenting acutely to hospital with medical problems

Authors: Dr John Firth, Dr Abigail Moore, Dr Chris Subbe

Editor: Dr Rhid Dowdle

- 1.1 This section of the report describes the medical or alternative staffing required to provide safe, timely and effective care for patients who present acutely to hospital with medical problems. Patients normally present to hospital with acute medical problems in one of two ways. They may be referred directly to the 'on-take' medical team by their GP or other primary care service. Alternatively, they may present directly or indirectly to the emergency department where, after review by emergency physicians or other specialists such as surgeons, they are referred to the 'on-take' medical team.
- 1.2 We recommend that the adequacy of the numbers of medical staff is validated by an audit of performance in managing patients who present with acute medical problems. Our recommendations for audit topics can be found at the [end of this section](#).

In scope

- 1.3 This section deals with the medical or equivalent staffing requirements for dealing with patients who present acutely to hospital with medical problems. This begins at their presentation to hospital services and continues until they are discharged or admitted to hospital and a ward-based medical team takes over. It includes patients who are seen for initial assessment in emergency admissions avoidance clinics.

Out of scope

- 1.4 This section does not deal with other matters that medical staff who are involved in dealing with acute patients are frequently required to deal with simultaneously (eg managing medical inpatients and surgical referrals). These matters are considered in [Section 4](#).
- 1.5 This section also does not deal with the care of patients who are managed by ambulatory emergency care (AEC) after their initial assessment. Their subsequent care may be provided either directly through the AEC unit, by community services, by primary care or by Hospital at Home.³⁶

Approach

From a system perspective

- 1.6 We estimate the staff required to provide safe, timely and effective care for all patients who present to a hospital with acute medical problems over a 24-hour period by aggregating individual patients' requirements. For example, if a hospital is seeing X patients each day, they need A hours of Tier 1 time, B hours of Tier 2 time, and C hours of Tier 3 time to provide a safe and effective service.
- 1.7 The distribution of medical staffing that is recommended in this section needs to reflect the workload over a 24-hour period and must include time for handover between the staff of various shifts.
- 1.8 Hospitals that provide care for acutely ill medical patients vary considerably in size. Smaller hospitals have a single acute assessment team led by general physicians. Larger hospitals may have some specialty-specific acute assessment teams. There is no evidence to suggest that the total amount of clinical time that is needed to assess a given number of patients differs between the two models. We have therefore described the staffing of hospitals as a single assessment pathway.

Particular considerations

Variation in consultant working patterns

- 1.9 Consultants can lead care or they can deliver care, and there is a continuum between the two. Consultant-delivered care occurs when the consultant provides a substantial amount of the 'hands-on' medical care of the patient. Consultant-led care occurs when the consultant supervises and takes responsibility for the 'hands-on' clinical care of the patient that is delivered by others.
- 1.10 A consultant may lead care for one patient and deliver care for the next. Delivering care takes longer than leading care and we recognise this when making recommendations about time requirements.

Traditional working patterns and an unintended consequence of change

- 1.11 In the traditional medical model a patient was first assessed by a junior doctor, then presented to a middle-grade doctor to determine an immediate management plan and

then finally presented to a consultant to develop a definitive longer-term management plan. This traditional model was good for some elements of training, but it did not give patients the rapid access to senior decision makers that provides the highest quality care.^{37,38}

- 1.12 The welcome and appropriate deployment of medical consultants in emergency departments and AMUs, while allowing early senior decision making,²⁶ has had the unintended consequence of changing the role of the medical registrar. To be trained as consultants of the future, medical registrars need to be able to function as senior decision makers in Tier 2 and not be squeezed out of this role.^{39–41} This requires a particular style of collaborative working with consultants, to ensure that medical registrars acquire the opportunistic teaching and experience that they need throughout their training.

Medical input required to service the medical take

- 1.13 Initial assessment and management of individual patients includes:

- history taking
- physical examination
- establishing a working diagnosis
- organising and reviewing investigations
- assessing key risks such as thromboembolism, acute kidney injury and sepsis
- determining an appropriate monitoring regimen
- instigating initial treatment
- communicating with relatives and carers.

- 1.14 While working 'on-take', the medical registrar (Tier 2) and consultant (Tier 3) will often be involved in discussions with nursing, surgical and managerial colleagues about the running of the take, eg incoming referrals, referrals to other specialties, bed placement etc. The best evidence³¹ suggests that 30–70% of medical staff time is spent on such essential activities, which are inextricably linked with the provision of clinical care. In our modelling assumptions for this section, we have taken account of the time needed for such indirect patient care in our overall estimates of the time needed for specific activities.

- 1.15 When they are on call, Tier 2 doctors may also have roles and activities that are unrelated to the new-patient assessment process, such as membership of the hospital's cardiac

arrest team or providing urgent medical opinions on the ward. The staffing requirements of these additional activities are considered separately in [Section 4](#).

The severity and complexity of patient presentations

1.16 The 2013 Society for Acute Medicine Benchmarking Audit (SAMBA)⁴² found that 84% of over 2,000 acutely presenting patients had a National Early Warning Score (NEWS) of 4 or less. Our recommendations are therefore based on the assumption of an 80:20 rule:

- 80% of patients are appropriately managed with initial assessment by a Tier 1 clinician, followed by subsequent assessment by a Tier 2 or Tier 3 doctor
- 20% of patients require initial management by a Tier 2 or Tier 3 doctor.

1.17 Patients who have a high likelihood of prompt discharge after their initial assessment may be selected for that assessment to be carried out by a Tier 2 or Tier 3 doctor. Both such doctors have the capacity to discharge the patient without further consultation.

Modelling assumptions

1.18 We describe three working patterns for on-take medical staffing, depending on what care patients need. We allocate the average amounts of medical time that each patient needs on the basis of the available evidence, combined with the experience and expertise of the members of the working party.

1.19 We stress that Tier 1 assessment may be by:

- a a junior doctor working in the medical team
- b a junior doctor working in another clinical team (eg in emergency medicine)
- c another clinician who has appropriate competencies, such as a physician associate.

Table 2 Timings for tasks undertaken by members of the medical assessment and admission team

Tier 1	1.5 hour per patient, whether or not they perform the initial assessment, as there are tasks that arise following the initial assessments of all patients that are carried out by the Tier 1 clinicians, even if they were not the initial assessor
Tier 2	1 hour per patient if performing the initial assessment
	25 minutes (0.42 hour) per patient when Tier 1 presents to Tier 2, including tasks following such discussion
	25 minutes (0.42 hour) per patient for presentation and discussion with Tier 3 and tasks following such discussion
Tier 3	1 hour per patient if performing the initial assessment
	50 minutes (0.84 hour) per patient if directly reported by Tier 1, including tasks following such discussion
	25 minutes (0.42 hour) per patient if reported following Tier 2 assessment, including tasks following such discussion

1.20 Our models will only deliver care efficiently if the supply of doctors or other clinicians who are available to assess and treat patients is closely mapped to demand at all times over the 24 hours. If it is not, queues will build up and patient care will be delayed.

Working patterns

1.21 Our three working patterns are:

- a Tiers 1, 2 and 3 are all present in the emergency department or AMU
- b Tiers 1 and 2 are present, with Tier 3 involved in 'post-take review'
- c Tiers 1 and 3 are present, without Tier 2.

1.22 Although consultant responsibility for direct patient care differs significantly in the three models, the consultant on-call is still responsible for the general management of the medical intake.

1.23 We recognise that a formal post-take ward round may be led by a Tier 2 doctor as part of their training, as recommended by the Joint Royal Colleges of Physicians Training Board (JRCPTB).³⁵ There must be consultant oversight of such ward rounds.

Partly consultant-delivered care, with consultant presence and early involvement in the emergency department and the AMU

1.24 When all three Tiers of clinicians are present, a cohort of 10 patients will be managed as follows:

- four patients will be initially assessed by Tier 1 and reported directly to Tier 2
- four patients will be initially assessed by Tier 1 and reported directly to Tier 3
- one patient will be initially assessed by Tier 2 and reported to Tier 3
- one patient will be initially assessed by Tier 3.

The input required by Tiers 1, 2 and 3 will be as shown in Fig 1.

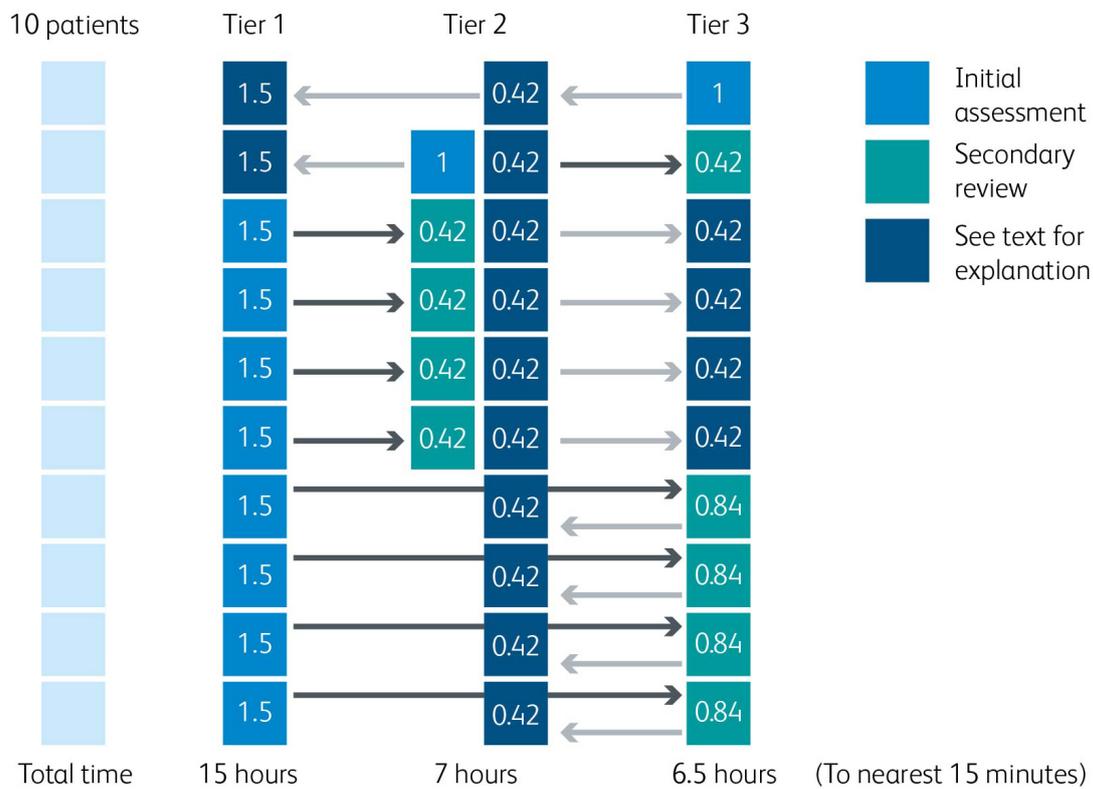


Fig 1 Partly consultant-delivered care – input required by Tiers 1, 2 and 3. The numbers within the boxes indicate the time spent by the clinician for each patient episode.

To assess 10 patients satisfactorily requires:

Tier 1 time – 15 hours

Tier 2 time – 7 hours

Tier 3 time – 6.5 hours

Planned consultant-led care, without an immediate consultant presence in the emergency department and the AMU, but with consultant-led post-take ward rounds

1.25 When Tier 1 and Tier 2 clinicians are present, a cohort of 10 patients will be managed as follows:

- eight patients will be initially assessed by Tier 1 and reported directly to Tier 2
- two patients will be initially assessed by Tier 2
- all patients will be reviewed by Tier 3.

The input required by Tiers 1, 2 and 3 will be as in Fig 2.

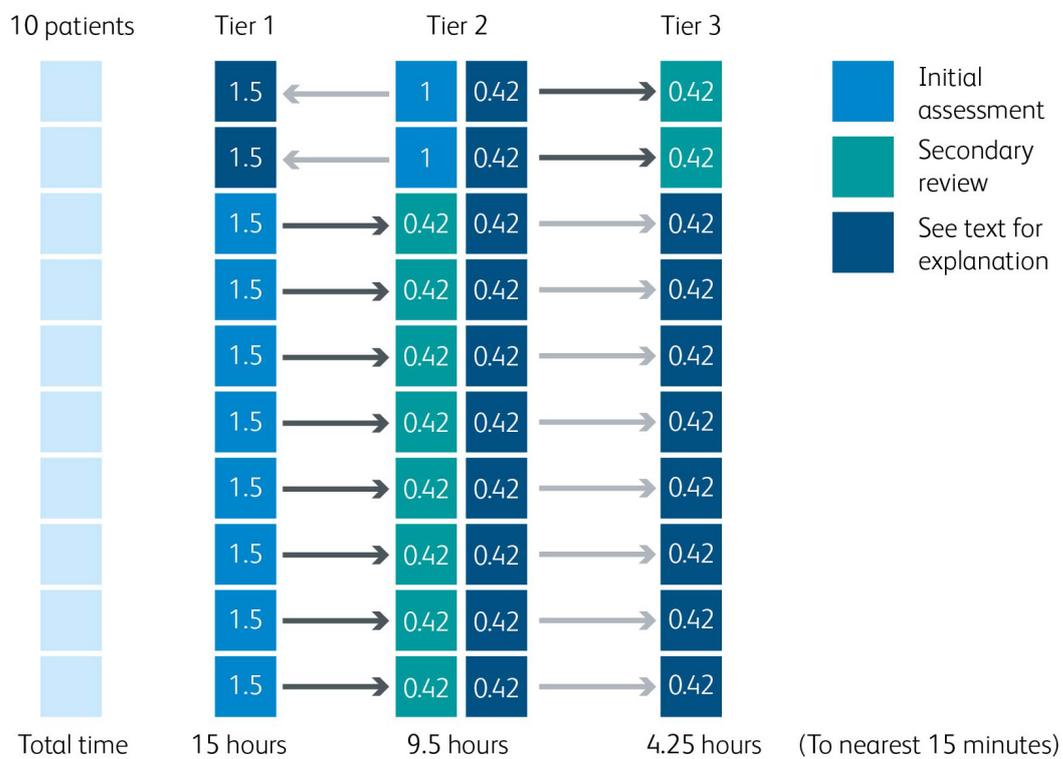


Fig 2 Planned consultant-led care – input required by Tiers 1, 2 and 3. The numbers within the boxes indicate the time spent by the clinician for each patient episode.

To assess 10 patients satisfactorily requires:

Tier 1 time – 15 hours

Tier 2 time – 9.5 hours

Tier 3 time – 4.25 hours

Planned consultant-delivered care

1.26 When only Tier 1 and Tier 3 clinicians are involved, a cohort of 10 patients will be managed as follows:

- eight patients will be initially assessed by Tier 1 and reported directly to Tier 3
- two patients will be initially assessed by Tier 3.

The input required by Tiers 1 and 3 will be as in Fig 3.

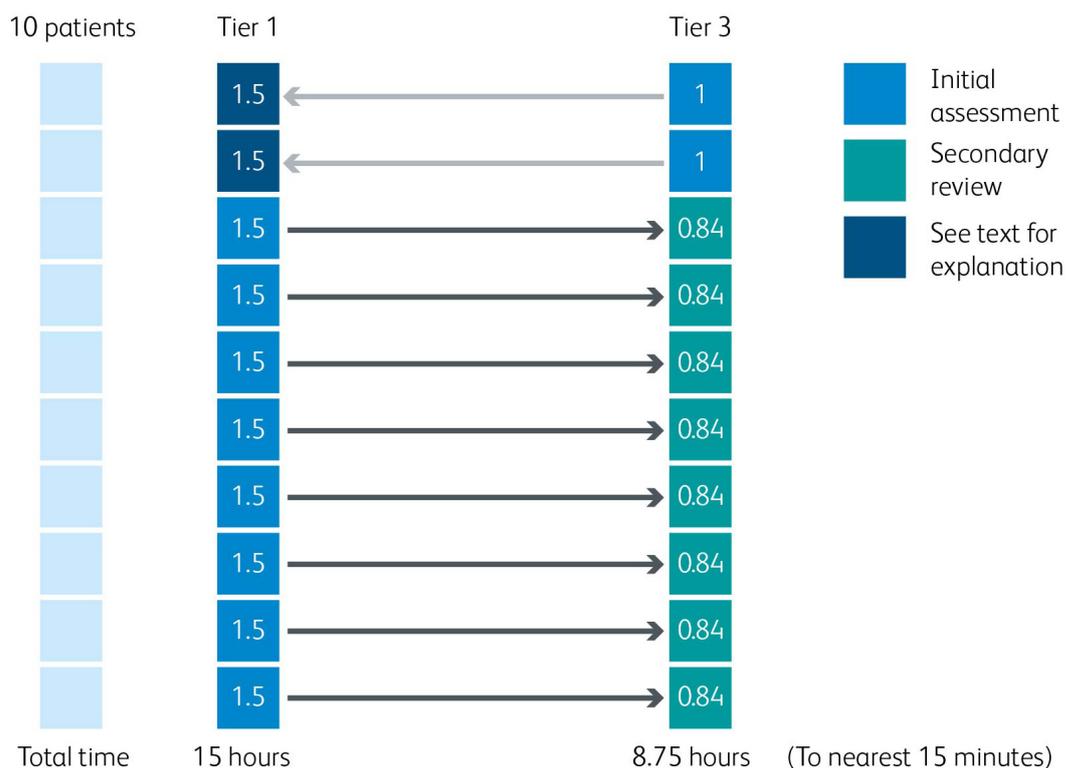


Fig 3 Planned consultant-delivered care – input required by Tiers 1 and 3. The numbers within the boxes indicate the time spent by the clinician for each patient episode.

To assess 10 patients satisfactorily requires:

Tier 1 time – 15 hours

Tier 3 time – 8.75 hours

Recommended audit topics and standards

1.27 In addition to reviewing incident reports and complaints, we recommend that the adequacy of the numbers of medical staff is validated by audits of performance in managing patients who present with acute medical problems. We therefore suggest the following audit topics:

- a review of patients who present acutely with medical problems by a Tier 2 or Tier 3 doctor within 4 hours of arrival in the emergency department / medical admissions area:

Standard = 95%

- b drugs charted and fluids prescribed (when required) before patients are transferred from the emergency department / medical admissions area to a ward:

Standard = 100%

- c antibiotics administered to patients with possible sepsis before they are transferred from the emergency department / medical admissions area to a ward:

Standard = 100%

Section 2: Medical staffing of the medical wards by day, Monday to Friday

Authors: Dr Druin Burch, Dr Jodie Sabin

Editor: Dr Rhid Dowdle

- 2.1 In this section we describe the medical or equivalent staffing that is needed to ensure safe, timely and effective care of medical patients following their admission to hospital, with no daytime tasks being left unattended or unfinished for the out-of-hours teams to complete owing to a lack of personnel. As there is much variation in the way individual medical wards function, we recommend that the adequacy of the number of staff on a medical ward is validated by an audit of the ward's performance. Our recommended topics for audit can be found at the [end of this section](#).
- 2.2 We define the normal working week of a medical ward to be 9am to 5pm, Monday to Friday. These are the hours during which all support services are routinely available, both within the hospital and in the community.
- 2.3 One medical ward may host a number of medical teams (sometimes of different medical specialties) working in a variety of ways. The involvement of a number of medical teams in the management of patients on a single ward may bring inefficiencies in the working practices of that ward. For the sake of simplicity, we have assumed that the overall medical staffing needs of a ward's patients will be similar, irrespective of the working patterns of the individual medical teams working on the ward. Accordingly, we have considered the needs of a ward as a whole rather than trying to describe the needs of a variety of medical teams that manage patients in a number of areas.
- 2.4 We have included the care of medical patients on outlying wards as part of the remit of this section, recognising the inefficiencies and hazards that are inherent in this way of working.⁴³
- 2.5 The medical staff required to manage a medical ward during the normal working week may have additional responsibilities that are unrelated to their clinical ward work, such as outpatient clinics and investigational sessions. This is particularly the case for Tier 2 doctors, who can be expected to spend 3 half-days per week in scheduled activities away from their base ward. The issue is so much more complicated for Tier 3 consultants that we have made no attempt to compensate for similar activities in this group.

- 2.6 It is a reasonable and basic requirement that every patient on a medical ward is seen by a member of the medical team who is responsible for their care on every normal working day. This routine care may take the form of a consultant ward round in which all the available team are present, or it may involve doctors of other Tiers doing a ward round independently or with varying degrees of supervision.

Daily tasks

- 2.7 We have accepted the recommendations of the Academy of Medical Royal Colleges, NHS Improvement and NICE Guideline 94 regarding the routine schedule of work on medical wards.^{10–13}
- 2.8 We have taken into account the additional time needed to accommodate unexpected emergencies and other events and interruptions in the daily work of clinicians of all Tiers, as described by Tipping *et al.*³¹ These events were estimated to occupy 30–70% of a doctor's working time, and other studies have come to similar conclusions.^{32–34,44} We have recognised this emergency and indirect clinical activity explicitly for each Tier of clinicians as unplanned care.

The assessment of a new patient following transfer to a medical ward

- 2.9 The following time allowances should be made when a new patient arrives on a medical ward from whatever source.
- a 10 minutes per patient to receive any handover, to read the patient's case notes and to see and speak to the patient.
 - b This includes the time needed to communicate with the relevant nurse and to discuss the patient's care plan and the level of care needed.
 - c We would expect that this initial assessment would usually be undertaken at the patient's bedside by a consultant, or by a Tier 2 doctor in the absence of a consultant.
 - d Ideally, patients should have their initial assessment by a Tier 2 doctor or consultant on the day of their transfer to the medical ward, but transfers late in the day may prevent this. As a minimum standard, all newly transferred patients should be seen by a consultant on the day following their transfer to the ward.⁴⁵

Clinical tasks that arise following the admission of a new patient to a medical ward

2.10 We suggest that *10 minutes* of Tier 1 time per patient is required for the routine tasks that arise when a patient is transferred to a new ward.

Basic daily ward tasks

2.11 The following are basic activities that should take place every day.

- a *Board rounds*^{46,47} – it has become common practice to review patients' progress in a brief clinical meeting. This is termed a 'board round' and can be used in addition to orthodox ward rounds. A board round should be a daily occurrence on every medical ward and should precede any other elective ward activity. We estimate that a board round for 30 patients will take approximately *30 minutes*.
- b Every unwell medical patient should be seen by a Tier 2 doctor and their consultant every day, unless it has been determined that this would not affect the patient's care pathway.⁴⁷
- c All newly transferred patients should be seen by their consultant at the earliest opportunity.⁴⁷
- d Every medical inpatient should be seen by a Tier 1 (or more senior) clinician on every normal working day.

Formal ward rounds

2.12 In addition to these basic activities, formal ward rounds that are led by consultants and/or Tier 2 doctors are usual in most hospitals. The number of reviews by clinicians of different Tiers can vary substantially. We have assumed that at least two consultant-led ward rounds take place each week. Formal ward rounds are also led by Tier 2 doctors as an essential part of their training, as recommended by the JRCPTB,⁴⁸ but there must be consultant supervision or availability, depending on the seniority of the trainee.

2.13 Good advice on the conduct of a ward round is provided in the document *Ward rounds in medicine: principles for best practice*, produced jointly by the RCP and the RCN.⁴⁶ We agree that a senior nurse should be present at every bedside patient review as part of the ward round.

The Tier 1 ward round – the daily ward round

- 2.14 We suggest that 7 minutes per patient is allowed for Tier 1 review, based on the work of Herring *et al.*⁴⁹ They found that an average of 10 minutes was spent with each patient on a formal consultant-led ward round of follow-up patients.
- 2.15 As all patients will have been reviewed at the daily board round and new and unwell patients will have been previously seen that day by Tier 2 and 3 doctors, it is evident that the Tier 1 ward round of the remaining patients will require less than 10 minutes per patient.
- 2.16 It is also to be expected that only a minority of the patients who are seen on the Tier 1 ward round will require further discussion of their care plan with a Tier 2 or 3 doctor from the patient's team.

The Tier 2 ward round – the registrar ward round

- 2.17 It is an essential part of specialty registrar training that Tier 2 doctors undertake ward rounds. When a Tier 2 ward round does take place, we suggest the following timings.
- a Tier 2 review – 7 minutes per patient.
 - b This estimated time is based on the same logic that has been used to determine the time needed for the Tier 1 ward round.
 - c The Tier 1 doctor is likely to be in attendance and therefore 7 minutes of their time is also consumed.
 - d Some additional time may be required for discussion of the proposed care plans with a Tier 3 consultant, depending on the seniority and experience of the Tier 2 doctor.

The Tier 3 ward round – the consultant ward round: typically two or three times a week

- 2.18 We have described evidence that the average time needed to see a patient on a routine consultant-led ward round is 10 minutes (Paragraph 2.14).⁴⁹
- 2.19 All patients will have been discussed at the board round, and new and unwell patients will have been seen by the medical team before the start of the routine ward round. We estimate that the time required to review the remaining patients is 7 minutes per patient, on average.
- 2.20 Tier 1 and Tier 2 clinicians and doctors are likely to be in attendance, consuming the same amount of their time: 7 minutes per patient.

Review of care plans and additional clinical tasks following a ward round

2.21 We suggest that *2 minutes* per patient is a reasonable time for review of care plans and *5 minutes* is reasonable for undertaking additional clinical tasks following a ward round. A minority of patients will require time-consuming jobs, such as the requesting of complex investigations and discussions with other clinicians. This time is likely to be shared by Tier 1 and Tier 2 clinicians.

Multidisciplinary team meetings and other informal clinical discussions

2.22 Formal multidisciplinary team (MDT) meetings do not necessarily form part of every ward round. Other discussions with allied health professionals take place frequently but informally.¹²

2.23 We suggest that *1 minute* per patient per day is a reasonable estimate for the amount of time that is needed for both formal MDT meetings and other discussions. We base this estimate on the presumption that, for most patients, the time required to review them in an MDT meeting is considerably shorter than 1 minute, while for a few patients it is very much longer. This time applies to all Tier 1, 2 and 3 clinicians and doctors.

Meetings with families

2.24 All interactions with patients should include sufficient time for care plans to be discussed and developed with the patient and those closest to them.

2.25 Based on a standard ward of 30 patients, there will be an average of three clinician meetings with patient families each day. Each will last approximately *15 minutes*, totalling 45 minutes per day. This interaction is likely to involve only one member of the clinical team on each occasion, although it may sometimes involve more.

Discharging a patient

2.26 We suggest *20 minutes* per patient is allowed for arranging their discharging. This is likely to be predominantly Tier 1 time. The time involved will depend partly on each hospital's record-keeping system, how efficient any electronic patient record is, and to what extent it can utilise information from earlier patient encounters.

The impact of length of stay

2.27 The length of time that patients spend on a medical ward is one of the determinants of medical staffing needs. We have explored the implications of various lengths of stay.

The impact of patient frailty, multiple comorbidity and cognitive impairment

2.28 We recognise that most patients who are on geriatric medicine wards will have moderate to severe levels of frailty, and that managing older people with frailty requires more time compared with patients who are robust, wherever they are in the hospital. Caring for patients who have cognitive impairment also brings additional challenges. Careful and thoughtful dialogue with patients and their families and carers, including information gathering from their collateral histories, is time-consuming but essential for the safe care of older people with frailty, particularly if they are unable to represent themselves adequately. The appropriate medical staffing of wards that have high concentrations of patients with moderate to severe frailty should be explored and assured by local audit. Medical ward staffing should always meet the patients' needs.

The impact of high patient acuity and high care areas

2.29 A similar situation pertains to wards with large numbers of unwell patients, particularly when the ward includes a level 1 enhanced care area²¹ or a level 2 medical high dependency unit. Our recommended staffing numbers are intended to be indicative rather than definitive and they should always be validated or modified by the results of appropriate audits. We consider the timeliness of the delivery of care to be an important marker of safe medical staffing.

A 30-patient medical ward

2.30 For the sake of simplicity, we have assumed the following.

- a Patient admissions and discharges take place to the same degree on every day during the working week.
- b Patients are formally reviewed every day. The working patterns of all clinical staff are changing and there are already many different models, but as a starting point we have described a traditional style of practice with:
 - i a daily assessment of all new and unwell patients involving all Tiers of staff

- ii a daily board round lasting 30 minutes
 - iii two or three consultant-led ward rounds per week, involving Tiers 1, 2 and 3
 - iv one or two Tier 2 led ward rounds per week, involving Tiers 1 and 2
 - v one, two or three Tier 1 ward rounds per week, involving Tier 1 only.
- c A proportion of the patient care that is delivered by Tier 1 clinicians may be undertaken by Tier 2 doctors. For example, the handover and review of a new and particularly unwell patient might be more appropriately carried out by a Tier 2 doctor than a Tier 1 clinician, at the earliest opportunity.
- d Similarly, a proportion of the time spent in direct patient care by Tier 2 might be undertaken by Tier 3 consultants.
- e Our general recommendation is that calculations of staffing needs should be based on the value of 80% of that services' maximum demand. For our ward staffing calculations we have used the total number of beds, in effect taking the bed occupancy to be 100%. We have done this because:
- i medical bed occupancy is currently approaching 100%⁵⁰
 - ii the staff of a medical ward also provide for the needs of patients who are under the care of that ward's medical teams but who are not present on that ward: the ward's medical outliers.^{‡,43}

[‡] Inpatients who a medical team has clinical responsibility for but who are not accommodated on the team's ward (ie they are located elsewhere). Such patients are also sometimes referred to as 'boarders'.

Tier 1 clinicians**Table 3** Tier 1 time on a day without a Tier 2 or Tier 3 led ward round – 30-bed ward, LoS 6 days

Patients	Task	Tier 1 time (minutes)
All	Daily board round	30
5 new patient admissions	Handover and assessment (10 minutes per patient with Tiers 2 and 3)	50
5 new patient admissions	Clinical tasks arising (10 minutes per patient)	50
25 pre-existing patients	Review (7 minutes per patient)	175
	Review of care plans with Tiers 2/3 (2 minutes per patient)	50
25 pre-existing patients	Clinical tasks arising (5 minutes per patient)	125
Discharge process	Five per day, 20 minutes per patient	100
All	Unplanned and indirect patient care	300
Total		880

This equates to approximately 14.5 hours of Tier 1 time, equivalent to two full-time Tier 1 clinicians being present on the ward daily.

Table 4 Tier 1 time on a day with a Tier 2 or Tier 3 led ward round – 30-bed ward, LoS 6 days

Patients	Task	Tier 1 time (minutes)
All	Daily board round	30
5 new patient admissions	Handover and assessment (10 minutes per patient with Tiers 2 and 3)	50
5 new patient admissions	Clinical tasks arising (10 minutes per patient)	50
25 pre-existing patients	Ward round (7 minutes per patient)	175
25 pre-existing patients	Clinical tasks arising (5 minutes per patient)	125
Discharge process	Five per day, 20 minutes per patient	100
All	Unplanned and indirect patient care	300
Total		830

This equates to approximately 14 hours of Tier 1 time, equivalent to two full-time Tier 1 clinicians being present on the ward daily.

Tier 2 senior clinicians

2.31 We assume that the Tier 2 doctors:

- take part in the daily board round
- lead ward rounds when Tier 3 doctors do not
- take part in the reception of new patients every day
- discuss the pre-existing patients with the Tier 1 clinicians following the Tier 1 ward round on days when there is no formal ward round.

Table 5 Tier 2 time on a day without a Tier 2 or Tier 3 led ward round – 30-bed ward, LOS 6 days

Patients	Task	Tier 2 time (minutes)
All	Daily board round	30
5 new patient admissions	Handover and assessment (10 minutes per patient with Tiers 1 and 3)	50
25 pre-existing patients	Review of care plans with Tier 1 clinician (2 minutes per patient)	50
All	General patient care and meetings with families and other health professionals	30
All	Unplanned and indirect patient care	100
Total		260

This equates to 4.5 hours of Tier 2 (medical registrar) routine daily presence on the ward.

Table 6 Tier 2 time on a day with a Tier 2 or Tier 3 led ward round – 30-bed ward, LOS 6 days

Patients	Task	Tier 2 time (minutes)
All	Daily board round	30
5 new patient admissions	Handover and assessment (10 minutes per patient with Tiers 1 and 3)	50
25 pre-existing patients	Ward round (7 minutes per patient)	175
All	General patient care and meetings with families and other health professionals	30
All	Unplanned and indirect patient care	120
Total		405

This equates to 7 hours of Tier 2 (medical registrar) presence on the ward when ward rounds occur.

Tier 3 doctors

2.32 We assume that a Tier 3 consultant is present for some period on the ward each day. This may be to:

- take part in the daily board round
- assess newly arrived patients
- review particularly unwell patients
- lead a consultant ward round.

Table 7 Tier 3 time on a day without a consultant-led ward round – 30-bed ward, LoS 6 days

Patients	Task	Tier 3 time (minutes)
All	Daily board round	30
5 new patient admissions	Handover and assessment (10 minutes per patient with Tiers 1 and 3)	50
All	General patient care and meetings with families and other health professionals	30
All	Unplanned and indirect patient care	50
Total		160

This equates to 2.5 hours of Tier 3 (consultant) routine daily presence on the ward.

Table 8 Tier 3 time on a day with a consultant-led ward round – 30-bed ward, LoS 6 days

Patients	Task	Tier 3 time (minutes)
All	Daily board round	30
5 new patient admissions	Handover and assessment (10 minutes per patient with Tiers 1 and 3)	50
25 pre-existing patients	Ward round (7 minutes per patient)	175
All	General patient care and meetings with families and other health professionals	30
All	Unplanned and indirect patient care	100
Total		385

This equates to 6.5 hours of Tier 3 (consultant) routine daily presence on the ward.

The ward round itself, including the preceding board round and handover and assessment of new patients, is estimated to take 4 hours and 15 minutes.

Summary of recommended daily staffing for a 30-bed medical ward

Table 9 Recommended daily staffing for a 30-bed medical ward – per tier

Tier	Formal ward round day	LoS (days)	Hours of work	Number of staff needed
1	No	6	14.5	2
1	Yes	6	14	2
1	No	4	16	2
1	Yes	4	15	2

Tier	Formal ward round day	LoS (days)	Hours of work	Number of staff needed
2	No	6	4.5	0.5
2	Yes	6	7	1
2	No	4	4.5	0.5
2	Yes	4	7	1

Tier	Formal ward round day	LoS (days)	Hours of work	Number of staff needed
3	No	6	2.5	0.25
3	Yes	6	6.5	1
3	No	4	3	0.25
3	Yes	4	6.5	1

Interpretation of the staffing summary

2.33 We found little difference in the staffing requirements of wards with lengths of stay of 4 days and 6 days. We have therefore used a length of stay of 6 days in our subsequent calculations.

The time that the various Tiers of clinicians need to be present on the ward each week**Table 10** Time to be present on the ward each week

Tier	Daily hours of work	Hours of work per week
1	(3 days × 14 hours) + (2 days × 14.5 hours)	71
2	(3 days × 7 hours) + (2 days × 4.5 hours)	30
3a (three consultant ward rounds)	(3 days × 6.5 hours) + (2 days × 2.5 hours)	24.5
3b (two consultant ward rounds)	(2 days × 6.5 hours) + (3 days × 2.5 hours)	20.5

2.34 We found that when two rather than three consultant-led ward rounds take place, Tier 3 consultants need to be present on the ward for 4 hours less per week. However, where a Tier 2 ward round replaces the third consultant-led ward round, some consultant time may be needed for subsequent discussion with the Tier 2 doctor. The time that the Tier 2 doctors need to be on the ward is only minimally changed when two rather than three consultant-led ward rounds take place.

2.35 *Tier 1 clinicians need to be present on the ward for 71 hours each week.*

Two Tier 1 clinicians are needed for most of the day, every day, irrespective of whether a formal ward round takes place or not. They may be doctors in training at Tier 1 or alternative staff with equivalent capabilities.

2.36 *Tier 2 doctors need to be present on the ward for 30 hours each week.*

One Tier 2 doctor is needed for most of the day on every day when there is a formal ward round and for half of the day on other days. There must always be a Tier 2 doctor immediately available, even if they are not present on the ward.

2.37 *Tier 3 consultants need to be present on the ward for between 20.5 and 24.5 hours each week.*

One Tier 3 consultant is needed for most of the day when there is a consultant ward round and for 2.5 hours on other days. There must always be a consultant immediately available, even if they are not present on the ward.

2.38 Our figures estimate the length of consultant-led ward rounds to be approximately 4 hours for a 30-bed ward ([Table 8](#)). This appears to be in accord with the general experience of the members of the working party.

Recommended audit topics and standards

2.39 As there is much variation in the way individual medical wards function, we recommend that the adequacy of the numbers of staff on medical wards is validated by audits of the wards' performance. In addition to reviewing incident reports and complaints, we therefore suggest the following audit topics for medical ward staffing:

- a the volume of legacy work left to be completed by the hospital's out-of-hours emergency team:

Standard = less than 30 minutes per on-call period

- b completion of bedside review by a Tier 2 or 3 doctor of all patients who are defined as requiring it on every weekday:

Standard = 100%

- c completion of consultant review of new patients before the end of the next day:

Standard = 100%

2.40 Failure to meet some or all of the above standards should lead to a review of the staffing of the ward or its workload.

Section 3: Medical staffing of the medical wards by day on weekends and public holidays

Authors: Dr Mike Jones, Dr Nigel Trudgill, Dr Aveen Connolly

Editor: Dr Rhid Dowdle

- 3.1 In this section we describe the staffing needed to ensure that safe, timely and high-quality medical care remains uniformly available throughout the week. To avoid unnecessary repetition, we will use the term ‘weekend’ to refer to both weekends and public holidays.
- 3.2 We recommend that the adequacy of the numbers of medical ward staff is validated by audit of the ward’s performance. Our recommended topics for audit can be found at the [end of this section](#).
- 3.3 Some aspects of non-urgent patient care may be reduced at weekends and on public holidays. Where such aspects have an impact on urgent care, such as the provision of services that enable a patient’s appropriate transfer of care from hospital to the community, they should be available every day. It is not in any patient’s best interest to be in hospital unnecessarily.⁵¹
- 3.4 Medical cover on weekends is usually significantly reduced when compared with weekdays. Arrangements for the care of patients by all Tiers of medical staff is likely to be based on a system of cross-cover.[§] Such care should be set at a level that is adequate for patients’ needs.
- 3.5 The care of medical patients on outlying wards, and of patients with medical problems whose care is shared with other disciplines, is included in this section. It is recognised that the care of medical patients in outlying wards is associated with significant inefficiencies.⁴³
- 3.6 We have assumed that the weekend and public holiday cover of a medical ward should be split into two time frames: 9am – 10pm and 10pm – 9am. It is acknowledged that rotas for many hospitals may well differ.

From a system perspective

- 3.7 There has been a steady increase in emergency work, especially out of hours. This can be attributed to factors such as reductions in patients’ length of stay; patients presenting with

§ When staff ‘cover’ for colleagues to provide care for patients when other members of staff are not available.

greater acuity of illness; and increasing numbers of older patients with frailty and multiple comorbidities. We have tried to define recommended levels of medical and alternative staffing based on patients' needs, acuity and risks.

- 3.8 The basic care that is delivered to medical inpatients should be no different on weekends and public holidays than it is during the normal working week. This approach is supported by the Academy of Medical Royal Colleges in its document *Seven Day Consultant Present Care*.^{13,47} Their standards are:
- a Hospital inpatients should be reviewed by an on-site consultant at least once every 24 hours, 7 days a week, unless it has been determined that this would not affect the patient's care pathway.
 - b Consultant supervised interventions and investigations, along with reports, should be provided 7 days a week if the results will change the outcome or status of the patient's care pathway before the next 'normal' working day. This should include interventions that will enable immediate discharge or a shortened length of hospital stay.
 - c Support services both in hospital and in the primary care setting in the community should be available 7 days a week. This will ensure that the next steps in the patient's care pathway, as determined by the daily consultant-led review, can be taken.
- 3.9 These standards are further augmented by the SAFER Patient Flow Bundle¹⁰ produced by NHS Improvement. It reiterates that consultants should conduct a daily ward round, and that sick patients and those who are identified for discharge should be prioritised and seen by 10am.
- 3.10 The Future Hospital Commission clearly stated that acutely ill medical patients in hospital should have the same access to medical care at weekends as on weekdays.⁵² Services should be organised so that clinical staff and diagnostic and support services are available on a 7-day basis. The level of care that is available in hospitals must reflect the patients' severity of illness.

The WayWard Project

- 3.11 The WayWard Project, conducted by the University of Nottingham, has reviewed task demand rates throughout the week. It demonstrates clearly that the on-call task demand

rate for many medical specialties increases significantly at the weekend. This is also true for non-medical specialities, including trauma and orthopaedics, as shown in Fig 4.

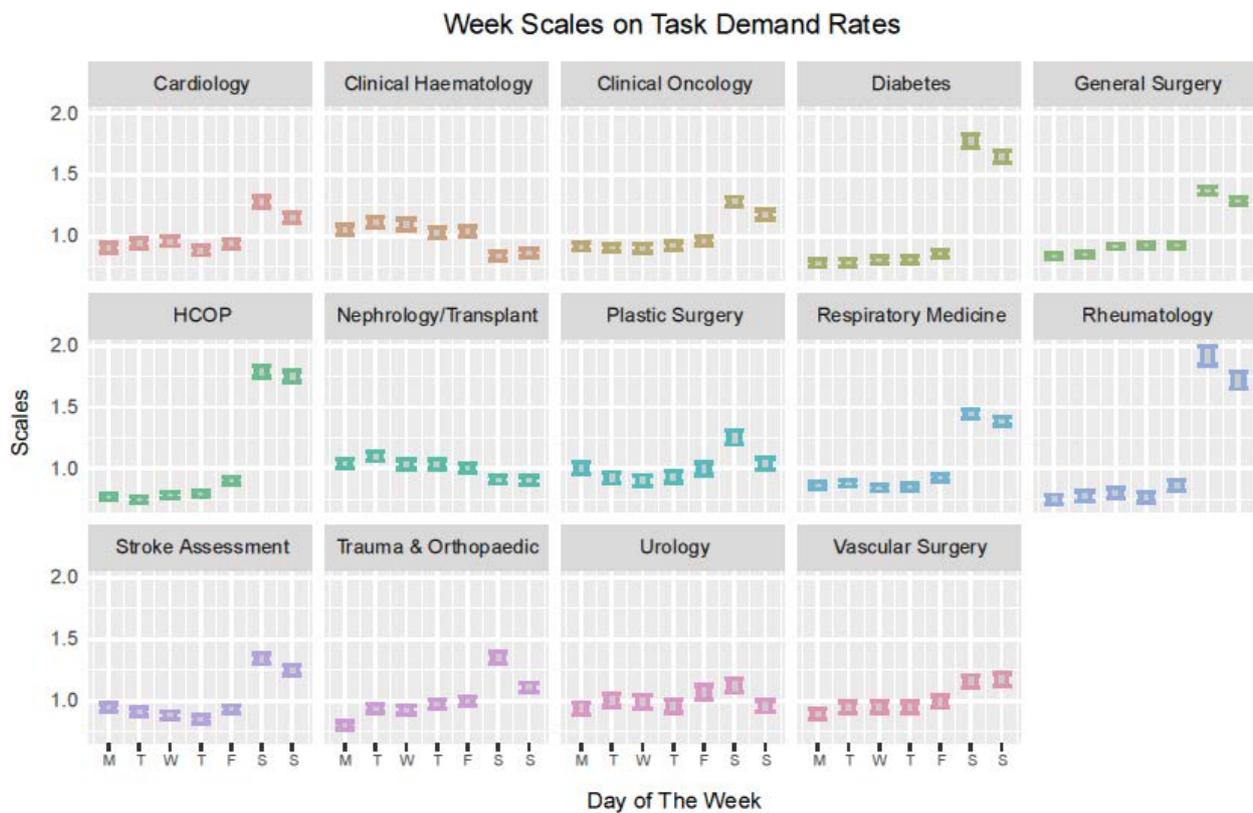


Fig 4 The WayWard Project – Nottingham Queen’s Medical Centre and Nottingham City Hospital: task demand rates by day of the week.

Reproduced from: Perez I, Brown M, Pinchin J *et al.* Out of hours workload management: Bayesian inference for decision support in secondary care. *Artif Intell Med* 2016;73:34–44. Copyright (2016), with permission from Elsevier.⁵³ HCOP = Health Care of Older People.

- 3.12 This increased demand for emergency care at weekends suggests that routine, structured ward care is currently inadequate over weekends, and that weekday preparations for medical tasks at the weekend are variable across wards and specialties.

Standards of medical inpatient care on weekends and public holidays

- 3.13 We recognise three standards of medical care that is available at weekends:
- a ‘Normal care’ – as on any other day of the week. This would be ideal, but there appears to be no prospect of support services in hospital or in the community being available uniformly throughout the week. In this situation, care would progress

normally throughout the weekend and the numbers of patients who are discharged from hospital care would be no different at the weekend.

- b 'Emergency care' – typical of the weekend care that is currently provided in many hospitals. In this situation the low levels of medical staffing that are committed to ward care are further constrained by reduced support services on the weekends, both in hospital and in the community. If emergency care alone is provided, patients will progress more slowly over the weekend and fewer patients will be discharged. There may also be issues of patient safety, as care is typically reactive rather than proactive.
- c 'Best practicable care' – the standard of weekend care that we consider to be potentially available, if there is:
 - i an appropriate level of medical staffing
 - ii greater provision of imaging and pathology services
 - iii provision of services to support discharge to the community.

3.14 Such additional services will clearly require an increase in funding. This should be offset, at least in part, by a shorter mean length of inpatient stay. What may be more problematic is the recruitment of appropriately trained and skilled staff to provide such services at weekends.

3.15 If the provision of care is the same at weekends as on weekdays, the ward staffing that is described in [Section 2](#) will apply. Accordingly, we will not discuss that further. Instead we will consider the spectrum between emergency care and best practicable care, and recognise that many hospitals operate systems that are somewhere between these standards.

Terminology of medical out-of-hours services

3.16 Clinicians who are committed to the routine care of medical inpatients at weekends are members of the weekend medical ward team. The consultants who are responsible for the care of medical patients who are already admitted to the hospital are therefore the weekend medical ward team consultants. Similar nomenclature applies to Tier 1 and 2 clinicians who work on the wards on weekends.

- 3.17 The extent to which the weekend medical ward team will share personnel with the medical team on-call and the medical assessment and admission team will vary between hospitals. It will depend mainly on the size of the hospital. Large hospitals may be able to support three separate teams. Smaller hospitals may need to have a single group of clinicians who fulfil all three roles.

The work of the weekend medical ward team

- 3.18 The basic elements of inpatient medical care have been described in [Section 2](#), but they require some modification for weekend working.
- 3.19 Before the start of the weekend, each ward's routine medical team should identify:
- a the patients who do not need to be seen over the weekend because such review will not affect their clinical progress – such patients may, of course, need to be seen if their clinical circumstances change unexpectedly
 - b the patients for whom clear criteria for discharge during the weekend have been drawn up – these patients should be discussed at the board round and be discharged by the weekend medical ward team when the criteria have been met.

Routine tasks

- 3.20 The following basic activities should take place every day over a weekend.
- a A board round should take place daily on every medical ward, led by a Tier 2 doctor or a consultant.^{46,47} This should precede any other ward activity and can be expected to last up to 30 minutes.
 - b A medical consultant should visit every medical ward every day. These visits should include the review of medical outliers on non-medical wards and outlying patients who are under shared care with other non-medical disciplines.
 - c The consultant should be supported by the numbers of Tier 1 and Tier 2 clinicians needed to carry out the planned weekend activities and respond to patients' new clinical needs.

- d Every unwell medical patient should be seen by a Tier 2 doctor daily and by the consultant on-call, unless it has been previously determined that this would not affect the patient's care pathway. An unwell patient might be categorised by having one or more of a number features:
 - i having been previously identified by the patient's usual medical team as requiring further review
 - ii being a cause for concern to the current nursing staff on the ward
 - iii having been seen urgently by the medical team on-call in the preceding 24 hours
 - iv having a NEWS2 of 5 or more.
- e All patients who are transferred to a new ward should be seen by the consultant who is responsible for their ward care within 24 hours of their transfer.
- f All patients who, prior to the weekend, are identified by the medical ward team as being potentially well enough for discharge over the weekend, and whose clinical state meets their discharge criteria, should be reviewed by a clinically competent practitioner and their discharge should be expedited.
- g Every medical inpatient should be seen by a Tier 1 (or more senior) clinician every day, unless it has been determined by the medical ward team prior to the weekend that doing so would not affect the patient's care pathway.

Schedule of work for the weekend medical team

- 3.21 Many routine laboratory, imaging and therapeutic services are not available in hospitals during weekends and public holidays. There are therefore limited opportunities to arrange further investigations or treatments for patients who undergo routine Tier 1 review. As a result, the usual weekday procedure of discussing patients' care plans after the Tier 1 review is not needed, unless there have been new developments.
- 3.22 We have taken into account the additional time needed to accommodate unexpected developments, emergencies and episodes of indirect patient care as described previously and we have made allowances for such activity explicitly for each Tier of clinicians as 'unplanned care' and 'indirect care'.

Tier 1 clinicians

Table 11 Tier 1 – 30-bed ward, LoS 6 days, 40% of patients not needing weekend review

Patients	Task	Tier 1 time (minutes)
All	Daily board round	30
5 new patient admissions	Handover and assessment (10 minutes per patient with Tiers 2 and 3)	50
5 new patient admissions	Clinical jobs arising (10 minutes per patient)	50
12 pre-existing patients	Not requiring review	0
13 pre-existing patients	Review (7 minutes per patient)	91
Discharge process	Five per day, 20 minutes per patient	100
All	Unplanned and indirect patient care	150
Total		471

This equates to 8 hours of Tier 1 time, equivalent to one full-time Tier 1 clinician being present on the ward daily.

Tier 2 senior clinicians

Table 12 Tier 2 – 30-bed ward, LoS 6 days, 40% of patients not needing weekend review

Patients	Task	Tier 2 time (minutes)
All	Daily board round	30
5 new patient admissions	Handover and assessment (10 minutes per patient with Tiers 1 and 3)	50
12 pre-existing patients	Not requiring review	0
All	Unplanned and indirect patient care	50
Total		130

This equates to 2 hours of Tier 2 (medical registrar) routine daily presence on the ward.

Tier 3 consultants

Table 13 Tier 3 – 30-bed ward, LoS 6 days, 40% of patients not needing weekend review

Patients	Task	Tier 2 time (minutes)
All	Daily board round	30
5 new patient admissions	Handover and assessment (10 minutes per patient with Tiers 1 and 3)	50
All	Unplanned and indirect patient care	40
Total		120

This equates to 2 hours of Tier 3 (consultant) routine daily presence on the ward.

- 3.23 We have carried out similar calculations for a ward where 20% of the patients have been identified as not requiring routine review over the weekend. The calculations can be found in Appendix 5 and a comparison of the two situations is shown in Table 14.

Summary of recommended daily weekend staffing for a 30-bed medical ward

Table 14 Recommended weekend staffing for a 30-bed medical ward

	Percentage of inpatients not requiring daily review	Number of inpatients not requiring daily review	Hours of work	Number of staff needed
<i>Tier 1</i>	20%	6	10	1.25
<i>Tier 1</i>	40%	12	8	1
<i>Tier 2</i>	20%	6	3	0.33
<i>Tier 2</i>	40%	12	2	0.25
<i>Tier 3</i>	20%	6	2	0.25
<i>Tier 3</i>	40%	12	2	0.25

Interpretation of the staffing summary

- 3.24 There is little difference in the weekend staffing requirements of wards with either 20% or 40% of patients not needing routine clinical review over the weekend. There is a slightly reduced need for Tier 1 presence on wards with 40% of patients not needing weekend review.

- 3.25 One Tier 1 clinician is needed on each ward all day, every day over the weekend. They may be doctors in training at Tier 1 or alternative staff with equivalent capabilities.
- 3.26 One Tier 2 doctor is needed for 2 hours on each ward, every day over the weekend. There must always be a Tier 2 doctor immediately available, even if they are not present on the ward.
- 3.27 One Tier 3 consultant is needed for 2 hours on each ward, every day over the weekend. There must always be a Tier 3 doctor available, even if they are not present in the hospital.³⁵

Unscheduled tasks

- 3.28 Unscheduled tasks have much in common with tasks that are managed by the medical team on-call. By definition, the amount of time that it takes to perform these tasks cannot be calculated in advance. The daily presence of a Tier 2 medical registrar for the 12 hours of greatest clinical activity in the hospital is recommended in Section 4 ([Paragraph 4.34](#)). That will support the care for patients who are suffering unexpected urgent medical problems on the weekends, both on medical wards and in non-medical locations.

Expected and predictable tasks

- 3.29 Expected and predictable tasks include those that all patients will require to ensure a safe episode of care in hospital. Examples include re-writing time-expired medication charts, routine prescriptions of oral anticoagulants and appropriate analgesia. These tasks are best performed by the staff of the routine ward team that is caring for the patient during the normal working week. Those staff have full clinical knowledge of the patient as well as clinical and governance responsibility.
- 3.30 Over a weekend the ward team will be depleted, and the efficiency with which these tasks are completed may vary. It will depend to a large extent upon the staffing of the wards and the efficiency of their working. Hospitals that provide adequate numbers of medical staff should seek to have efficient working practices and minimise the overall time that it takes to perform these tasks. It is likely that the majority of these tasks will fall to clinicians in Tier 1.

Expected but unpredictable tasks

- 3.31 Expected but unpredictable tasks cannot be quantified, but they will arise on all medical wards in an acute hospital. They include:
- a responding to requests made at handover for patient reviews for issues of patient acuity or to promote discharge
 - b reacting to a relapse of the condition that caused the patient's initial admission
 - c reacting to an acute deterioration in the clinical state of a previously stable patient due to a new acute medical problem
 - d newly occurring maintenance tasks such as re-acquiring failed venous access
 - e speaking with relatives.
- 3.32 It is likely that such tasks will fall to clinicians in both Tiers 1 and 2.

'External' referrals from non-medical areas for medical input

- 3.33 Assistance with the medical problems of non-medical patients is part of the role of the medical team in an integrated hospital service. Typical examples of such episodes are general deterioration or new infections in surgical patients; perioperative cardiac or pulmonary events; thromboembolism; acute kidney injury; and medical problems in maternity patients.
- 3.34 It is likely that responding to such requests will fall mainly to Tier 2 doctors, although incorporating Tier 1 clinicians into emergency response teams can influence this. It is increasingly clear that the role of the weekend medical team is of significant importance in providing support for patients in such non-medical settings. Providing such support is therefore an additional consideration in calculating the required medical staffing levels.

Recommended audit topics and standards

- 3.35 There is much variation in the way that individual medical wards function and our calculations provide indicative rather than absolute staffing numbers. Some hospitals may be able to provide a high-quality, timely and safe service with fewer personnel. But this must not be presumed to be the case without evidence to corroborate that presumption.
- 3.36 We recommend that the adequacy of the numbers of medical ward staff is validated by audits of the wards' performance. In addition to reviewing incident reports and

complaints, we therefore suggest the following audit topics for medical ward staffing at weekends:

- a the volume of legacy work that is left for completion by the hospital's out-of-hours emergency team:

Standard = less than 30 minutes per on-call period

- b the completion of bedside review by a Tier 2 or 3 doctor of all patients who are defined as requiring it on every day of the weekend or public holiday:

Standard = 100%

- c the completion of consultant review of new patients before the end of the next day of the weekend or public holiday:

Standard = 100%

- 3.37 Failure to meet some or all of the above standards should lead to a review of the staffing of that ward or its workload.
-

Section 4: Medical staffing for hospital inpatients who need urgent medical care by day and by night

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Editor: Dr Rhid Dowdle

- 4.1 In this section we describe the medical component of the team that is tasked with responding to the urgent needs of patients who have medical problems that cannot be addressed by the ward team. This is either because their usual ward team is no longer available, or because their current ward team lack the requisite physicianly skills.
- 4.2 We recommend that the adequacy of the numbers of staff who provide this urgent medical care is validated by audit of the service's performance. Our recommended topics for audit can be found at the [end of this section](#). Further information about work out of hours is available in Appendix 6.
- 4.3 On medical wards, during the normal working day, the vast majority of issues that need urgent attention will be dealt with by the patient's own medical ward team. This may be with or without direct liaison with other medical specialties. Between 5pm and 9am, when the patient's own team is no longer available, such calls for urgent assistance become the responsibility of the out-of-hours team on-call.
- 4.4 This team may exist in a variety of forms, but in recent years the structure of such teams has become multidisciplinary, and the format of the Hospital at Night (H@N) team has been widely adopted. However, while the H@N team may include members from non-medical specialties, the majority of its members are still likely to be physicians. We use the term 'medical team on-call' for the physicianly component of any out-of-hours team.
- 4.5 Calls for urgent medical assistance from non-medical wards can occur at any time of day or night. Less urgent problems that arise in this context may be dealt with by direct liaison with the appropriate medical specialties. More urgent problems tend to become the responsibility of the Tier 2 medical registrar on-call, whose work is therefore not confined to the out-of-hours period.
- 4.6 The RCP Medical Registrar Survey (Appendix 2) shows that the medical registrar who is tasked with responding to requests for urgent assistance from the wards also leads the medical assessment and admission team in most hospitals (80%). This dual responsibility

has resulted in a workload that most medical registrars have found to be heavy and some have found to be a potential risk to patient safety. In only one-fifth of hospitals, most of which are large, are there separate posts of ‘medical registrar on-call’ and ‘medical registrar for admissions’.

Weekend working

- 4.7 As a matter of principle, the emergency medical care of hospital inpatients should be no different at weekends and public holidays compared with the care provided during the working week. However, it is currently the case that the medical team on-call is asked to see patients on medical wards whose problems would have been addressed by the ward-based team on a weekday. This situation would persist, albeit to a lesser degree, even if the best practicable care (described in [Paragraph 3.13](#)) was routinely available.
- 4.8 This means there is a substantial difference between emergency working at weekends and emergency working during the week. This reflects the low levels of routine care that are delivered outside the normal working week, as show in [Fig 4](#).

From a system perspective

- 4.9 There has been a steady increase in emergency work, especially out of hours, as shown in Fig 5. This can be attributed to factors such as reductions in patients’ lengths of stay, and the increasing numbers of older patients who have frailty and multiple comorbidities.

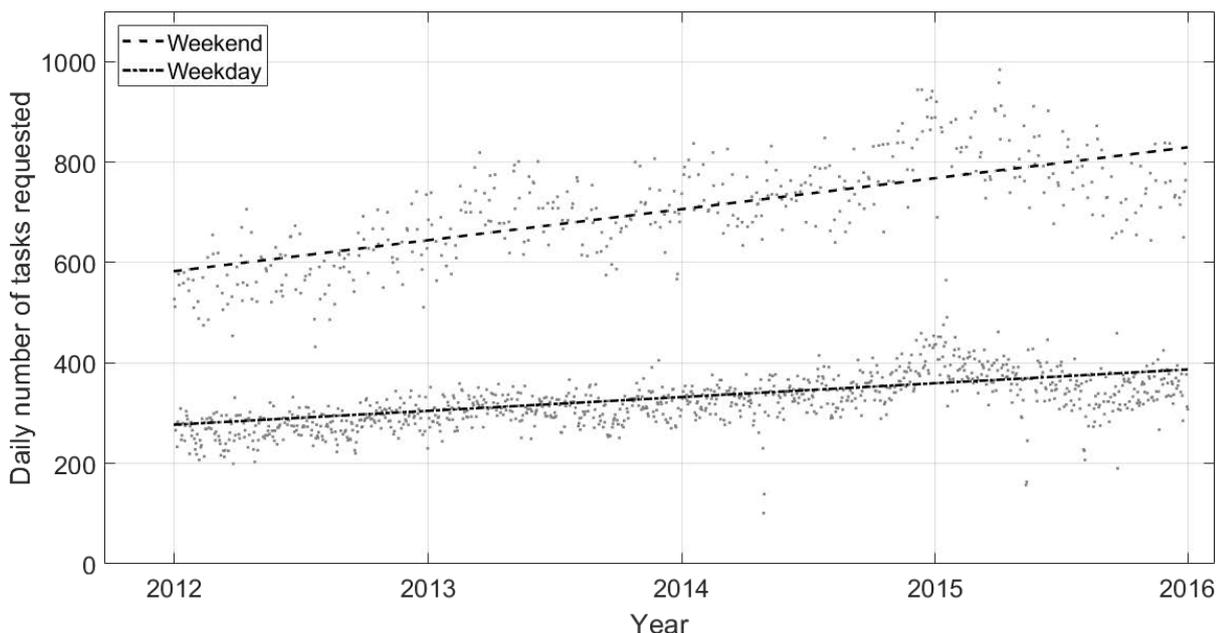


Fig 5 The WayWard Project – Nottingham Queen’s Medical Centre and Nottingham City Hospital: daily number of tasks requested, by year.

- 4.10 As a result of this trend hospitals are 'running hotter', with high rates of bed occupancy and more rapid turnover, as well as sicker patients who require more medical input.³⁵ We have tried to define recommended levels of medical and alternative staffing in this context based on patients' needs, acuity and risks.

The nature of out-of-hours work

- 4.11 The establishment of the H@N system led to a better understanding of the work that is undertaken by clinical staff working out of hours. One aspect was the realisation that the need for some of the work that is undertaken out of hours had been evident during the preceding working day.⁵⁴
- 4.12 There may be a variety of reasons for this work not being undertaken at the earliest opportunity. But it is obvious that it is preferable to deliver patient care during the working day, when all support facilities are available, rather than out of hours when they are not. Delivering care during the working day also reduces the workload of on-call staff and reduces their fatigue, which in turn improves patient safety. It is also much more acceptable to staff to be employed during normal working hours rather than at unsociable times, which is important for recruitment.

Classifying the work of the medical team on-call

- 4.13 There are a number of different types of problem that demand the involvement of members of the medical team on-call. We have categorised them as follows.

Group 1 – Handover work

- 4.14 A patient's need for active ongoing medical care may extend beyond the normal working day. When this is evident to that patient's usual medical team, a request for the continuation of that care out of hours is made at the formal handover session at the end of the working day.

Group 2 – New work: expected but unpredictable tasks

- 4.15 The occurrence of these tasks is not unexpected, but their nature is such that they cannot be managed by the ward team that is caring for the patient by day. These tasks include:
- reacting to a relapse of the condition that caused the patient's initial admission

- reacting to an acute deterioration in the clinical state of a previously stable patient due to a new acute medical problem
- newly occurring maintenance tasks, such as re-acquiring failed venous access
- the development of a complication such as a hospital-acquired infection, venous thromboembolism or a fall that necessitates medical review
- speaking with relatives.

It is likely that such tasks will fall to clinicians in both Tiers 1 and 2.

Group 3 – Legacy tasks

- 4.16 Some routine tasks that are best done by the ward team, who have full clinical knowledge of the patient as well as clinical and governance responsibility, may not be completed during the working day or may be passed on at formal handover. Examples include re-writing time-expired medication charts; routine prescriptions of oral anticoagulants; and maintenance of intravenous fluids and appropriate analgesia. Out of hours, it is likely that most such tasks will fall to clinicians in Tier 1.
- 4.17 Of more concern, however, is where a patient's deteriorating health is brought to the attention of the medical team on-call but the deterioration started during the working day and was either not noted or not addressed at the earliest opportunity. Such delayed presentations may demand the involvement of members of all Tiers of the medical team on-call.
- 4.18 We have termed these tasks 'legacy tasks'. The number of such tasks that are 'left over' for completion by the medical team on-call will depend to a large extent upon the daytime staffing of the wards and the efficiency of their working. Hospitals that provide adequate numbers of medical staff by day and have efficient working practices should have a minimum number of legacy tasks.

Group 4 – Referrals from non-medical areas for medical input

- 4.19 As part of their role in an integrated hospital service, medical teams have always responded to requests for assistance with the care of the medical problems of non-medical patients. Following the implementation of the Working Time Regulations, for a variety of reasons, middle-grade surgeons have increasingly become non-resident when they are on call.¹⁵ Their absence has led to an increase in the work of the medical registrar

in particular. This increase in the medical workload, both during the working day and out of hours, should not be underestimated and needs to be accurately assessed and planned for.

- 4.20 There have been some noteworthy initiatives in medically delivered perioperative care, notably for older patients with frailty.^{55,56} However, such initiatives remain limited and often provide routine care that is delivered during the working day with no additional resources being committed to out-of-hours care.

Current working patterns and the workload of the medical team on-call

Tasks undertaken by the medical team on-call

- 4.21 Data from the WayWard Project and the Aneurin Bevan University Health Board study can be used to derive an image of current activity in response to calls for assistance out of hours, anywhere in the hospital. Similar work from Sandwell General Hospital yielded figures for a weekend nightshift (Appendix 4).
- 4.22 Neither study captures the work of the medical registrar on-call out of hours to any great extent.
- 4.23 Respondents to the RCP Medical Registrar Survey (Appendix 2) reported that, in their opinion, over half the tasks that they undertook when they were providing on-call ward cover could have been undertaken by Tier 1 clinicians. They also reported that their workload was excessive, suggesting that the current levels of Tier 1 staffing out of hours are essentially inadequate.
- 4.24 A further reality check suggested that the Tier 1 time needed equates with there being one medical Tier 1 clinician available to provide emergency care for every 100–120 hospital inpatients throughout each 16-hour on-call period. To cover 300–360 medical inpatients out-of-hours therefore requires three Tier 1 clinicians to be on duty at all times.

The medical registrar on-call

- 4.25 The workload of the medical registrar on-call in particular is deemed to be inappropriately onerous. This workload is considered by some to be a major factor in the unpopularity and recruitment problems that are faced by the medical specialties that are involved in acute medical care.³⁹ It is not captured well by the WayWard Project and other data, but it has recently been the subject of a survey by the RCP (Appendix 2).

- 4.26 Having a single Tier 2 medical registrar who leads both the medical assessment and admission team, and the medical out-of-hours team on-call, for 24 hours is potentially not safe, except perhaps in small hospitals.
- 4.27 This dual role might be practicable in medium-sized hospitals during the period at night when both the levels of admission activity and emergency calls are low. However, large hospitals need the two roles to be entirely separately staffed over the full 24 hours.
- 4.28 Remembering the potential for calls for assistance to be received from non-medical wards during the working day, most hospitals require a separate medical registrar on-call for 12 hours during the period of greatest activity.

Discussion

- 4.29 It is clearly in the best interests of patient safety for as much patient care as possible to be delivered during the normal working day, when all resources are available.
- 4.30 A reduction in the number of tasks that are left to the on-call service is likely to enable a reduction in the number of staff who are needed to provide the on-call service, as well as improving patient safety. Achieving this will require a sufficient number of clinicians who are able to complete these tasks being employed to work by day.
- 4.31 The WayWard Project has shown that one-quarter of all on-call work emanates from the general and orthopaedic surgical wards. The advent of orthogeriatrics has demonstrated the usefulness of a proactive medical presence in orthopaedic wards. A well-developed physicianly presence on surgical wards by day would doubtless improve the timeliness of the identification of medical issues in surgical patients.

Summary of recommendations

- 4.32 One medical Tier 1 clinician should be available throughout each 16-hour on-call period, to provide emergency care for every 100–120 hospital inpatients who are covered by the on-call team.
- 4.33 Small hospitals may be able to combine the roles of the Tier 2 on-call medical cover of the wards and leading the medical assessment and admissions team.
- 4.34 Most hospitals require a separate, dedicated Tier 2 medical registrar to provide on-call cover of the wards for 12 hours during the period of greatest activity every day, including

the weekend, with another medical registrar leading the assessment and admissions team.

- 4.35 Large hospitals need a separate dedicated Tier 2 medical registrar to provide on-call cover of the wards throughout the 24 hours.
- 4.36 Ward staffing by day should be sufficient to ensure that the tasks that are passed on to the out-of-hours service are kept to a minimum. This includes the development of robust, medical perioperative services.
- 4.37 The adequacy of staffing the medical team on-call should be confirmed by appropriate audit.

Recommended audit topics and standards

- 4.38 In addition to reviewing incident reports and complaints, we therefore suggest the following audit topics:

- a legacy tasks – the time spent by on-call teams performing legacy tasks:

Standard = less than 30 minutes per on-call period

- b response to a deteriorating patient – response time of the medical team on-call when they are notified about a patient deteriorating to a NEWS2 of 5 or 6:

Standard = bedside attendance by a Tier 2 medical member of the on-call team within 15 minutes in 100% of cases

- c appropriate workload – subjective opinion of all Tiers of the medical team on-call:

Standard = no one should feel that their workload is so onerous as to prejudice patient safety.

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