NHS Services, Seven Days a Week Forum

Evidence base and clinical standards for the care and onward transfer of acute inpatients
NHS Services, Seven Days a Week Forum

Gateway reference: 00889

Contents

Statements in support of seven day services ................................................................. 3
Executive summary ....................................................................................................... 4
Key messages .................................................................................................................. 4
1. Introduction .................................................................................................................. 6
   1.1 Everyone Counts: Planning for Patients 2013/14 ....................................................... 6
   1.2 Scope of the review ................................................................................................. 6
   1.3 Governance ............................................................................................................. 6
   1.4 Approach to the development of the evidence base and standards ...................... 7
   1.5 Self-reported survey of acute hospitals ................................................................. 8
   1.6 The need for a whole-system implementation ...................................................... 8
2. Context .......................................................................................................................... 9
   2.1 Variation in outcomes ............................................................................................ 9
3. The patient pathway ...................................................................................................... 13
   3.1 Consultant delivered care ..................................................................................... 13
   3.2 Multidisciplinary care .......................................................................................... 16
   3.3 Handovers ............................................................................................................. 20
   3.4 Diagnostic services ............................................................................................... 21
   3.5 Intervention / Key services .................................................................................. 25
   3.6 Mental health .......................................................................................................... Error! Bookmark not defined.
   3.7 On-going review of patients .................................................................................. 32
   3.8 Onward transfer of care ....................................................................................... 34
   3.9 Training and quality improvement ........................................................................ Error! Bookmark not defined.

Annex A- Hospital services seven day a week – consideration of inequalities .............. 40
Statements in support of seven day services

Academy of Medical Royal Colleges (Seven day consultant present care): “If the medical profession accepts that consultant-delivered care provides better patient outcomes, it would seem ethically unjustifiable to deprive patients of those benefits during the weekend.”

Royal College of Physicians of London (Future Hospital Commission): “Acutely ill medical patients in hospital should have the same access to medical care on the weekend as on a week day. Services should be organised so that clinical staff and diagnostic and support services are readily available on a 7-day basis. The level of care available in hospitals must reflect a patient’s severity of illness. In order to meet the increasingly complex needs of patients – including those who have dementia or are frail – there will be more beds with access to higher intensity care, including nursing numbers that match patient requirements.”

Royal College of Surgeons (President, Norman Williams): “The evidence continues to mount that we need to rethink how surgical care is delivered for patients seven-days-a-week. In particular, mortality and complication rates vary widely for patients admitted as emergencies at the weekend. In order to address this, clinicians and managers must work together to reconfigure hospital services in a way that strengthens the quality of care given to patients regardless of when they are admitted.”

Care Quality Commission (Dr Nick Bishop, Senior Medical Advisor): “Why should the quality of care you receive depend on the day you are seen? Pressure is increasing from the public and government to provide high quality services to patients in secondary care for seven days a week without the variations currently apparent. This is quite a challenge given the financial constraints. If you dismiss it as impossible, you’ll never address it! Some providers are making good progress…”

Royal College of Paediatrics and Child Health (Dr Carol Ewing, Workforce planning officer): “Patients deserve to be treated with the same high standard of care whatever time of day or night they are admitted to hospital, whether that be at 11am on Tuesday morning or 10pm on Sunday evening. We should always look at ways to improve our hospital services and I believe that by rolling out a model of consultant delivered care, or tailoring a variation of the model to a service’s busiest day or time of the week, our NHS will be a much better service.”

Royal College of Radiologists (Standards for providing a 24-hour diagnostic radiology service): “Clinical radiology is now so central to the management of so many patients that its delivery can no longer be confined to ‘office hours’”
Executive summary

The demand for urgent and emergency care does not follow a pattern that is consistent with the traditional working week of Monday to Friday, nine to five. If a profession, service or facility is important to the care of patients, the NHS cannot justify a delay in its availability based solely on the fact it is the weekend. However, evidence shows that being admitted to hospital at the weekend is associated with a significantly increased risk of dying within 30 days of admission compared to being admitted on a weekday.

Accepting the limitations of NHS resources, and the inter-dependencies of care which make providing an equitable service a challenge of viability as well as one of principal, every effort should be made to ensure that the standard of care a patient receives, their experience of it and the outcome as a result, are not impacted by the day of the week.

Key messages

- There needs to be a whole-system approach to seven day services to achieve the greatest benefit for both patients and the NHS. Commissioners and providers of NHS services should plan the implementation of these standards with consideration for the recommendations of the national review of Urgent and Emergency Care and the national Integrated Care work being undertaken with partners in community health and social care to achieve a seven day service that spans the health and social care system.

- Improving patient experience is shown not only to have a direct benefit but has clear associations with improved clinical safety and effectiveness. When seeking to understand and improve the quality of any NHS service, the experiences of those who use it should be central.

- There is a large body of evidence associating timely consultant input to patient care with improved outcomes. This meets with patients’ expectations and their care becomes more effective and efficient. Professional bodies consistently recommend working patterns that enable rapid consultant assessment for all patients throughout the week yet there remains significant variation in working arrangements between hospitals and between weekdays and weekends.

- The majority of hospital inpatients are older people with comorbidities that require input from a multi-disciplinary team of care professionals. With an ageing population and increasing options of treatment available, this prevalence is only likely to increase. For hospitals to remain clinically viable and provide patients with effective and efficient care they must have these services available throughout the week, coordinated to support the establishment of care plans, the timely review and starting of medicines, delivering care and supporting discharge where necessary.

- Handovers can ensure that patients experience coordinated care from teams of professionals, working seamlessly to progress their recovery from illness or injury; without effective handover patient safety is at risk and services become less efficient. The increasing number of handovers, particularly at weekends, between individuals, teams, departments and organisations makes standardisation and senior leadership critical to safe and effective patient care.
The vast majority of patients require **diagnostic investigation** as part of their care. If clinicians and allied health professionals are to diagnose promptly and progress patients’ care across seven days a week, they must be supported by prompt testing and accurate reporting to support decision-making.

Key **interventional services** such as emergency surgery, critical care and interventional radiology and endoscopy are a time critical response to an urgent or emergency need. When required, access to them will inevitably have a profound effect on a patient’s outcome but in the case of radiology and endoscopy, service provision is shown to be highly variable, particularly at weekends.

A high quality, efficient patient pathway is dependent on access to high quality **mental health** services across the seven days of the week to provide timely and appropriate input to patient assessment, on-going care and discharge support.

Consultant-delivered **ward rounds** are a central pillar to patient care, providing a structured and consistent opportunity for the multidisciplinary team to review patients’ progress, share information and communicate with the patient. This also makes them an ideal opportunity for training and education. Reduced weekend service levels mean that many hospitals do not meet national recommendations for twice daily ward consultant rounds.

Enabling the timely **discharge or transfer** of patient care improves both quality of care and the efficiency of services. It requires resources to be balanced and aligned so that they are available to meet patients’ needs at the earliest possible point, seven days a week.

The development of seven day services and new methods of **training and education** have the potential to be mutually beneficial and should be considered alongside one another. Defining new models of working provides the opportunity to embed recommendations for training but they also need to present attractive career options in emergency medicine.
1. Introduction

1.1 Everyone Counts: Planning for Patients 2013/14

NHS England’s vision for NHS services, seven days a week is set out in Everyone Counts: Planning for Patients 2013/14, which describes an NHS in which routine services are available seven days a week.

Considerable evidence has emerged over the last ten years linking poor outcomes for patients admitted to hospital as an emergency and the level of service provision, at the weekend particularly. The historical five day service model no longer meets justifiable patient and public expectations of an efficient, effective and responsive service.

Nor will it meet the demand for services within NHS resources. The recent National Audit Office report highlights that emergency admissions to hospital have risen by 47% in the last fifteen years and in 2012/13 cost the NHS £12.5 billion.

Hospitals should strive to meet patient and public expectations by providing a consistent service on all seven days of the week. This will drive up clinical outcomes and improve patient experience through reducing the risk of morbidity and mortality following weekend admission in a range of specialties and is supported by various public and professional bodies.

1.2 Scope of the review

As a first stage, a national programme of work has been initiated to focus on diagnostics and urgent and emergency care, looking at the consequences of non-availability of care seven days a week and making proposals for improvements in any shortcomings found.

For the purposes of this programme urgent and emergency care is defined as the part of the patient pathway following stabilisation in A&E or other specialised emergency department and the decision to admit as an inpatient for treatment, investigation or further observation through to the patient’s discharge or transfer to another care setting.

Similarly diagnostics is defined as diagnostic services in support of a patient’s emergency admission and treatment such as radiology and pathology services.

1.3 Governance

As Senior Responsible Officer for the review Professor Sir Bruce Keogh established a seven day services Forum with representation from key experts in those fields which will prove critical to successful delivery of the objective. Five workstreams were established that each undertook investigation, liaising with their own community’s of interests and has made proposals to the Forum for inclusion in its final report. (Full membership of Forum and review groups is available at Appendix A.)
Communications and engagement for the review were cross-cutting activities and delivered by the NHS England project team working with colleagues in NHS England.

### 1.4 Approach to the development of the evidence base and standards

The development of the evidence base and clinical standards was led by Celia Ingham Clark, National Clinical Director for enhanced recovery and acute surgery and NHS England (London region) Medical Director for revalidation and quality.

A Clinical Reference Group (CRG) was established by the Forum to provide clinical advice, opinion and direction. It has drawn together the clinical evidence base in support of seven day services and developed clinical standards based on existing recommendations from relevant national and professional bodies.

The CRG believes these will support the NHS to address the shortcomings identified, to drive up clinical outcomes and improve patient experience, through reducing the risk of morbidity and mortality following weekend admission in a range of specialties, by providing consistent NHS services, across all seven days of the week.

The review of seven day services has been a clinically-led process with patient representation. The evidence base has been drawn together using a combination of:

- desk-based research of relevant literature;
- analysis of relevant available data (Hospital Episodes Statistics);
- the results and analysis from the self-reported survey on providers’ current provision; and
case studies of seven day services and their impact obtained from NHS Improving Quality and other recommendations.

The CRG reviewed the available evidence along with existing standards of care published by relevant clinical bodies and collated them into ten key areas along the patient pathway. An adapted standard for each area was developed by the CRG and proposed to the Forum.

The Academy of Medical Royal Colleges (AoMRC) has been a key partner in this review. Its work on seven day services has made a significant contribution to this report and there has been an explicit effort to align the recommendations made with the Academy’s work. Professor Terence Stephenson, president of the AoMRC, is a member of the seven day services Forum and Dr Chris Roseveare, co-Chair of the AoMRC seven day project sub-committee is a member of the Clinical Reference Group.

Finally, consideration has been given to existing data that could potentially be used as metrics for the implementation and impact of the proposed standards.

1.5 Self-reported survey of acute hospitals

As part of the review, a survey was developed by the Clinical Reference Group to establish a baseline and an awareness of current NHS acute service arrangements throughout the week. Limitations of undertaking a self-reported survey were acknowledged, recognising that the survey was subject to a degree of interpretation and the accuracy of responses would depend on whether responses were derived from experience and opinion or data sources. As such, the survey is intended only to highlight the breadth and variation of service arrangements in place across England and should not be used as an accurate means of benchmarking. A link to the survey data and analysis can be found on the NHS England website.

1.6 The need for a whole-system implementation

The scope and standards within this review are limited to the services patients receive whilst an inpatient in hospital, however, for all of these patients their episode begins either in primary care or the Emergency Department before being admitted to hospital, and for a great many it continues in the community after being discharged. If patients and the public are to experience genuine seven day care then the standards within this report need to be accompanied by similar improvements across primary, community and social care. In addition, work is required to improve the interface between organisations and streamline processes in order to improve both patient safety and efficiency. If this is achieved the NHS can ensure that:

- patients experience high quality care throughout their pathway;
- the benefits of these standards are not reduced or negated by shortcomings elsewhere;
- that only patients who absolutely need hospital care are admitted;
- that once patients are well enough to leave hospital they are supported to do so in a safe and timely manner with any on-going care needs met in the most appropriate setting.
2 Context

2.1 Variation in outcomes

Significant variation in patient outcomes for those admitted as an emergency exists across England. This variation is seen in patient experience, mortality rates, length of hospital stay and re-admission rates. Evidence suggests that the workforce, systems and processes in place at hospitals to manage emergency admissions can have an influence on these patient outcomes.

This evidence base draws on the significant amount of research carried out in this area along with a national survey of acute hospital services. It aims to highlight the associations between both poorer outcomes and the variation in outcomes for patients, and the systems and processes in place which influence them.

2.1.1 Mortality rates

Evidence drawn from national research by influential professional bodies, such as the Royal Colleges and the National Confidential Enquiry into Patient Outcome and Death (NCEPOD), have highlighted deficiencies of care for many areas and demonstrated that patients admitted as a medical emergency at the weekend have a significantly greater risk of dying in hospital than those admitted on a weekday\(^2\) \(^3\) \(^4\) \(^5\) \(^6\).

Further evidence of this “weekend effect” was reported in an analysis of NHS inpatient data from 2009/10 by Freemantle et al\(^7\). The analysis concluded that being admitted at the weekend is associated with an increased risk of mortality within 30 days of admission compared to weekdays. This ranged from an 11% increase on Saturday to a 16% increase on Sunday when compared to patients admitted on a Wednesday.

Most recently a further a study by Bell et al\(^8\) found that patients admitted to hospital as an acute medical emergency at the weekend had a 14% increased chance of mortality than those admitted on a weekday.

The explanation for this higher mortality rate outside of normal working hours is multifactorial and as such there is little evidence to establish a cause and effect relationship. However, a great deal of analysis has been undertaken in the area and some widely accepted associations made, which are discussed further in section 5 and summarised as follows:

- Variable staffing levels in hospitals at weekends;
- A lack of consistent specialist services, such as diagnostics, at weekends; and
- A lack of availability of specialist community and primary care services, resulting in more patients on an end of life care pathway dying in hospital.

2.1.2 Hospital length of stay

The length of time patients spend in hospital is an important marker of care quality for two reasons:

1. There are direct patient benefits: Patients naturally prefer to spend as little time in hospital as possible, so assuming they have a positive outcome and don’t need to be readmitted, their experience of care is improved. In addition, minimising a patient’s length of stay also minimises their risk of acquiring a hospital based infection and the degree of lost mobility from time spent in bed.
2. It can be indicative that a hospital, and the wider health and social care, system are arranged effectively, matching capacity to demand and supporting the flow of patients along their pathway, benefiting both patient care and system efficiency.

Recent work by The Health Foundation with Sheffield Teaching Hospitals NHS Trust to improve the flow of patients through their geriatric medicine emergency pathway delivered a 37% increase in patients who could be discharged on their day of admission or the following day\textsuperscript{9}. This was accompanied by a fall in deaths among the patient group, a reduced bed occupancy rate that enabled the trust to close two wards with an estimated saving of over £3m.

Many factors impacting patients’ length of stay are beyond the hospital’s control, such as the nature and severity of the illness or injury, as well as the structure of services in the community and social care. Many more however are within their gift, including increasing weekend presence of consultants, which was a feature of The Health Foundation’s work with both Sheffield and with South Warwickshire NHS Foundation Trust. Analysis found that when patients had to wait for senior assessment overnight or over the weekend, their chance of being put on the wrong pathway increased and led to a much longer than necessary length of stay.

Analysis of emergency bed use by the King’s Fund in 2012\textsuperscript{10} showed that average lengths of stay for patients over 65 varied from 6 to 13 days. This variation increases further for patients over the age of 85, who had been admitted from home but needed to be discharged to supported accommodation, with an almost five-fold variation from 11 days to 51 days. Amongst the contributing factors cited by the report was: the availability of community-based resources such as primary care and social care; hospital based supply-side factors such as availability of senior clinical review and timely access to therapies, and; the co-ordination and relationship between services – all characteristics that become more pronounced at weekends.

The King’s Fund calculated that 7,000 fewer hospital beds would be needed across England if all commissioners achieved the rate of admission and average length of stay of the lowest 25\textsuperscript{th} percentile. In monetary terms, the NHS Institute for Innovation and Improvement has estimated that if hospitals moved 25\% closer to the national average length of stay the NHS in England could save just over £1 billion a year\textsuperscript{11}.

2.1.3 Re-admission rates

If a patient’s health deteriorates once they have been discharged from hospital, it may be necessary to re-admit them for further care. In many cases this is an avoidable result of a shortcoming in their care and as such is another important indicator of care quality, both in hospital and in the community following the acute phase of their pathway. Anecdotally, it can be said that seven-day re-admission rates are most commonly associated with a shortcoming in a patient’s care in hospital and 30-day re-admission rates are associated with a shortcoming in a patient’s care in the community after being discharged.

As with length-of-stay, it is the quality of a hospital’s systems and processes, along with those of their community providers and the interface between the two that impact re-admission rates.

There is evidence from a systematic review of randomised controlled trial that an individualised discharge plan for hospital inpatients is more effective than a routine discharge plan that is not tailored to the individual. Re-admissions to hospital were significantly reduced by around 15\% for patients allocated to structured, individualised discharge planning\textsuperscript{12}.
Another study of a structured discharge planning program using collaboration between the Clinical Nurse Specialist (CNS) and the social worker showed that after discharge patients involved in collaborative planning were more satisfied, had a shorter length of stay, had fewer readmissions, and received a higher rate of indicated post-discharge services. These studies demonstrate the importance of establishing patient specific management plans, with multidisciplinary input and the inclusion of social services where appropriate. They allow hospitals to effectively support a patient’s recovery from ill health and give them the greatest chance of preventing re-occurrence. At weekends, undertaking these important actions becomes increasingly difficult and likely to impact negatively on re-admission rates.

2.1.4 Patient experience

The importance of improving patient experience and its contribution to overall quality of care is highlighted with increasing frequency and is now reflected in the NHS Mandate. ‘Making sure that people experience better care’ as one of five key areas for improvement.

There are a number of ways in which to view this. A critical part of patient experience, and one which is central to this review, is timely access to services. The Mandate itself highlights that “the NHS should be there for people when they need it; this means providing equally good care seven days of the week, not just Monday to Friday.”

The quality of care people receive as opposed to the quality of their treatment is also hugely important. Admitted patients are often elderly and vulnerable, making it even more important that they are cared for with compassion, respect and dignity.

An independent review of the Liverpool Care Pathway, More Care, Less Pathway describes how the quality of care and communication for patients, their families and carers can be woefully inadequate without the right levels of expertise, staffing and attention to individual patients’ needs. The review found repeated instances at weekends of there being too few staff with the requisite training and competence, insufficient access to equipment and the unavailability of palliative care teams. Not only did this often result in bad decision-making and communication with patients, their families and carers, but fewer people could be supported to die at home had they wished to.

The review recommends that a named consultant or GP, respectively, should take overall responsibility for the care of patients who are dying in hospital or the community, with funding made available to enable palliative care teams to be accessible at any time of the day or night, both in hospitals and in community settings, seven days a week.

As well as being an end in its own right, there is evidence that demonstrate a positive association between patient experience and objective measures of hospital quality. In 2012, a study by Greave et al that compared hospital ratings submitted by patients on the NHS Choices website against clinical outcome measures found that hospitals with positive recommendations were significantly associated with lower HSMR, lower mortality from high risk conditions and lower readmission rates. The top quartile rated hospitals when compared to the bottom quartile had 5% lower mortality rates and 11% lower readmission rates.

These findings were repeated in 2013 when a systematic review by Doyle et al, which summarised evidence from 55 studies, found consistent, positive associations between patient experience and patient safety and clinical effectiveness.
The NHS Constitution describes high quality care as that which is safe, effective and focussed on patient experience and these studies support that statement.

Despite this, inpatient experience data for England have shown no improvement between 2007 and 2012\textsuperscript{17} and within that cohort, there is further evidence to show that the experience of patients admitted as an emergency is poorer than that of patients admitted to hospital on a planned basis. The analysis by Sullivan P. et al.\textsuperscript{18} reviewed findings from the 2010 Adult Inpatient Survey categorised into three groups: those with unscheduled acute medical admissions, unscheduled other specialty admissions and scheduled admissions. Emergency admissions reported worse experience for all survey items, and of those, unscheduled medical admissions were worse than admissions to other specialties for pain control, privacy, involvement, information, and for a number of questions relating to information on discharge. Notably, families often could not access senior doctors in acute medicine, an issue more pronounced at weekends.

The RCP's Future Hospital Commission states that in the hospital of the future patient experience is valued as much as clinical effectiveness and that good communication with and about patients is the norm. It believes that “patients can be empowered to prevent and recover from ill health through effective communication, shared decision-making and self-management”.

The Forum is aware of the duty on NHS England to have regard to the need to reduce health inequalities in the access and outcomes of healthcare and has undertaken some preliminary analysis out with the clinical reference group. A paper considering the links between hospital services, seven days a week, and inequalities, is appended at Annex A.

**Key message:** Improving patient experience is shown not only to have a direct benefit but has clear associations with improved clinical safety and effectiveness. When seeking to understand and improve the quality of any NHS service, the experiences of those who use it should be central.

**Standard:** Patients, and where appropriate families and carers, must be actively involved in shared decision making and supported by clear information from health and social care professionals to make fully informed choices about investigations, treatment and on-going care that reflect what is important to them. This should happen consistently, seven days a week.
3 The patient pathway

During a period of illness or injury the care that a patient receives is often referred to as their ‘pathway’. For many patients part of their pathway involves a period as a hospital inpatient which is the focus of this review and can be defined in three stages:

At each stage, a number of actions and inputs are required to help patients make a swift and successful recovery. This section looks at those activities, describing how services often operate across the week in today’s acute hospitals and how public and professional bodies recommend they should work. Examples are included from hospitals who are working to deliver seven day services and each stage includes a recommended standard that reflects the minimum level of acute care all patients should receive throughout the NHS at all times of the week.

3.1 Consultant delivered care

Early consultant involvement in the management of patients admitted as an emergency is one of the most important factors in patient care. Delays to both consultant reviews and a lack of senior involvement in patient care have been linked to poor outcomes in patients.

3.1.1 Benefits of consultant delivered care

In January 2012, the Academy of Medical Royal Colleges published The Benefits of Consultant Delivered Care which identifies the benefits of having the “ready availability” of consultants across all services and summarises them as:

- Rapid and appropriate decision making;
- Improved outcomes;
- More efficient use of resources;
- GPs’ access to the opinion of a fully trained doctor;
- Patient expectation of access to appropriate and skilled clinicians and information; and
- Benefits of the supervised training of junior doctors.

The report recognises the absence of primary evidence on the subject, but as a comprehensive literature review considers the association between consultant involvement and improved outcomes to be compelling.

Evidence has demonstrated that where a service has the adequate provision in place, seven days per week, there is no observed difference in mortality rates between the week and at the weekend.

3.1.2 Association with mortality rates

The 2011 Hospital Guide published by Dr Foster demonstrated the impact of senior staffing levels on mortality rates. Across England senior staffing levels, both on-site and on-call, were mapped at a trust level and compared to data on the number of beds and the weekend
NHS Services, Seven Days a Week Forum

Evidence base

Mortality analysis. Findings showed that more senior staffing at the weekend is associated with a lower emergency weekend mortality rate. The data collection was repeated in 2012 with the same findings.

**Figure 2: Weekend mortality ratio compared to senior staff/bed ratio**

![Graph showing weekend mortality ratio compared to senior staff/bed ratio](source-and-copyright-dr-foster-ltd)

3.1.3 Patterns of consultant presence

In 2012, the Royal College of Physicians of London (RCP) went beyond staffing levels to look at the working pattern of admitting consultants and made further associations between increased and timely consultant-delivered care and improved outcomes. Their report identified that:

- hospitals in which admitting consultants have no other fixed clinical commitments while on acute take had a lower mortality rate;
- hospitals in which the admitting consultants work blocks of more than one day had lower excess weekend mortality;
- hospitals in which there were two or more acute medical unit (AMU) ward rounds per day reviewing all patients on the unit had a lower mortality rate for patients with a hospital length of stay of more than seven days;
- hospitals where the admitting consultant was present for more than four hours for seven days per week had a lower 28 day readmission rate; and
- hospitals in which there were two or more AMU ward rounds per day on weekdays and admitting consultants work blocks of more than one day had a lower aCFR (ie. less excess mortality)."

Most recently, a study by Bell et al evaluated whether systems of consultant cover with the above characteristics were associated with better outcomes for adult patients admitted to hospital as an acute medical emergency. It found that this ‘all-inclusive’ pattern of consultant working was associated with an overall reduction in mortality as well as a reduction in the excess hospital mortality of weekend versus weekday admissions. The seven day readmission rate was also lower, although the mean length of stay was slightly higher.
3.1.4 Service levels against recommended practice

Recommendations from professional bodies aim to ensure a consistent level of consultant input for all patients admitted as an emergency. The Royal College of Physicians of London and College of Emergency Medicine recommend that consultant presence on the AMU should start no later than 08.00 to coincide with peak activity and be maintained for a minimum of 12 hours per day, seven days per week, with individual consultant’s presence usually between eight and 12 hours\textsuperscript{31} \textsuperscript{32} \textsuperscript{33}. All patients should be reviewed by a consultant within 14 hours of arrival at hospital and during the period of consultant presence newly admitted patients should be reviewed within six to eight hours.

Survey results show broad variation across hospitals in the number of hours an admitting medical consultant is present on the AMU each day; and whilst approximately two thirds of hospitals maintain 12 hours presence each day during weekdays this drops to one third at the weekend.

Figure 3: Number of hours each day that hospitals have a dedicated admitting medical consultant present on the AMU

---

Case study: London stroke care – Speciality care pathway

National evidence suggests that across NHS hospitals stroke patients have approaching a 20% greater risk of dying if admitted on a weekend in contrast to a weekday. Not only is the risk of dying significantly higher, but the chances of patients having appropriate diagnostics and treatment such as a brain scan and clot busting drugs are much lower and the risk of developing complications such as aspiration pneumonia higher.

In response to the National Stroke Strategy (2007) a stroke strategy for London (2008)\textsuperscript{34} was developed at which stage most hospitals with an Emergency Department were attempting to provide stroke care services, with varying degrees of success. Following implementation of a networked approach however, just eight hospitals provide consistently high quality care in units known as Hyper Acute Stroke Units (HASUs). These specialist centres for stroke patients, which concentrate workforce, skills and expertise, has significantly reduced the higher mortality rates for stoke patient admitted at weekends. Units are staffed 24 hours a day by stroke experts and arrangements are in place with ambulance services to take patients with a suspected stroke straight to their nearest HASU rather than their local hospital.
The result has been a significant fall in mortality. Prior to the reorganisation, 10% of stroke patients died within seven days of admission if they came into hospital at the weekend, compared with 8% of those admitted on a weekday. Following the reorganisation, the weekday mortality rate dropped to 6.4% but the weekend mortality rate fell at a much greater rate to 7.3%.

**Key message:** There is a large body of evidence associating timely consultant input to patient care with improved outcomes. This meets with patients’ expectations and their care becomes more effective and efficient. Professional bodies consistently recommend working patterns that enable rapid consultant assessment for all patients throughout the week yet there remains significant variation in working arrangements between hospitals and between weekdays and weekends.

**Standard:** All emergency admissions must be seen and have a thorough clinical assessment by a suitable consultant as soon as possible but at the latest within 14 hours from the time of arrival at hospital.

### 3.2 Multidisciplinary care

Multidisciplinary working enables the effective care of patients with complex clinical presentations. Where early medical or surgical assessment is supported with input from care professions including nursing, physiotherapy, occupational therapy, speech and language therapy, pharmacy and social care, a management plan can be implemented that addresses all of the patient’s care needs up to and including preparation for their discharge.

Reduced provision at weekends will naturally inhibit the ability of any of these services to care for patients during that time; whether to assess a new admission and implement a management plan, or to facilitate discharge for a patient who is otherwise ready to leave the hospital.

#### 3.2.1 Therapies

Studies have shown an association between seven day physiotherapy services and a reduction in overall length of stay for patients. A study by Cardiff and Vale University Health Board in 2009 which introduced extended day and seven day physiotherapy service demonstrated that for the 50% of patients admitted to the acute medical unit with physiotherapy needs an average reduction in length of stay of 1.5 days was achieved. In addition, the physiotherapy response times from referral to contact were significantly improved from an average of 13.7 hours to 2.3 hours therefore expediting patients' treatment and recovery.

An evaluation of the first year of weekend therapy services at Heart of England NHS Foundation Trust found that amongst other benefits they were able to discharge 50 additional patients each weekend thanks to extending their therapy service across seven days. A slight reduction in weekday working has been carefully managed, and along with the use of a therapy bank of existing staff, the Trust was able to contain the cost implications of the additional weekend service whilst achieving a significant cost saving. This weekday gap in service was considered much safer and more easily managed than the much larger weekend gap previously experienced.
3.2.2 Pharmacy
Prescribing errors remain a major issue in hospitals and an emergency inpatient phase presents significant risk of miscommunication and unintended changes to medicine as patients are transferred between care settings. A 2010 audit across 50 acute trusts found that most of over 8600 patients involved had at least one omitted drug or wrong dose following admission. Clinical pharmacy services play an essential role in managing patient’s medicines. Where the clinical pharmacy service is limited or unavailable at weekends, hospitals report increases in missed or delayed doses, higher prescription errors, lack of medicines reconciliation and delays to discharge.

Pharmacy support to emergency admissions units should be available seven days a week to incorporate medicines reconciliation and prescription review service within 24 hours of all admissions, in-line with NICE and NPSA guidance. This would ensure appropriate prescription review takes place over the weekend and the correct medicines start early in a patient’s admission; timely and effective decision-making on post-take ward rounds would be supported by pharmacy staff; medicines supply will be made quicker, with significantly fewer drug charts leaving a ward area; and more efficient weekend discharge can be facilitated leading to a decreased risk of medicines related readmissions.

The introduction of a weekend clinical pharmacy service at Northumbria Healthcare NHS Foundation Trust saw emergency duty call-out rates for supply on Sundays decrease by 84%; critical medicines call-out rate decreased by 75%; and the percentage of patients admitted on Mondays who had medicines reconciliation within 24 hours, increased from 22% to 73%.

3.2.3 Wider MDT
Inpatient under nutrition remains a huge problem and leads to weakness and susceptibility to infection. Stroke patients, for instance, are often kept nil by mouth until Speech and Language Therapists (SALT) have checked they can swallow safely. Seven day input from SALT helps to limit avoidable starvation for patients - the previously referenced weekend therapies pilot by Heart of England NHS Foundation Trust saved 171 days of patients being nil by mouth in its first year by having an on-call weekend service from 08.00 to 18.00 at weekends.

Even if the hospital makes all necessary preparations there are factors beyond its control such as the unavailability of Social Services or a patient’s GP to communicate the transfer of care, that can prevent discharge or the onward transfer of care.

All these factors unnecessarily prolong a patient’s hospital stay and negatively impact their experience of care (41% or respondents in the 2011 National Inpatient Survey said that their discharge from hospital was delayed). However, an increased length of stay also has associated increase in a patient’s risk of acquiring a hospital-based infection and further reduced mobility from prolonged time spent in bed.

3.2.4 Service levels against recommended practice
The Royal College of Physicians of London recommends that AMUs should be staffed by a multidisciplinary clinical team (MDT) “delivering a consistent high quality service 24/7”. It considers it essential that older patients have early engagement from the specialist MDT including specialist nurses, physiotherapy, occupational therapy, intermediate care, pharmacy, social care and specialist discharge teams. They also state the importance of MDT input for what are often complex transfers of care arrangements which require early planning and proactive management.
The Royal College of Surgeons also identifies effective multidisciplinary team working as a key element of a high quality emergency surgical service. Many hospitals are beginning to increase the weekend availability of services such as physiotherapy, Occupational Therapy and Pharmacy through pilot schemes, however, service levels remain highly variable, both between hospitals and within disciplines. NHS Benchmarking data which included services provided by 63 acute trusts found that all trusts provided partial coverage of services at weekends but almost all were limited to certain specialties, with Orthopaedics and respiratory the only specialties consistently covered.

Our own survey results show that aside from medical and nursing professions, no other MDT profession is routinely available on the AMU at weekends in more than 50% of hospitals.

**Figure 5: Which of the following professionals are present on the acute medical unit to participate in the MDT review?**

Figure 5 above shows us the probability that individual professions will be available during the weekend, however, as reported in many evaluations of seven day service pilot schemes, by the nature of multidisciplinary working the greatest benefit is only realised when all necessary inputs are available. In that respect, figure 6 below shows us that only 6% of hospitals surveyed have all of the MDT professions identified, routinely present on the AMU at weekends.
Figure 6: Chart showing the number of MDT professions available on the acute medical unit to participate in the MDT review during weekdays and at the weekend.

Case study: The Ipswich Hospital NHS Trust

Prior to seven day services, patients admitted to Emergency Assessment Unit (EAU) over the weekend sometimes waited more than 48 hours for a therapy assessment.

Following implementation of seven day working, 100% of patients were assessed within 24 hours of admission with the majority often being assessed within a much shorter timescale.

This enables patients to access the right ward to address the complexity of their social/functional needs much sooner, minimising ward transfers and reducing overall length of stay. During February/March 2011, 100% of patients assessed by Therapists at weekends and identified as requiring a complex bed were transferred to a complex bed direct from EAU.

Following the implementation of this and other initiatives, average length of stay for a complex patient reduced by 57%.

“I’m impressed we’ve had the right patients on the right wards this week” Dr Lockington, Consultant in Complex Care, Ipswich Hospital NHS Trust.

Key message: The majority of hospital inpatients are older people with comorbidities that require input from a multi-disciplinary team of care professionals. With an ageing population and increasing options of treatment available, this prevalence is only likely to increase. For hospitals to remain clinically viable and provide patients with effective and efficient care they must have these services available throughout the week, coordinated to support the establishment of care plans, the timely review and starting of medicines, deliver care and support discharge where necessary.

Standard: All emergency inpatients must have prompt assessment by a multi-professional team to identify complex or on-going needs, unless deemed unnecessary by the responsible consultant. The multi-disciplinary assessment should be overseen by a competent decision-maker, be undertaken within 14 hours and an integrated management plan with estimated discharge date to be in place along with completed medicines reconciliation within 24 hours.
3.3 Handovers

The handover of care for patients happens at various points throughout their pathway including their admission to hospital, between shifts, transferring between clinical teams and wards, and often at the point of discharge if care is continuing in the community. Continuity of patient care relies heavily on the effective transfer of information both written and verbal during handovers, as such, it is acknowledged as a high-risk step in any pathway.

3.3.1 Impact of poor handover practice

Work by Bhabra et al\(^43\), cited in the 2010 RCP Acute care toolkit, found that there will be as many as five shift handovers in a typical weekend. If no written record is kept, only 2.5% of information from the first handover is retained at the final handover. In contrast, if notes are taken, 85.5% of information is retained, rising to 99% when a standardised proforma is used.

If information is either missing, incorrect or untimely during handover it can cause patient safety incidents and a number of workflow problems, including incorrect diagnoses, delayed decisions, incorrect treatment, poor communication with the patient, inefficiencies, repetitions and repeated investigations\(^44\).

A 2010 survey by the RCP found that 72% of respondents believed handover was an important issue but only 33% felt that is was being done well and even less (18%) had reported education on handover with their trust. Significantly, given the evidence for increasing consultant-delivered care, only 34% of consultants actively participated in the handover of care between their team and others.

3.3.2 Service levels against recommended practice

The Royal College of Nursing\(^45\) describes best practice in the transfer of care as “A whole systems approach with all concerned working in partnership to deliver a transfer that is relevant, timely and appropriate to the needs of the people involved. The safe transfer of care requires the accurate exchange of information, delivered in a standard format, across a variety of care settings throughout the patient’s journey”.

In practice, it is recommended that handovers are a standardised process that is relevant to and owned by each Trust. Designated time and space should be made to ensure that a multidisciplinary approach can be taken, without distraction, and which uses a standard proforma. This is very well utilised in the principle functions for Hospital at Night (HaN) working, which are based on:

- A formal, structured handover process with a consultant and senior nursing leadership
- Strong multi-disciplinary team working with robust HaN protocols.
- Competency-based policy

Having a consultant-led HaN service including senior nurse leads, supported by appropriate multidisciplinary-team working, helps to reduce the number of junior doctors working unsupervised and in turn improves the quality of care delivered to the patient. Reviewing the benefits to patients and staff that can be achieved from applying an effective HaN model is basis for moving towards implementing seven-days-a week or 24/7 acute service.

This review’s own survey of acute hospitals found that the majority had a structured process in place for the medical handover of acute medical and surgical patients at least twice a day.
throughout the week. However, the chance of the handover being led by a consultant remains slightly lower at the weekend than during weekdays.

Consideration should be given to the work of the Clinical Documentation and Generic Record Standards (CDGRS) programme being led by the Health and Social Care Information Centre. A set of standard headings and editorial principles for professional record keeping standards has been produced, covering admission, handover and discharge and was jointly published with the Royal College of Physicians in April 2013.46

Case study: Burnley General Hospital, East Lancashire Hospitals NHS Trust47

Each morning on the paediatric unit a multidisciplinary handover is held at 9.00am, led by the senior nurse on duty and the consultant of the week. This handover takes place in a specific room, and is ring fenced to ensure that it is not disturbed except in unforeseen emergency situations. All of the outgoing night team and incoming day team attend and all patients on the paediatric ward and neonatal unit are discussed. A consultant-led ward round then takes place seven days a week, involving the night medical team and daytime oncoming team.

An identical handover takes place at 16.45, where the day teams handover to the evening team – this is, again, consultant and senior nurse-led. All patients are discussed and their management plans reviewed by the consultant of the week.

A further handover takes place at 21.30 which is attended by the evening and night medical staff and is followed up by a discussion with the consultant on call for the night.

Patient safety is paramount by ensuring that each patient is properly handed over, and the most senior member of the medical staff available is present together with nursing staff involvement. Impromptu educational questions can be raised, and direction can be given by consultants for further management of patients.

Key message: Handovers can ensure that patients experience coordinated care from teams of professionals, working seamlessly to progress their recovery from illness or injury; without effective handover patient safety is at risk and services become less efficient. The increasing number of handovers, particularly at weekends, between individuals, teams, departments and organisations makes standardisation and senior leadership critical to safe and effective patient care.

Standard: Handovers must be led by a competent senior decision maker and take place at a designated time and place, with multi-professional participation from the relevant in-coming and out-going shifts. Handover processes, including communication and documentation, must be reflected in hospital policy and standardised across seven days of the week.

3.4 Diagnostic services

Around one billion diagnostic investigations are carried out in the NHS each year. Clinicians rely on prompt access to a range of tests and accurate reporting of them in order to reach the right diagnosis and implement the appropriate care plan for patients. It is equally important to have the right expertise on hand to help identify the most appropriate test and to interpret results. Without either the appropriate diagnostics or expertise patient safety may be compromised by delayed or incorrect treatment. Provision of seven day diagnostic services is
key to ensure the safe flow of patient care, having the potential to reduce length of stay and improve both patient experience and hospital efficiency.

### 3.4.1 Benefits of seven day diagnostics

Studies have noted a correlation with 24 hour diagnostics and consistent staffing levels and no significant difference between weekend and weekday mortality\(^48\). The Royal Infirmary of Edinburgh had implemented an acute medical admissions unit, with consistent staffing levels and 24-hour access to diagnostics for the early phase of critical illness. A study at the Infirmary\(^49\) analysed all hospital admissions in 2001 for six predetermined diagnoses (total 3,244) of chronic obstructive pulmonary disease, cerebrovascular accidents, pulmonary embolism, pneumonia, collapse and upper gastrointestinal bleed. It compared hospital mortality rates, re-admission rates and hospital length of stay for weekend admissions as compared to those on a weekday. Weekend admission was not associated with significantly higher in-hospital mortality, re-admission rates or increased length of stay compared to the weekday equivalent for any of the six conditions. This absence of the poorer outcomes normally seen in weekend emergency admissions could be attributable to the consistent staffing and availability of diagnostics across the weekend.

### 3.4.2 Imaging

Access to imaging and to competent reporting underpins 80% of all clinical decisions throughout the patient pathway\(^50\). However, weekend access to diagnostics has historically been significantly lower than on weekdays, often associated with the high marginal costs of staffing departments for the additional periods. This was reflected in a 2007 Healthcare Commission report\(^51\) which found that whilst imaging departments have to provide round-the-clock service for emergency patients, for non-urgent examinations, at the time they were typically open for only 40 hours a week. This meant that less urgent cases were often delayed, particularly if requested over the weekend.

In 2012 the Department of Health published *Implementing 7 Day working in Imaging Departments*, which outlined considerable evidence for seven day working\(^52\).

The implementation of routine seven-day working at East Kent Hospitals University NHS Foundation Trust significantly increased the capacity and availability of the Radiological Sciences department. The new model supported appropriate weekend discharges, reduced average length of stay and the patient response was overwhelmingly positive. Although only one example, it’s important to note that the programme was able to deliver over £3m in savings over two years, achieved through a mix of cost reductions, improved productivity and increased income.

Best practice guidance developed by NHS Improvement and endorsed by the National Imaging Board states that “Patients have a right to expect that investigations will be seen and accurately reported within as short a time as possible. To provide high quality and effective patient-centred imaging services, it is essential that imaging departments support the whole patient pathway by providing the reporting of images in a timely manner.”

There is evidence however, demonstrating that significant proportions of inaccurate reporting are due to the misinterpretation of results by non-specialists or training grade radiologists, who have been found to make significantly more errors in the interpretation of scan results than consultant radiologists\(^53\)\(^54\)\(^55\). This means that access to a consultant radiologist, both in-hours and out-of-hours, is an important marker of a quality service. This has become increasingly
possible with the availability of technologies such as nationwide PACS facilities and systems including voice recognition and digital dictation.

### 3.4.3 Other key diagnostic services

NHS Improvements 2013 publication, Service improvement in Blood Sciences\textsuperscript{56}, highlighted that 95% of all clinical pathways rely on a patient having access to efficient, timely and cost-effective pathology services. As with imaging, clinical decision-making at weekends is often not possible without the availability of the service.

Endoscopy and physiological measurement (a term predominantly related to the assessment of function of major organ systems) are two further areas that encompass a range of key diagnostic and therapeutic services for patients and are also prone to delays in their availability, disrupting the patient pathway.

### 3.4.4 Service levels against recommended practice

Both NCEPOD\textsuperscript{57} and the Royal College of Radiologists\textsuperscript{58} state that severely and critically ill patients should have immediate access to radiological services to allow timely and accurate diagnosis to enable appropriate treatment.

Recommendations from the Royal College of Pathologists state that Biochemistry, Haematology and Medical Microbiology and Virology clinical advice should be available 24/7 with a response time of 30 minutes\textsuperscript{59}.

Significant progress has been made in recent years. The emergence of heart attack centres and hyper acute stroke units mean patients have 24/7 access to diagnostics that support life saving decisions about their care. In addition, NHS Improvement has been working with pilot sites nationwide in areas such as cytology, histopathology and radiology saving patients millions of waiting days and hundreds of thousands of pounds in savings for hospitals.

Results from the survey have some positive news for seven days services but depend on the service. Figure 4 shows that almost all hospitals have rapid access to x-ray and CT for emergency inpatients 24 hours a day, seven days a week. The remaining services follow the same pattern to varying degrees – access peaks during 'day time' hours throughout the week but is lowest at the weekend compared to weekdays, with less than half of hospitals having access to interventional radiology, MRI and Echocardiography during weekend out-of-hours.

In order to reduce the overall endoscopy waiting lists, an increasing number of hospitals have extended endoscopy procedures at the weekends, which allows access to urgent patients at the weekends as well.

**Figure 4: Percentage of hospitals with rapid access (within 1 hour) to key diagnostics where appropriate for emergencies arising in in-patients**
The Trust implemented a new model for unscheduled care that included seven-day on-site consultant presence in the emergency department and acute care and routing all emergency patients through the emergency department. The existing radiology service was unable to support this move to seven-day extended hours and so in response a system of extended weekday and weekend working was introduced to provide a timely and effective service and meet the demand. Consultant radiologists are now present on site until 21.00 Monday to Friday and between 08.30 to 17.30 on Saturdays and Sundays. Benefits have included a reduction of length of stay which has enabled the Trust to operate with fewer beds.

The radiologists' timetable was re-written using a time shifted approach, ensuring the main departments were not denuded of staff during the week. The seven day imaging service has been introduced in plain film radiography, CT, MRI and ultrasound to improve patient pathways and the delivery of imaging service. To support the review of a patient, rapid access, 24 hours a day, seven days a week to key diagnostic services is crucial to facilitate timely decision making and commencement of treatment.

In an emergency situation, there are two aspects of the diagnostic service that are important. Firstly, how promptly the diagnostic test can be undertaken and secondly, that the report that is returned is of sufficient quality to support effective decision-making about the subsequent care required.

**Key message:** The vast majority of patients require diagnostic investigation as part of their care. If clinicians and allied health professionals are to diagnose promptly and progress patients’ care across seven days a week, they must be supported by prompt testing and accurate reporting to support decision-making.

**Standard:** Hospital inpatients must have scheduled seven-day access to diagnostic services such as x-ray, ultrasound, computerised tomography (CT), magnetic resonance imaging (MRI), echocardiography, endoscopy, bronchoscopy and pathology. Consultant-directed diagnostic tests and their reporting will be available seven days a week:
Within 1 hour for critical patients
Within 12 hours of urgent patients
Within 24 hours for non-urgent patients

3.5 Intervention / Key services

Patients often require intervention from key services, either identified as part of their initial diagnosis and management plan or as a result of deterioration whilst in the hospital’s care. Services include emergency general surgery, critical care response, interventional radiology and interventional endoscopy. In some instances it is necessary for services to be immediately available on-site and for others a networked solution may be appropriate in order to provide a viable 24/7 service.

3.5.1 Emergency general surgery

General surgical emergencies make up about one half of all surgical admissions and about one-quarter of all emergency admissions\(^{61}\). Demand for this service does not recognise time of day therefore it is vital that the human and physical resources required to optimise patient outcomes are available 24 hours a day, seven days a week.

As with acute medicine, there is a clear association between the timely availability of senior expertise and improved patient outcomes. Whilst not all patients admitted as a surgical emergency will ultimately require surgery, the decision to operate can be very complex requiring input from anaesthesia and medicine, as well as the patient and/or their carer\(^{62}\). The consultant surgeon must take the lead on decisions on the management of patients with emergency surgical conditions, and must liaise effectively with the patient and carers, taking account of the input of the whole multi-professional team to come up with the best individualised care plan for each patient. Several major reports however, have identified a link with inadequate early consultant involvement and poor outcomes, including increased mortality\(^{63}\) \(^{64}\).

The Royal College of Surgeons recommend that the on-take consultant is available for telephone advice at all times and on-site within 30 minutes when required. As an absolute minimum, patients not considered high risk are discussed with a consultant within 12 hours of admission and should be seen by a consultant within 24 hours\(^{65}\).

Our survey found that half as many hospitals at the weekend (16%) carried out consultant review of all emergency admissions within 12 hours of the decision to admit or 14 hours from arrival at hospital compared to weekdays (32%).

NCEPOD have previously found that for non-consultants performing major surgery on emergency patients, the level of supervision was ‘inadequate’ in a third of cases reviewed\(^{66}\). This is reflected in a 2010 survey of surgeons, where 72.3% felt that the mandatory presence of a consultant surgeon (and anaesthetist) in theatre would ‘significantly improve care’\(^{67}\). Patients with major emergency abdominal conditions, whether primary or due to complications of previous treatment, present significant challenges for prompt effective diagnosis and
treatment. An experienced surgeon is more likely to identify and mitigate complications and provide expert input and leadership\textsuperscript{68}.

The grade and experience of the anaesthetist supporting the operation is also vital to patient outcomes. The presence of an appropriately trained and experienced anaesthetist is the main determinant of patient safety during anaesthesia\textsuperscript{69} with one review finding that 22\% of anaesthesia related surgical mortality involved the grade of the anaesthetist being too junior\textsuperscript{70}. The Royal College of Surgeons (RCS) recommend that in cases with predicted mortality over 5\%, a consultant surgeon and consultant anaesthetist are present for the operation except in specific circumstances where adequate experience and the appropriate workforce is otherwise assured\textsuperscript{71}.

NCEPOD\textsuperscript{72} found that trainee anaesthetists carried out 60 to 70\% of their emergency work out-of-hours, whereas consultants undertook 75\% of their emergency work during office hours. Involvement of a senior anaesthetist continues to be a key theme nearly a decade on in the more recent NCEPOD publication\textsuperscript{73}.

Recommendations state that emergency general surgical patients should have access to a dedicated emergency theatre available at all times\textsuperscript{74, 75, 76}. Poor theatre provision can be detrimental to the patient and their outcomes\textsuperscript{77} and can be a factor in increased post-surgical mortality\textsuperscript{78}. A 2010 NCEPOD review demonstrated that delays which were judged to affect the appropriate timeliness of the operation occurred in one in five cases\textsuperscript{79}. Our survey found that less than half of hospitals manage to operate on 90\% or more of their emergency cases on the day they were originally planned. Of the reasons given, 90\% said that theatre capacity was the principle reason for this.

**Case study: Oxford Radcliffe Hospitals NHS Trust\textsuperscript{80}**

Oxford Radcliffe Orthopaedic Trauma Service team has implemented a 24 hour, 365 days a year consultant delivered service, with a multidisciplinary approach to decision making that includes nurses and Allied Health professionals.

Their aims were that all medical diagnoses and treatments should be carried out either by, or under the direct supervision of, a fully trained consultant surgeon and that every clinical experience should be a learning opportunity, irrespective of the time of the day.

A shift from a ‘firm based’ to a ‘team based’ structure was trialled and then implemented with a dedicated on-call team consisting of a consultant trauma surgeon, a higher surgical trainee (SpR) and a surgical trainee (F2) being resident for 24 hours. A consultant is present on every operating list and clinic and the higher surgical trainees work on a flexible rolling six week rota.

Within 24 hours of their initial A&E assessment all new inpatients receive a consultant trauma surgeon opinion and have an agreed consultant-assessed management plan in place prior to surgery.

Professional development and increased responsibility was pivotal to the change in medical practice leading to a greater autonomous practice, with nurse-managed wards and a truly interdependent multidisciplinary team structure.

Higher consultant involvement has seen fewer complications, lower error rates, better gate keeping of admissions and reduced length of stay. Junior doctors have more structured access to senior experience and direct supervision within their training.
Cost savings were made in the reduction of pay in junior doctors and reduction in unit price was achieved, predominantly as a result of reduced length of stay. The total inpatients annual bed requirement for the service decreased by 26.4 %, resulting in adult bed reduction from 54 to 48.

3.5.2 Interventional radiology

Interventional radiology (IR) represents a range of minimally invasive procedures which are performed using image guidance and largely under local anaesthesia. This technique minimises physical trauma, reduces the need for open surgery, avoids general anaesthesia, reduces infection rates and shortens recovery time and hospital stays. As a result IR is now at the forefront of managing many life-threatening emergencies and demand has significantly increased over recent years.

All patients should have access to emergency IR services however, hospital provision varies widely across the country. The British Society of Interventional Radiology (BSIR) with NHS Improvement surveyed radiology service providers about the extent of core interventional radiology provision on a 24/7 basis. As figure 7 shows, they found that many providers had either no or limited core services on a formal rota and formal network provision.

**Figure 7: Interventional Radiology service provision map at May 2012**

**Key**

- **Red:** No core service and no network pathways - includes ad-hoc rotas.
- **Amber:** Some core services on a formal rota, limited formal network provision
- **Green:** Core service provision or partial service provision with a formal rota and formal network pathways to an agreed recipient trust.

Children’s units have been excluded

This continuing situation, with low provision and ad-hoc arrangements at weekends puts patients at risk and is neither sustainable nor reliable. Our survey found that while almost 70% of hospitals have access within the hour to Interventional Radiology during the week, out-of-hours and at weekends this drops to below 50%. Where hospitals are unable to provide a
NHS Services, Seven Days a Week Forum Evidence base

A comprehensive in-house service the Royal College of Radiologists recommends hospitals collaborate to provide a networked service or develop a hub and spoke service arrangement.

NCEPOD recently reviewed the care received by patients with an aneurysmal subarachnoid haemorrhage highlighted serious delays in the patient pathway, across referral, diagnostics and treatments. The review found that interventional radiologists were only available seven-days-a-week in ten out of twenty-seven neurosurgical centres.

**Case study: Royal Devon & Exeter and Torbay hospitals**

Two neighbouring district general hospitals, Royal Devon & Exeter and Torbay hospitals, each with three interventional radiologists have developed a networked solution to provide IR emergency cover at both sites, providing 24 hours a day, seven days a week safe and secure service.

The planned change included radiologists visiting each other’s departments to familiarise with layout and staff. Consumables such as wires and catheters were similar in each department but all radiologists satisfied themselves that their preferred kit was available on both sites. Planning discussions included radiology department managers, medical directors, senior executives, the radiology nurses and interventional radiographers, and the general radiologists.

On weekday and evenings and nights, each site covers its own emergency work. From Friday evening to Monday morning and on bank holidays there is one interventional radiologist on call, covering both sites. The radiologists’ rota is therefore 1:3 weekdays and 1:6 weekends supported by radiology nurses and interventional radiographers.

Increased funding was required for small increase in pay costs for the changes in job plans and on call frequency for the radiologists and formal on call requirements of nurses and radiographers, which was built into the business case. Increased awareness of the service has led to a significant increase in out-of-hours cases compared to the previous ad-hoc arrangements. However, all of these cases are felt to be appropriate for the benefit of the patient care.

The agreed portfolio of work covered on both sites on call includes nephrostomy, abscess drainage, peripheral vascular intervention and embolisation for haemorrhage. Other procedures are provided on ad-hoc basis as not all interventional radiologists are able to perform these procedures. Radiologists from both sites meet regularly to discuss the service and cases performed. In addition to IR, vascular surgeons from each hospital have also developed cross-site rotas which has encouraged further development of formal cross-site MDT working.

### 3.5.3 Interventional endoscopy

Similar to interventional radiology, endoscopy is a minimally invasive procedure normally carried out under local anaesthetic and has the associated benefits to patient care of reducing patients’ recovery time.

In addition to diagnostic procedures, endoscopy has a rapidly developing range of techniques that is reducing the need for surgery in a high risk patient population. It can be used to treat conditions such as decompensated liver failure and acute upper gastrointestinal bleeding.
(AUGIB), which has a hospital mortality rate of approximately 10%. Both require urgent investigation and treatment but despite this, surveys of UK hospitals have shown that out-of-hours provision of diagnostic and therapeutic endoscopy is poor\textsuperscript{88} and in some instances found to be “unsafe”\textsuperscript{89}. The 2007 audit of endoscopic services for AUGIB found that only 52% of hospitals had a formal consultant-led out-of-hours service. Furthermore, these hospitals had slightly lower risk adjusted re-bleeding and mortality rates.

The current arrangements that exist in England are unsustainable and ultimately pose a safety risk to patients – especially those admitted out-of-hours overnight and at weekends.

In 2010 the British Society of Gastroenterology and Royal College of Physicians of London produced a guide to providing out-of-hours endoscopy services\textsuperscript{90} with service standards recommending that patients who require urgent interventions either for endoscopy, interventional radiology or surgery must have formal 24/7 arrangements available.

This need was further stressed in 2012 NICE\textsuperscript{91} guidelines on the management of AUGIB which recommended endoscopy should be offered to unstable patients with severe AUGIB immediately after resuscitation and within 24 hours after admission to all other patients with AUGIB.

**Case study: Royal Bolton Hospital NHS Trust\textsuperscript{92}**

The Trust redesigned its services to ensure patients with severe acute upper gastrointestinal bleeding receive treatment in line with NICE recommendations. The redesign project involved a strategic review of the endoscopy department with the acknowledgment that patients admitted with gastrointestinal bleeding are high-risk and that their treatment outcomes can be improved by redesigning the endoscopy services offered.

The new model includes a seven day working endoscopy unit, open Monday to Sunday, 08.00 to 18.00 hours with up to three endoscopy slots on the daily list kept free for patients with upper gastrointestinal bleeding. Out-of-hours an on-call endoscopy service is available that includes patients who are haemodynamically unstable.

The new model of working has seen reduction in length of inpatient stay and rates of patient mortality. The redesigned service is able to admit patients with AUGIB directly from accident and emergency to endoscopy unit. This means that rapid assessment and treatment of patients with AUGIB is now possible, in line with NICE recommendations.

### 3.5.4 Critical care

Critical care involves the treatment of patients requiring a higher intensity of support than those on acute and downstream wards, either in an Intensive Care Unit (ICU) or High Dependency Unit (HDU) by specially trained teams of health professionals. Clinical deterioration can occur at any time in a patient’s illness including when outside the unit, as such it is important for the presence of units to be complemented by effective monitoring of patients on wards and the timely input of critical care expertise where appropriate.

One study showed that 4% of unexpected deaths on a ward were potentially avoidable if appropriate action had been taken when deterioration was first observed\textsuperscript{93}. The 2005 NCEPOD report: *An acute problem*, studied the provision of critical facilities linked to the care of severely ill medical patients in hospitals and found a number of areas for improvement. The study found that of those patients who had been in hospital for more than 24 hours prior to ICU admission, 66% had shown physiological instability for more than 12 hours. It was also found that ICU admission was thought to be avoidable in 21% of cases\textsuperscript{94}.
In 2012 the Royal College of Physicians of London published the first iteration of the National Early Warning Score (NEWS) designed to standardise the assessment of physiological parameters and improve safety and clinical outcomes for acutely ill patients. In addition, it recognises the contribution of critical care and acute care outreach teams stating that they should be available 24/7.

**Key message:** Key interventional services such as emergency surgery, critical care and interventional radiology and endoscopy are a time critical response to an urgent or emergency need. When required, access to them will inevitably have a profound effect on a patient’s outcome but in the case of radiology and endoscopy, service provision is shown to be highly variable, particularly at weekends.

**Standard:** Hospital inpatients must have timely 24 hour access, seven days a week, to consultant-directed interventions that meet the relevant specialty guidelines, either on-site or through formally agreed networked arrangements with clear protocols, such as
- Critical care
- Interventional radiology
- Interventional endoscopy
- Emergency general surgery

The input of mental health services is vital to deliver a modern, responsive and integrated acute service. Patients should have the same access to a consultant psychiatrist as they would have from a consultant specialising in physical health.

A study of by the Centre for Mental Health in 2012 highlighted that people with a physical health condition are two to three times more likely to also have a mental illness than the rest of the population. It estimates that 80% of all hospital bed days are occupied by adult patients with co-morbid physical and mental health conditions including depression, dementia and delirium.

### 3.5.5 Liaison psychiatry

Liaison psychiatry addresses the mental health needs of people who are being treated primarily for physical health problems or symptoms. However, the perception that liaison psychiatry is an optional rather than essential part of acute hospital services means that there remains significant variation across the country both in the provision of liaison psychiatry and the service delivery model, with provision being markedly poorer at the weekend.

This impacts both the quality and efficiency of care. The Royal College of Psychiatrists lists the adverse consequences as a two to three fold increase in hospital mortality rates, increased length of stay typically of around 5 to 10 days, increased re-admission rates and increased rates of discharge to institutional care rather than the patient’s home.

### 3.5.6 Benefits of mental health liaison services

The report by the Centre for Mental Health cites a wide body of evidence suggesting a reduction in length of stay of 2-5 days per patient is achievable. An evaluation of the RAID (Rapid Assessment, Interface and Discharge) service in Birmingham identified reduction of 14,500 hospital bed-days (equivalent to £3.55m) in the first full year of implementation.

Another example of the potential benefit to both patient and provider is a hospital that achieved a 50% reduction in the rate of admission of older people to psychiatric hospitals following the
introduction of psychiatric liaison services. As a result the Centre for Mental Health calculates that the average hospital could realistically achieve £5m savings a year from effective liaison psychiatry service.

Patient experience is also a key consideration. Deliberate self-harm is one of the most common reasons for an emergency admission to hospital, with over 170,000 admissions per year in the UK\(^9\). A survey of this patient group rated staff poorly in terms of both their attitude and understanding of the condition, as well as highlighting serious gaps in the training\(^9\). For some patients, this can lead to non-engagement with services and possibly further self-harm episodes.

**Case study: Birmingham and Solihull Mental Health NHS Foundation Trust – Rapid Assessment Interface Discharge (RAID)**

The RAID service is an innovative mental health model accredited by the Psychiatric Liaison Accreditation Network of the Royal College of Psychiatrists and having won a Health Service Journal Award for innovation in 2010. Offering a comprehensive range of mental health specialities within one multidisciplinary team 24 hours a day, seven days a week it ensures all adults can be assessed, treated, signposted or referred appropriately regardless of severity or time of presentation.

The service meets mental health needs of all adult patients in the hospital, including those who self-harm, have substance misuse issues or having mental health difficulties commonly associated with old age, including dementia. With a 24/7 service the team have target response times of one hour to assess patients referred from A&E and 24 hours for patients referred from hospital wards.

The service provides formal teaching and informal training on mental health difficulties to acute hospital staff. It puts an emphasis on diversion and discharge from A&E and on the facilitation of early but effective discharge from general admissions wards. In terms of follow-up support, after discharge from the hospital a large number of patients are referred to their General Practitioner, others to community mental health teams, home treatment teams or RAID follow-up clinic.

In order to assess the effectiveness and efficiency of the RAID model, data was independently collected and analysed in respect of three key areas: reduced length of stay, reduced readmission and admission avoidance at the medical assessment unit of the acute hospital. It concluded that the RAID service is value for money, particularly as the benefits included in the assessment are over and above any improvements in health and quality of life.

**Key message:** A high quality, efficient patient pathway is dependant on access to high quality mental health services across the seven days of the week to maximise the clinical and financial benefits from timely and appropriate input to patient assessment, on-going care and discharge support.

**Standard:** Where a mental health need is identified following an acute admission the patient must be assessed by psychiatric liaison within the appropriate timescales 24 hours a day, seven days a week:

- Within 1 hour for emergency* care needs
- Within 14 hours for urgent** care needs

*An acute disturbance of mental state and/or behaviour which poses a significant, imminent risk to the patient or others.
3.6 On-going review of patients

Ward rounds are a complex clinical process. They provide the opportunity for the multidisciplinary team to review progress and potentially refine or amend a care plan informed by examination, observation and further investigation.

In 2012 the Royal College of Physicians of London and Royal College of Nursing jointly published *Ward Rounds in Medicine: Principles for best practice* calling for ward rounds “to be restored to a position of central importance in how we collectively care for and communicate with patients”. It raises the issue that ward rounds are a neglected part of inpatient care with underestimated benefits to patients and opportunity for effective communication and shared learning amongst members of the multidisciplinary team.

3.6.1 Benefits

A RCP study found that hospitals in which there were two or more acute medical ward rounds per day reviewing all patients on the unit had a lower mortality rate for patients with a hospital length of stay of more than seven days.

Other benefits to regular patients’ reviews include:

- The opportunity to listen to patient and carers concerns and involve them in decision-making;
- The ability to review the patient’s status, check vital signs and identify improvement or deterioration;
- Convening the expert multidisciplinary team for, diagnosis, treatment, medication and discharge plan arrangements, and;
- Being able to provide patients, family and carers with information in relation to their care.

3.6.2 Challenges from reduced continuity of care

The RCP’s Future Hospital Commission recommends that services are designed to provide continuity of care as the norm, with seamless care for all patients; however, increasing specialisation of care and the European Working Time Directive mean that continuity of care is increasingly difficult to maintain. Patient care is more frequently transferred between shifts, wards, specialties, consultants and their teams. Taken alongside advances in diagnostic and therapeutic possibilities, coordinating the input of multidisciplinary team members for ward rounds has become increasingly challenging.

A 2012 survey by the Royal College of Physicians of London (RCP), found that over one quarter (28%) of consultant physicians surveyed rate their hospital’s ability to deliver continuity of care as poor or very poor. A similar proportion rated equally poorly their hospital’s ability to deliver stable medical teams for patient care and education.

These challenges make it even more important to have clearly defined, robust structures and processes in place for the on-going review of patients. Key aspects include strong leadership with clearly established roles and responsibilities from the MDT relevant to each specific ward,
NHS Services, Seven Days a Week Forum

Evidence base

dedicated time and space (e.g. for pre- and post-round briefings) and standardised documentation.

Nurses in particular are central to ensuring patients receive consistent and effective care. They support the sharing of information between medical teams and patients and their families/carers. Crucially they also help to articulate the patient’s views, preferences and needs.

Another critical part of maintaining continuity, and one that is recommended by the RCP\(^{103}\), is having an on-take working pattern where consultants work several consecutive days, rather than the ‘consultant of the day’ model that remains in many hospitals. This helps ensure patients remain in the care of a single consultant and as already highlighted, is associated with improved outcomes.

### 3.6.3 Service levels against recommended practice

Both the RCP and RCS recommend twice-daily consultant-led ward round/review of all patients in acute units, seven days a week, to support on-going decision making and to review the management plans and results\(^{104}\)\(^{105}\). Once inpatients are beyond their acute phase, AoMRC recommend patients should be reviewed by an on-site consultant at least once every 24 hours, seven days a week unless it has been determined that the patient’s care pathway would not be affected\(^{106}\). Board rounds can be useful to facilitate multidisciplinary input and prioritise bedside reviews, however, the RCP and RCN state that they should not replace face-to-face clinical reviews with patients\(^{107}\).

Figure 8 shows that less than half of hospitals currently deliver the recommended twice daily consultant-led review of patients on the AMU at any time, however this decreases further to 27% at the weekend, with a similar pattern seen for acute emergency general surgery patients.

**Figure 8: How often would each patient on the acute medical unit usually be reviewed by a consultant?**

When considered alongside the variation in MDT availability it is clear that ward round practice varies considerably amongst hospitals and will generally be of poorer quality at the weekend compared to weekdays as a result of reduced frequency and without the presence of the full MDT.
Case study: Heart of England NHS Foundation Trust

The Trust found that once a patient was transferred out of AMU they may wait considerable time for the next scheduled consultant review, depending on the day and time of the transfer. To address this delay the daily ‘golden hour’ ward round was introduced by the general medical team.

In the first hour of their working day seven days a week a consultant physician from each general medical team conducts a round on their allocated medical wards and specified outlying surgical wards. This facilitates prompt, consultant endorsed review within 24 hours of transfer from the AMU, enhancing continuity of care and supporting daily patient management and discharge planning. Ward staff welcome the presence of a consultant each day for advice and support and it provides an important opportunity for teaching and support to junior doctors. Weekend working has also made Monday morning much more manageable.

The challenge of implementing the ‘golden hour’ was persuading all medical teams to participate and to reassure consultants that this pattern of seven day service will be an efficient use of their time and expertise. The commitment requires a comprehensive review of consultant job plans with rescheduling of morning duties on weekdays.

Key message: Consultant-delivered ward rounds are a central pillar to patient care, providing a structured and consistent opportunity for the multidisciplinary team to review patients’ progress, share information and communicate with the patient. This also makes them an ideal opportunity for training and education. Reduced weekend service levels mean that many hospitals do not meet national recommendations for twice daily ward consultant rounds.

Standard: All patients on the AMU, SAU, ICU and other high dependency areas must be seen and reviewed by a consultant twice daily, including all acutely ill patients directly transferred, or others who deteriorate. To maximise continuity of care consultants should be working multiple day blocks.

Once transferred from the acute area of the hospital to a general ward patients should be reviewed during a consultant-delivered ward round at least once every 24 hours, seven days a week, unless it has been determined that this would not affect the patient’s care pathway.

3.7 Onward transfer of care

Patients should be discharged home or transferred to an appropriate place of onward care in the community when it’s clinically appropriate to do so. This helps keep length of stay to a minimum and improves patient experience. System-wide, the flow of patients through the hospital and all care settings is optimised enabling the NHS to maximise the positive potential of its resources – human, physical and financial.

Where hospitals, primary and community care providers and social services have reduced services at weekends it becomes more difficult to transfer or discharge patients at a rate that is consistent with weekdays. A recent report from the National Audit Office found that 0.83 million acute bed days were lost due to delayed discharges in 2012/13. These delays mean
beds are not freed up for patients ‘upstream’ whose clinical need is greater, ultimately putting pressure on the emergency department, which has no control over its workload and is forced to deal with two cohorts of patients in an unsuitable environment: those who would otherwise access primary and community services which are unavailable at the weekend and therefore attend A&E; and those who have been assessed and are ready to be admitted to an acute or specialist ward but remain in the emergency department because of a lack of available beds.

3.7.1 Evidence base
Despite its importance, the 2011 National Inpatients Survey found that discharge was delayed in about 40% of the respondents, and when asked if they encountered barriers to discharging patients at the weekend, 99% of hospitals we surveyed said they did. Figure 9 shows the most common reasons given, broadly resulting from having a reduced level of service or expertise at weekends that prevents them from undertaking the task required to support discharge.

Figure 9: Most commonly identified barriers to discharging patients at the weekend

As you might expect from a survey of acute hospitals, social care and other services in the community were the most commonly identified barriers. However, what’s important is that the vast majority of survey respondents identified more than one barrier to enabling weekend discharge. Even where adult social care is extended over the weekend to facilitate additional discharges, such as recent initiatives by Lincolnshire County Council, their impact is limited as a result of other assessments not being completed, including hospital services.

Whilst some professions and services are more commonly required and will therefore be able to benefit more patients from being available over the weekend, by the nature of patients having multiple and complex needs, each additional service that is available is arguably likely to benefit more patients that it would if it was implemented in isolation. And although there are clear financial challenges to simultaneously extending multiple services across the weekend, the greatest hospital efficiency gains will come with the greatest number of patients that benefit from a reduced length of stay – whether it enables a greater number of patients to be treated within the same resource, or the hospital is able to remove fixed costs.

A system implemented by Royal Liverpool and Broad Green Hospitals used case managers to work with the hospital’s multi-disciplinary team, community workers and social care to reduce delays to discharge. Using this system, the hospital reduced the average number of patients on the ‘ready to discharge’ list from 45 to 18, which also saw a 30% increase in the number of referrals into community beds, indicating better utilisation of intermediate care capacity.
3.7.2 Recommended practice
In 2010 the Department of Health published Ready to go? Planning the discharge and the transfer of patients from hospital and intermediate care, which outlines 10 key practices and principles to achieving safe and timely discharge:

1. Start planning for discharge or transfer before or at admission.
2. Identify whether the patient has simple or complex discharge or transfer planning needs. Involve the patient and carer in the decision.
3. Develop a clinical management plan for every patient within 24 hours of admission.
4. Coordinate discharge or transfer of care process and hand over responsibilities at ward level.
5. Set an expected date of discharge or transfer within 24 to 48 hours of admission, and discuss with the patient and carer.
6. Review clinical management plan with the patient each day, take necessary actions and update progress towards the discharge or transfer date.
7. Involve patients and carers so that they can make informed decision and choices.
8. Plan discharges and transfers to take place over seven days to deliver continuity of care for the patient.
9. Use discharge check list 24 to 48 hours before the transfer.
10. Make decision to discharge and transfer patients each day.

These good practices are further reiterated in the RCP’s Future Hospital Commission. It outlines the need for early identification of an estimated date of discharge along with all immediate and ongoing care needs so that the patient, carers and all health professionals across agencies can work towards returning the patient to normal life. The Commission stresses the need for effective relationships between medical and other health and social care teams with realistic allocation of responsibility for further action when patients move between care settings.

Case study: Sheffield Teaching Hospitals NHS Trust
As part of the Health Foundation’s Flow Cost Quality Programme the Trust explored the relationship between patient flow, cost and outcomes in its geriatric emergency medicine care pathway to better match capacity with demand and reduce “waste” or waits from the patients’ point of view.

Early review showed that patients arriving directly to A&E were normally seen by junior doctor, but remained in A&E for at least 4 hours before being transferred to one of the medical assessment units (MAU) or geriatric medicine ward. Most then waited until the following morning for a consultant ward round, often seen by acute physician before being seen by geriatric medicine consultant. In all cases the assessment or admission may be followed by a multidisciplinary nursing and therapy assessment for intermediate healthcare at home.

The team recognised that getting patients home more quickly required not just earlier assessment and care planning but the discharge processes require inter-agency working with the local authority and primary care.

The team tested and implemented a range of changes, including:
- Change consultant working patterns (up to 8.00 pm on weekdays and 5.00 pm on weekends) from ‘post-take’ to ‘on-take’
- See patients in real time, on admission
- Establish an MAU focused on frail older people
- Put in place a multidisciplinary assessment team
- Speed up discharge by switching to a model of ‘discharge to assess’

Whilst the demand has remained same the results have been very positive, with a 37% increase in patients discharged on the day of admission or the following day, with no increase in re-admission rate. There was a reduction of bed occupancy for emergency care of the elderly, allowing two wards to be closed, a total of 68 beds. The Trust also reported around 15% decrease of in-hospital mortality for geriatric medicine.

Key message: Enabling the timely discharge or transfer of patient care improves both quality of care and the efficiency of services. It requires resources to be balanced and aligned so that they are available to meet patients’ needs at the earliest possible point, seven days a week.

Standard: Support services, both in the hospital and in primary, community and mental health settings must be available seven days a week to ensure that the next steps in the patient’s care pathway, as determined by the daily consultant-led review, can be taken.

Reviews in recent years conclude that if the NHS is to maintain an appropriately skilled workforce, it needs to change its working patterns and training methods\textsuperscript{115,116}. Much of the driving force comes from the same pressures on emergency care that compound the need for seven day services but even where other drivers exist there is some alignment between the solutions put forward and the characteristics of seven day services.

The European Working Time Directive (EWTD) was introduced in 1998 and had the most significant impact amongst hospital doctors and those providing emergency and out-of-hours care. The directive was important in countering the damaging effects on quality of care by people working when over-tired; a review by Taffinder et al found that the impairment to the cognitive performance of surgeons from 24 hours wakefulness was equivalent to being above the legal drink drive limit\textsuperscript{117}. However, restrictions on time resulted in greater use of shift systems and trainees became increasingly relied upon to provide out-of-hours cover, unsupervised and at the expense of training opportunities due to restrictions on working hours. The Temple review concluded that there was sufficient time to deliver high quality training in a 48 hour week but that changes to the traditional experiential model were needed. Amongst its recommendations was the need for greater levels of consultant-delivered services and to realise the learning opportunity in every clinical situation, including using multi-disciplinary team working and appropriately supervised handovers.

The Hospital at Night programme also sought to reduce the dependency on doctors in training for providing cover at night in order to reduce their working hours without damaging their training. This was to ensure that junior doctors are not over-worked and under-supervised and ensure patients receive high-quality care in hospitals at night.

In addition to the need for great levels of consultant delivered care out of hours and at weekends, the RCP’s Hospital workforce. Fit for future?\textsuperscript{118} concludes that an ageing population means that the hospital workforce needs to be reorganised to meet the needs of
frail elderly patients better, with a greater proportion of doctors trained in acute, general and geriatric medicine. Recruiting these doctors is becoming increasingly difficult though, with three successive years of only 50% fill rates for emergency medicine trainees, resulting in a ‘lost cohort’ of over 200 potential consultants\textsuperscript{119}.

An independent review, led by Professor David Greenaway\textsuperscript{120}, of medical training has highlighted the need of more doctors who are capable of providing general care in broad specialties across a range of different settings. This is being driven by a growing number of people with co-morbidities, an ageing population, health inequalities and increasing patient expectations. The report recommends changes with inclusion of broad teaching in medical training and range of general specialties (e.g. child health, women’s health, mental health) within post graduate training.

Education and improvement in care practice should not stop however with those in training. All health professionals should be routinely involved in reviewing patient outcomes to identify areas where improvements can be made at an individual, team, ward and hospital-wide level.

### 3.7.3 Developing the future healthcare workforce

In January 2012, the Department of Health published \textit{Liberating the NHS: Developing the Healthcare Workforce: from design to delivery}\textsuperscript{121} which aims to set up an effective education and training system for the health workforce, being led by Health Education England (HEE) and Local Education and Training Boards (LETBs).

The report calls for a better use of the expanded consultant workforce, not only to improve training for doctors but also in terms of better efficiency and enhanced safety and quality of care patients; and as with the evidence throughout this review, there is also recognition of the contribution made by nurses and allied health professionals in the assessment, diagnosis and treatment of patients.

Health Education England’s approach to quality will directly link education and learning to improvements in patients’ outcomes. An Education Outcomes Framework with five domains has been developed to measure both progress in delivering improvements to education, training and workforce development as well as its consequential impact on the quality and safety of patient care.

---

**Case study: Northumbria Healthcare NHS Foundation Trust\textsuperscript{122}**

The Trust provides a seven day consultant-led and consultant-delivered acute care service with reconfiguration of the foundation programme for years 1 and 2 to maximise doctors training in acute care. The geographical challenge represented 10 inpatient and 20 outpatient sites. The establishment of both a Rapid Access and Treatment Unit and Medical Assessment Unit together with extra consultant A&E time and enhanced nurse triage supported the ‘Front of House’ (FOH) hospital activities. As part of the foundation programme pilot, the Trust altered junior doctors (FY1 and 2) training to ‘front load’ their on-call commitments within their first four months of FOH exposure. This is followed by four months ‘Back of House’ and four months of exposure to other specialities – all supported by the Hospital at Night and nurse practitioners.

Job plans were changed and on-call commitments were re-defined; being on-call was part of the working day. Physicians extended their working days from 08.00 to 22.00; this allowed for increased trainee contact. Three effective handovers could be facilitated with the late one evening handover to the Hospital at Night team. Teaching and ward work was no longer interrupted as all the ‘on-call’ was done whilst covering the FOH, leaving the BOH staff more
able to become much better organised. The FY1s attained better support on the clinical floor from both consultants and previous trainees.

When rostered for a ward based slot the consultants were not called away to deal with emergencies as this was covered by the FOH team. In the new emergency care centre, the clinical floor will be fronted by a 24 hour resident emergency care consultant. This is backed by nine consultant led teams; upper and lower limb orthopaedics and trauma, upper and lower gastrointestinal surgeons, obstetrics and gynaecological, paediatrics, cardiology respiratory and elderly care. Since the new integrated seven day service has been put in place patients have not experienced any delays and ultimately have shorter lengths of stay (LOS), with 84% of emergency admissions have less than 3 days.

| Key message: The development of seven day services and new methods of training and education have the potential to be mutually beneficial and should be considered alongside one another. Defining new models of working provides the opportunity to embed recommendations for training but they also need to present attractive career options in emergency medicine. |
| Standard: All those involved in the delivery of acute care must participate in the review of patient outcomes to drive care quality improvement. The duties, working hours and supervision of trainees in all healthcare professions must be consistent with the delivery of high-quality, safe patient care, seven days a week. |
Hospital services seven days a week – consideration of inequalities

Summary

We have no evidence to suggest that any of the protected groups are disproportionally disadvantaged by a reduced level of service offered to emergency patients admitted at the weekend. There is however the possibility that there is a level of unmet need from patients who could benefit from improved services at the weekend and that this unmet need may have a social inequalities gradient. Improved access to senior medical staff at the weekend could reduce this inequalities gradient.

Evidence

The comprehensive service offered by the majority of hospital trusts can be broadly categorised into scheduled (cold) and unscheduled (warm) services. Whereas the scheduled services offered by most health providers follows a Monday-Friday, office hours model, unscheduled services have to receive patients at any time, 24 hours per day, seven days per week.

The NHS Services, Seven Days a Week Forum report identifies that services offered in hospitals at the weekend have, in the majority of cases, a reduced capacity to provide diagnosis and treatment to unscheduled patients compared to weekdays.

The number of patients who are admitted at the weekend is generally lower compared to weekdays. But associated with the reduction in the number of unscheduled patients admitted at the weekend is an increased probability of dying in hospital, and within 30 days of being admitted.
Two principal explanations have been suggested as to why the probability of dying increases with a weekend unscheduled admission:

- **Failure to rescue** – the reduced services offered at the weekend increase the risk of dying.
- **Case mix** – the type and severity of patients at the weekend are different to those who are admitted during the week.

Researchers (Aylin et al 2010, Freemantle et al 2012)¹ have attempted to make adjustments to correct for differences in case mix in order to explore how large the “failure to rescue” effect might be. Various estimates have been made to gauge the magnitude difference in underlying mortality rates. The main differences appear in the respiratory, vascular, renal and cancer diagnosis groups. Many of these conditions are associated with higher prevalence rates linked to the social determinates of ill health (The Marmot Review, 2010)². The adjustments made in the analysis should take account of these effects and give a measure that reflects the differences in providers of hospital services. Statistical differences in weekend mortality for some surgical groups have also been found, but these are much smaller than those found in the acute medical patients.

Differences in the case mix of unscheduled patients over the week might also be associated with equality characteristics. We will here consider if changes to provision of services at the weekend, to address the perceived higher risk of mortality, will have a disproportionate impact on different groups.

Clinical evidence provided to the seven day services review has suggested that there is a greater likelihood of a patient being admitted at a weekend on an end-of-life pathway because of the lack of availability of (sometimes more suitable) alternatives. 18% (range 17% - 19%) of emergency medical hospital admissions are via a direct GP referral on a weekday. This drops to 9% on Saturday and 8% on Sunday. There is no corresponding rise in direct A&E admissions. This suggests there is a degree of unmet need for care at the weekend. It is not clear if this unmet need is evenly distributed across different groups, or compounds previously identified inequality gradients in access and outcome to healthcare.

### Clinical specialty on admission

The increased weekend mortality rate associated with emergency admissions is not uniform across all patients. Analysis of all emergency admissions broken down by treatment consultant, grouped into four broad areas is show below. Patients admitted by surgical specialties (HES specialist codes 100 – 192) and all other specialties (HES specialist codes 400 – 960, but not including 430) show the expected reduction in the number of patients admitted at the weekend compared to weekdays, but the in-hospital death rate is below 2% and does not significantly increase at the weekend.

The variation in the number of patients admitted by a specialist in geriatric medicine by day of the week changes by 23% from a peak on Friday to a low on Sunday. There is a weak association between the number of patients admitted by day of the week and the proportion of

---

patients discharged dead ($R^2 = 0.55$). There seems to be a weekly cycle of admissions and deaths in the geriatric patients and the weekend effect is only part of this cycle.

The most pronounced weekend effect can be observed in patients admitted to a medical specialty (other than geriatric medicine) where there is a 25% drop in volume of patients (from 364K to 272K nationally 2012/13) admitted on a Saturday or Sunday, compared to an average weekday, but the proportion of patients who are discharged dead goes up by 13.9% (From 5.1% to 5.9%).

<table>
<thead>
<tr>
<th>% change in volume and death rate - weekend v Weekday average</th>
<th>Volume</th>
<th>Dead</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surgical</td>
<td>-13%</td>
<td>0.3%</td>
</tr>
<tr>
<td>Medical</td>
<td>-25%</td>
<td>13.9%</td>
</tr>
<tr>
<td>Geriatric</td>
<td>-18%</td>
<td>4.1%</td>
</tr>
<tr>
<td>other</td>
<td>-22%</td>
<td>-7.4%</td>
</tr>
</tbody>
</table>

This analysis confirms the published findings that the increased risk of death, if a patient is admitted at the weekend compared to a weekday, is mainly associated with a sub-group of admissions linked to unscheduled acute medical admissions. No attempt has been made to case-mix adjust by patient type and co-morbidities in this analysis as the additional step is unlikely to change these findings.
Admission route

A patient can have a number of routes into an unscheduled hospital admission. The volume of patients admitted directly via A&E does drop over the weekend but not as much as all the routes in to hospital.

<table>
<thead>
<tr>
<th></th>
<th>Average WEEKDAY unscheduled admissions</th>
<th>Average WEEKEND unscheduled admissions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A&amp;E</td>
<td>GP</td>
</tr>
<tr>
<td>Surgical</td>
<td>190,229</td>
<td>34,662</td>
</tr>
<tr>
<td>Medical</td>
<td>249,335</td>
<td>63,238</td>
</tr>
<tr>
<td>Geriatric</td>
<td>54,899</td>
<td>9,769</td>
</tr>
<tr>
<td>other</td>
<td>74,328</td>
<td>41,549</td>
</tr>
</tbody>
</table>

DH analytical services: HES 2012/13

Looking particularly at mortality rates for medical admission (consultant code 300-371) by admission route, a similar weekend pattern is seen for direct admission via A&E, admission via a bed bureau, and via a GP where there is a significant rise in the proportion of patients discharged dead which is associated with a drop in the number of patients admitted by each route.

This point can be seen in the following graph where the percentage drop in volume over the weekend, compared to an average weekday, is plotted on the horizontal axis, and the change in the percentage of patients discharged dead is plotted on the vertical axis. For the three
admission routes shown there is a clear link between the reduction in volume increase and the percentage of patients discharged dead.

The regression coefficient ($R^2 = 0.9881$) shows the relationship between the two is strong.

A hypothesis could be suggested that the drop in volume at the weekend is associated with a reduction in probability of less ill patients being admitted. The case-mix mortality adjusted estimates by Aylin and Freemantle\(^3\) should correct for this effect by taking other factors, such as co-morbidities, into account with data recorded on the HES database. This correction may be limited by the quality of clinical coding and the variation in practice between trusts and may not fully account for the differences in patients admitted at the weekend.

**Sex of patients**

In general more men than women die in hospital following an emergency admission to a medical specialty. This may reflect that women have a higher life expectancy and tend to outlive their partners, being more likely to spend their end of life in social care facilities. The difference in death rate between men and women reduces at the weekend.

---

Age of patients

Admission to hospital, particularly as an emergency patient, is strongly related to age and the proximity to death. In the graph below the average probability of dying in hospital with age can be seen to increase steeply with age. The increased risk of dying following an emergency admission to a medical specialty at the weekend is also linked with age. However as the graph clearly shows there is also an increased risk of dying following an admission on Monday compared to Tuesday – Friday.
Ethnicity of the patients.

The unstandardized in-hospital mortality for unscheduled patients admitted to a medical specialty by the day of the week, broken down by the ethnic classification, is shown below.

![Proportion of patients discharged dead following an emergency admission to a medical specialty by day of admission](chart.png)

Although white patients have a higher rate of in-hospital death compared to all the other ethnic groups, the table below shows that the biggest weekend effect is in the black group (which includes African, Caribbean and any other Black/ African/ Caribbean background classifications) which shows a 26% increase the number of patients who die following a weekend admission.

<table>
<thead>
<tr>
<th></th>
<th>White</th>
<th>Mixed</th>
<th>Asian</th>
<th>Black</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weekday</td>
<td>5.4%</td>
<td>2.1%</td>
<td>2.8%</td>
<td>2.3%</td>
<td>4.8%</td>
</tr>
<tr>
<td>Weekday</td>
<td>6.2%</td>
<td>2.3%</td>
<td>3.2%</td>
<td>2.9%</td>
<td>5.6%</td>
</tr>
<tr>
<td>Percentage difference</td>
<td>16%</td>
<td>12%</td>
<td>15%</td>
<td>26%</td>
<td>18%</td>
</tr>
</tbody>
</table>

It is recommended that further analysis of this area is carried out using an age standardised approach to see if the difference between white and non-white groups can be better understood in absolute and relative terms.

Index of Multiple Deprivation of normal place of residence

Deprivation indicators of the normal place of residence are known proxy measures of need of patients. In general the use of hospital and other health services is associated with deprivation indicators. The difference in health outcomes based on a patient’s associated index of multiple deprivation (IMD) measure is a key indicator of inequalities in health outcomes.
In the graph below the percentage of patients discharged dead by day of the week and IMD band of the normal place of residence is shown for emergency admissions to medical specialties. Overall the probability of dying in a single hospital episode goes down as the deprivation index of the normal place of residence goes up. In addition to this overall trend a clear weekend effect can be seen with the probability of being discharged dead going up for all IMD scores at the weekend compared to a mid-week admission. A “Monday” effect can also be seen, although this is less marked than weekend effect.

The weekend effect is more pronounced in the patients who would be classified as less deprived compared to the most deprived group. This seems counter intuitive. Further investigation has suggested that the probability of being admitted as an emergency patient goes up with IMD score so the analysis above does not take into account the “churn” of multiple admissions in a year. In effect the chances of dying in a single hospital spell is lower for patients with a higher IMD score but further analysis would have to be carried out to investigate the compounding effect of multiple admission.

Summary

A number of areas have been investigated to understand the equalities and inequalities issues associated with the additional risk of death following emergency admission to hospital at the weekend. This investigation has been limited to factors which can be analysed from routinely collected data. No specific additional data has been collected for this investigation.

The data that is available has suggested that age is the biggest factor associated with in-hospital deaths and the weekend additional risk of death, this link being strong because of its association with proximity to death. A number of other areas may have an equalities of access...
to care dimension and would benefit from more in-depth analysis, including the ethnic background of patients and linking individual hospital spells with overall risk of dying in a given year.
1 Reference: National Audit Office (2013) Emergency admissions to hospital: managing the demand


9 The Health Foundation (2013) *Improving Patient Flow*

10 The King’s Fund (2012). *Older people and emergency bed use.*


18 Nafsi et al. (2007). Audit of deaths less than a week after admission through an emergency department: how accurate was the ED diagnosis and were any deaths preventable? *Emergency Medicine Journal.* 24: 691 - 695

19 NCEPOD (2009). *Caring to the end? A review of the care of patients who died in hospital within 4 days of admission.*


23 Academy of Medical Royal Colleges (2012). *The Benefits of consultant-delivered care*


28 Dr Foster Hospital Guide. (2001-2011) Inside your Hospital.
33 The Society for Acute Medicine. Position Statement: Seven day working for consultants in the acute medical unit. [n.d.]
36 Cardiff and Vale University Health Board (2009). Extended day and seven-day physiotherapy service in acute medicine
41 Royal College Physicians of London (2007). Acute medical care: The right person, in the right setting – first time
46 Royal College of Physicians (2013). Consistent structure and content standards for admission, handover, discharge, outpatient and referral records and communications
50 NHS Improvement (2013) Directory of Diagnostics Services for Commissioning Organisations
52 Department of Health (2012) Implementing 7 Day working in Imaging Departments: Best Practice Guidance.


NCEPOD (2007). Emergency admissions: A journey in the right direction?


NHS Improvement. Equality for all. Delivering safe care – seven days a week


NCEPOD (2007). Emergency admissions: A journey in the right direction?


NCEPOD (2007). Emergency admissions: A journey in the right direction?


Royal College of Anaesthetists (2009). Guidelines for the provision of anaesthetic services.


NCEPOD (2007). Emergency admissions: A journey in the right direction?


Core services included nephrostomy, embolization of haemorrhage control and endovascular intervention, but excluded complex techniques such as E-EVAR and TIPS.


NICE (2012). *Acute upper gastrointestinal bleeding; management* (NICE CG141)


NICE Shared Learning Awards. Top 20 examples 20/1213

Academy of Medical Royal Colleges. (2008). *Managing urgent mental health needs in the acute trust: A guide by practitioners, for managers and commissioners in England and Wales*


Royal College of Medicine and Royal College of Nursing (2012). *Ward rounds in Medicine: Principles for best practice*

Royal College of Physicians (2010). *An evaluation of Consultant Input into acute Medical admissions management in England, Wales and Northern Ireland*


Academy of Medical Royal Colleges (2012): *Seven day consultant present care.*


National Audit Office (2013) *Emergency admissions to hospital: managing the demand*


Medworxx (2012). *Medworxx underpins highly successful case management model at Royal Liverpool and Broadgreen University Hospitals*

Ready to Go, Hospital Discharge Planning (2010) DoH

114 The Health Foundation (2013) *Improving the flow of older people.*
116 Royal College of Physicians (2013). *Hospital workforce: Fit for the future?*
118 Royal College of Physicians (2013). *Hospital workforce. Fit for the future?*
120 David Greenaway, Shape of Training (2013). *Securing the future of excellent patient care*
121 DH (2012) *Liberating the NHS: Developing the Healthcare Workforce, From Design to Delivery.*