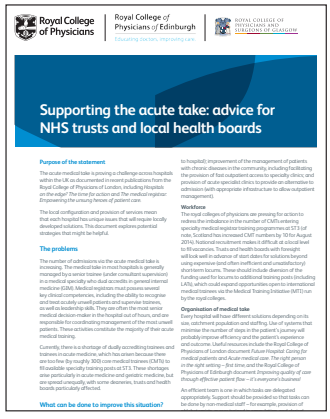
Supporting doctors on the acute medical take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Supporting the acute take: advice for NHS trusts and local health boards

Purpose of the statement

The acute medical take is proving a challenge across hospitals within the UK as documented in recent publications from the Royal College of Physicians of London, including *Hospitals on the edge? The time for action* and *The medical registrar: Empowering the unsung heroes of patient care*.

The local configuration and provision of services mean that each hospital has unique issues that will require locally developed solutions. This document explores potential strategies that might be helpful.

The problems

The number of admissions via the acute medical take is increasing. The medical take in most hospitals is generally managed by a senior trainee (under consultant supervision) in a medical specialty who dual accredits in general internal medicine (GIM). Medical registrars must possess several key clinical competencies, including the ability to recognise and treat acutely unwell patients and supervise trainees, as well as leadership skills. They are often the most senior medical decision-maker in the hospital out of hours, and are responsible for coordinating management of the most unwell patients. These activities constitute the majority of their acute medical training.

Currently, there is a shortage of dually accrediting trainees and trainees in acute medicine, which has arisen because there are too few (by roughly 300) core medical trainees (CMTs) to fill available specialty training posts at ST3. These shortages arise particularly in acute medicine and geriatric medicine, but are spread unequally, with some deaneries, trusts and health boards particularly affected.

What can be done to improve this situation?

to hospital); improvement of the management of patients with chronic diseases in the community, including facilitating the provision of fast outpatient access to specialty clinics; and provision of acute specialist clinics to provide an alternative to admission (with appropriate infrastructure to allow outpatient management).

Workforce

The royal colleges of physicians are pressing for action to redress the imbalance in the number of CMTs entering specialty medical registrar training programmes at ST3 (of note, Scotland has increased CMT numbers by 10% for August 2014). National recruitment makes it difficult at a local level to fill vacancies. Trusts and health boards with foresight will look well in advance of start dates for solutions beyond using expensive (and often ineffi cient and unsatisfactory) short-term locums. These should include diversion of the funding used for locums to additional training posts (including LATs), which could expand opportunities open to international medical trainees via the Medical Training Initiative (MTI) run by the royal colleges.

Organisation of medical take

Every hospital will have different solutions depending on its size, catchment population and staffing. Use of systems that minimise the number of steps in the patient's journey will probably improve efficiency and the patient's experience and outcome. Useful resources include the Royal College of Physicians of London document *Future Hospital: Caring for medical patients* and *Acute medical care: The right person in the right setting – first time*, and the Royal College of Physicians of Edinburgh document *Improving quality of care through effective patient flow – it's everyone's business*.

An efficient team is one in which tasks are delegated appropriately. Support should be provided so that tasks can be done by non-medical staff – for example, provision of clinics, acute specialist clinics, community services).

New advice published jointly by three Royal Colleges representing physicians across the UK sets out how NHS trusts and health boards can deploy trainee doctors to ensure safe patient care and alleviate the clinical pressure on medical registrars.

In a joint statement (www.rcplondon.ac.uk/resources/supporting-acute-take-advice-nhs-trusts-and-local-health-board), the Royal College of Physicians of London, the Royal College of Physicians of Edinburgh and the Royal College of Physicians and Surgeons of Glasgow set out a series of measures to alleviate this pressure, including:

- Diverting funds used to employ expensive locums to create more training posts
- Considering innovative solutions to fill recruitment gaps, such as using international medical graduates
- Organizing patient flow to minimize the number of steps in a patient's journey, and using the whole workforce effectively (e.g. nurses, clerical staff, physicians associates, phlebotomists)
- Providing alternatives to acute admissions (e.g. outpatient access to specialty clinics, acute specialist clinics, community services).

Professor Derek Bell, president of the Royal College of Physicians of Edinburgh, said: 'Our longer term shared goals must be to grow the workforce and to restore a more appropriate balance between service delivery and the standards of training. Trainee satisfaction levels relating to being on call for acute medicine must improve.'

Dr Tim Yates, Deputy Chair of the BMA Junior Doctor Committee, commented: 'We welcome the focus on strengthening existing systems – from workforce planning down to the traditional doctor team – that will deliver better patient care and medical training.'

'Weekend effect' seen in paediatric surgery

Investigators from Johns Hopkins University School of Medicine, Baltimore, Maryland compared death and complication rates between children treated on weekends and those treated during the week (Goldstein et al, 2014).

Using the Nationwide Inpatient Sample and the Kids' Inpatient Database, the researchers identified 439 457 paediatric (<18 years old) admissions from 1988 to 2010 that required a selected index surgical procedure on the same day of admission.

Outcome metrics were compared using logistic regression models that adjusted for patient and hospital characteristics as well as the procedure performed.

Patient characteristics of those admitted on the weekend (n=112 064) and weekday (n=327 393) were similar, although those admitted at the weekend were more likely to be coded as emergent (61% *vs* 53%).

After multivariate adjustment and regression, patients undergoing a weekend procedure were more likely to die (odds ratio 1.63, 95% confidence interval 1.21–2.20), receive a blood transfusion despite similar rates of intraoperative haemorrhage (odds ratio 1.15, 95% confidence interval 1.01–1.26), and suffer from procedural complications (odds ratio 1.40, 95% confidence interval 1.14–1.74).

The authors concluded that paediatric patients undergoing common urgent surgical procedures during the weekend have a higher adjusted risk of death, blood transfusion and procedural complications.

'These are provocative findings and, we hope, a conversation starter,' said lead author Dr Seth Goldstein, a paediatric surgery resident at Johns Hopkins. 'Our next step is to understand the what, how and why behind this alarming disparity.'

Goldstein SD, Papandria DJ, Aboagye J et al (2014) The "weekend effect" in pediatric surgery - increased mortality for children undergoing urgent surgery during the weekend. *J Pediatr Surg* **49**(7): 1087–91 (doi: 10.1016/j.jpedsurg.2014.01.001)

Preterm babies more likely to survive in busier neonatal units

Premature newborns are 32% less likely to die if they are admitted to high volume neonatal units at the hospital of birth (those providing more than 3480 care days to preterm babies per year) rather than low volume, according to new research (Watson et al, 2014).

For babies born at less than 27 weeks the effect was greater, with the odds of dying almost halved when they were admitted to high volume units compared to low volume units.

The team analysed data from 165 neonatal units across the UK for 20 554 babies born at less than 33 weeks and for 2559 babies born at less than 27 weeks. Twenty-four per cent of the neonatal units were classified as high volume and 46.4% of infants born at less than 33 weeks were born in hospitals with a high volume neonatal unit.

Co-author Professor Neena Modi from the Department of Medicine, Imperial College London said: 'Our research... supports the networked approach that centralises the delivery of specialised neonatal care in high volume units and enables women at risk to be transferred to these units to receive the care they need.'

Watson SI, Arulampalam W, Petrou S et al; Neonatal Data Analysis Unit and the NESCOP Group (2014) The effects of designation and volume of neonatal care on mortality and morbidity outcomes of very preterm infants in England: retrospective population-based cohort study. *BMJ Open* **4**(7): e004856 (doi: 10.1136/bmjopen-2014-004856)

Differences in brain circuits explain why people with bipolar disorder take more risks

Researchers at the Universities of Manchester and Liverpool (Mason et al, 2014) have discovered that circuits in the brain involved in pursuing and relishing rewarding experiences are more strongly activated in people with bipolar disorder – guiding them towards riskier gambles and away from safer ones.

Researchers invited participants to play a game of roulette in which they made safe or risky gambles, and measured their brain activity throughout using functional magnetic resonance imaging (fMRI).

Their findings revealed that the nucleus accumbens (the brain's 'pleasure centre') was more strongly activated in people with bipolar disorder compared to a healthy control group (*Figure 1*).

Another key difference arose in the prefrontal cortex. This gives us the ability to coordinate our various drives and impulses – such as quelling our urges when faced with risky decisions – allowing people to make decisions that are less immediately rewarding but better in the long run.

The researchers found that for control participants, their prefrontal cortex guided them towards safe gambles and away from risky ones, while people with bipolar disorder showed greater neural activity for risky gambles.

Mason L, O'Sullivan N, Montaldi D, Bentall R, El-Deredy W (2014) Decision-making and trait impulsivity in bipolar disorder are associated with reduced prefrontal regulation of striatal reward valuation. *Brain* doi: 10.1093/brain/awu152

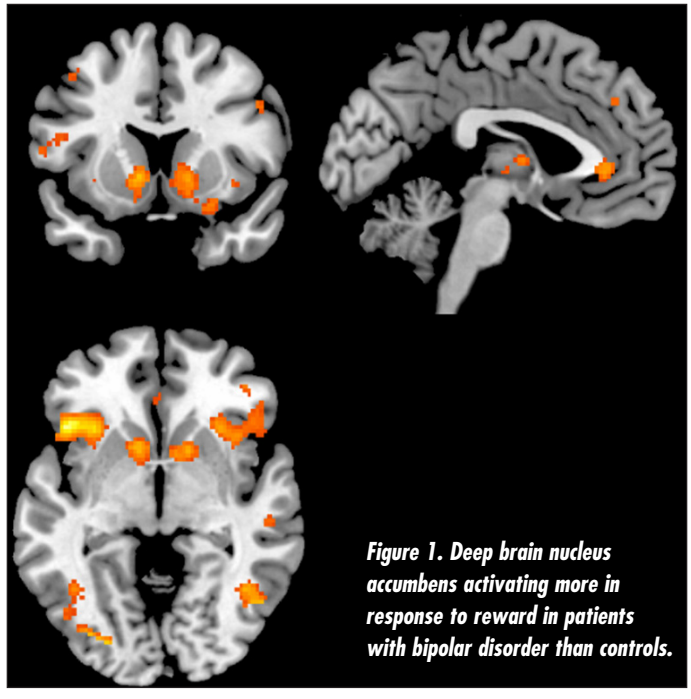


Figure 1. Deep brain nucleus accumbens activating more in response to reward in patients with bipolar disorder than controls.

Global recommendation for dry labs to improve gynaecological endoscopy training

Six leading European and American professional organizations, active in the field of gynaecological surgery, have published a joint recommendation on the implementation of endoscopic surgery.

The organizations, which include the European Society for Gynaecological Endoscopy, EBCOG, European Academy for Gynaecological Surgery, European Network of Trainees in Obstetrics and Gynaecology, American Congress of Obstetricians and Gynecologists and AAGL, strongly recommend that each hospital teaching endoscopic surgery should make available an endoscopic dry lab for training and improving the proficiency of the endoscopic surgery skills of the physician.

'It is unacceptable that the level of care a patient receives should depend on having the luck to meet a surgeon with appropriate training in laparoscopic surgery', explained Dr Maud van de Venne, president, European Network of Trainees in Obstetrics and Gynaecology.

She continued: 'As we aim to achieve the highest possible standards of training, we strongly endorse the evidence of dry lab training for acquiring the basic laparoscopic skills like camera navigation, hand–eye coordination, and bi-manual coordination'.

New BMI thresholds suggested for different ethnicities

Researchers from the University of Glasgow analysed data on 490 288 people. Their findings support the use of lower body mass index (BMI) thresholds to define obesity, suggesting a BMI of at least 22 kg/m^2 in South Asians, a BMI at least 24 kg/m^2 in Chinese and a BMI at least 26 kg/m^2 for black people *vs* a BMI of 30 kg/m^2 in Caucasians (pii: DC_132966).

Asthma drugs suppress growth

Two systematic reviews from the Cochrane Library (doi: 10.1002/14651858.CD009471.pub2 and doi: 10.1002/14651858.CD009878.pub2) focus on the effects of inhaled corticosteroid drugs on growth rates of children with asthma. Children's growth slowed in the first year of treatment, but the effects were minimized by using lower doses.

Kidney donation safe for older adults

A cohort study looked at older live kidney donors who were matched to healthy older individuals. In median follow-up of 7.8 years, mortality was not different between donors and matched pairs ($P=0.21$), nor was there a higher risk of cardiovascular disease.

Preferred anticoagulant varies with type of surgery

Hip fracture surgery and lower extremity arthroplasty are associated with increased risk of both venous thromboembolism and bleeding. The best pharmacological strategy for reducing these opposing risks is uncertain.

A systematic review and meta-analysis was undertaken to compare venous thromboembolism and bleeding rates in adult patients receiving aspirin *vs* anticoagulants after major lower extremity orthopaedic surgery.

Of 298 studies screened, eight trials including 1408 participants met inclusion criteria; all trials screened participants for deep vein thrombosis. Overall rates of deep vein thrombosis did not differ statistically between aspirin and anticoagulants (relative risk 1.15, 95% confidence interval 0.68–1.96).

Subgrouped by type of surgery, there was a non-significant trend favouring anticoagulation following hip fracture repair but not knee or hip arthroplasty (hip fracture relative risk 1.60, 95% confidence interval 0.80–3.20, two trials; arthroplasty relative risk 1.00, 95% confidence interval 0.49–2.05, five trials).

The risk of bleeding was lower with aspirin than anticoagulants following hip fracture repair (relative risk 0.32, 95% confidence interval 0.13–0.77, two trials), with a non-significant trend favouring aspirin after arthroplasty (relative risk 0.63, 95% confidence interval 0.33–1.21, five trials). Rates of pulmonary embolism were too low to provide reliable estimates.

Compared with anticoagulation, aspirin may be associated with a higher risk of deep vein thrombosis following hip fracture repair, although bleeding rates were substantially lower. Aspirin was similarly effective after lower extremity arthroplasty and may be associated with lower bleeding risk.

Commenting on the findings, lead author Dr Frank Drescher, of the Veterans Affairs Medical Center in White River Junction, Vermont, said: 'We hope our findings may guide physicians trying to help their patients make decisions about how to best minimize surgical risks.'

Dr Frank Drescher, Veterans Affairs Medical Center in White River Junction, Vermont

Drescher FS, Sirovich BE, Lee A, Morrison DH, Chiang WH, Larson RJ (2014) Aspirin versus anticoagulation for prevention of venous thromboembolism major lower extremity orthopedic surgery: A systematic review and meta-analysis. *J Hosp Med* doi: 10.1002/jhm.2224

Highest risk of suicide 2 weeks after leaving hospital

Mental health patients are at their highest risk of dying by suicide in the first 2 weeks after leaving hospital, according to the latest report from the National Confidential Inquiry into Suicide and Homicide by People with Mental Illness.

Around 3225 patients died by suicide in the UK within the first 3 months of their discharge from hospital – 18% of all patient suicides, between 2002 and 2012.

The National Confidential Inquiry into Suicide and Homicide by People with Mental Illness found that 526 patients died within the first week, the peak time of risk in England, Northern Ireland and Scotland; it is the first 2 weeks in Wales.

Professor Louis Appleby, Director of the National Confidential Inquiry, who led the study said: 'Our latest data show the first 3 months after discharge remain the time of highest risk but especially in the first 1–2 weeks.'

He continued: 'This increased risk has been linked to short admissions and to life events so our recommendations are that careful and effective care planning is needed including for patients before they are discharged and for those who self-discharge.'

The National Confidential Inquiry into Suicide and Homicide by People with Mental Illness (2014) Annual Report: England, Northern Ireland, Scotland and Wales. www.bbmh.manchester.ac.uk/cmhr/centreforsuicideprevention/nci/reports/AnnualReport2013_UK.pdf (accessed 22 July 2014)

Sharp increase in private provision of mental health services

There has been a marked shift from NHS to independent sector provision in community and mental health services over the past few years, but spending on non-NHS hospital providers has slowed, finds an analysis by the Nuffield Trust (2014).

Non-NHS provision in mental health services has increased by 15% in real terms between 2011–12 and 2012–13 alone, while primary care trust spending on NHS providers of mental health services fell by 2.5% in real terms (£17 million) with funding for independent sector providers rising by 12% (£126 million) but from a much lower base.

The share of the independent sector as a proportion of total spend on mental health services increased by 5 percentage points between 2008–9 and 2012–13.

Increased spending on non-NHS providers of acute care has slowed. Between 2010–11 and 2012–13 spending on acute care provided by independent sector hospitals increased by an annual average of 6.7% from £1.30 billion to £1.58 billion.

In 2012–13, the growth in spending on NHS funded care delivered by independent sector hospitals slowed, with primary care trusts spending £14 million less in real terms compared with 2011/12.

Nuffield Trust (2014) Spending on NHS and non-NHS providers. Nuffield Trust briefing. www.nuffieldtrust.org.uk/sites/files/nuffield/publication/140702_spending_on_non-nhs_providers.pdf (accessed 22 July 2014)

Three-dimensional printed anatomy marks a new era for medical training

The '3D Printed Anatomy Series', developed by experts from Monash University in Australia, is thought to be the first commercially available resource of its kind. The kit contains no human tissue, yet it provides all the major parts of the body required to teach anatomy of the limbs, chest, abdomen, head and neck, produced by 3D printing.

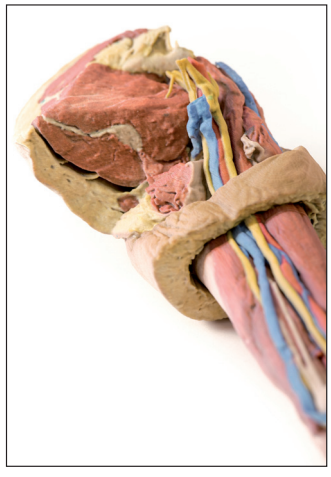
Professor Paul McMenamin, Director of the University's Centre for Human Anatomy Education, said the simple and cost-effective anatomical kit would dramatically improve trainee doctors' and other health professionals' knowledge and could even contribute to the development of new surgical treatments.

Professor McMenamin emphasized: 'Many medical schools report either a shortage of cadavers, or find their handling and storage too expensive as a result of strict regulations governing where cadavers can be dissected.'

He added: 'Without the ability to look inside the body and see the muscles, tendons, ligaments and blood vessels, it's incredibly hard for students to understand human anatomy. We believe our version, which looks just like the real thing, will make a huge difference.'

The kit, set to go on sale later this year, could have particular impact in developing countries where cadavers are not readily available, or are prohibited for cultural or religious reasons.

After scanning real anatomical specimens using either computed tomography or a surface laser scanner, the body parts are 3D printed either in a plaster-like powder or in plastic, resulting in high resolution, accurate colour reproductions.



Sleep problems may be associated with worse memory and executive function when ageing

New work from researchers at the University of Warwick indicates that sleep problems are associated with worse memory and executive function in older people (Miller et al, 2014).

Analysis of sleep and cognitive data from 3968 men and 4821 women who took part in the English Longitudinal Study of Ageing was conducted in a study funded by the Economic and Social Research Council. Respondents reported on the quality and quantity of their sleep over 1 month.

The study showed that there is an association between both quality and duration of sleep and brain function which changes with age.

In adults aged between 50 and 64 years of age, short sleep (<6 hours per night) and long sleep (>8 hours per night) were associated with lower brain function scores. By contrast, in older adults (65–89 years) lower brain function scores were only observed in long sleepers.

Dr Michelle A Miller said: '6–8 hours of sleep per night is particularly important for optimum brain function, in younger adults. These results are consistent with our previous research, which showed that 6–8 hours of sleep per night was optimal for physical health, including lowest risk of developing obesity, hypertension, diabetes, heart disease and stroke.'

Interestingly, in younger pre-retirement aged adults, sleep quality did not have any significant association with brain function scores, whereas in older adults (>65 years), there was a significant relationship between sleep quality and the observed brain function scores.

Dr Miller concluded: 'If poor sleep is causative of future cognitive decline, non-pharmacological improvements in sleep may provide an alternative low-cost and more accessible public health intervention, to delay or slow the rate of cognitive decline.'

Miller MA, Wright H, Ji C, Cappuccio FP (2014) Cross-Sectional Study of Sleep Quantity and Quality and Amnestic and Non-Amnestic Cognitive Function in an Ageing Population: The English Longitudinal Study of Ageing (ELSA). *PLOS One* doi: 10.1371/journal.pone.0100991

Sociodemographic differences in how parents cope with children's oral clefts

Cleft lip and/or palate occurs in about 1 in 600 births worldwide. These children often have difficulties feeding, hearing, breathing or speaking and may be affected psychologically. How the child copes with complications can be influenced by how the parent copes.

Mothers of 294 children with cleft lip and/or cleft palate completed the Mental Health Inventory and Aggravation in Parenting Scale (Dabit et al, 2014). Children in this sample were aged 4–9 years and born in Arkansas, Iowa or New York State.

Mothers of children with oral clefts were not more likely to report poor mental health status, nor experience higher levels of aggravation in parenting than those of unaffected children.

However, among mothers of children with oral clefts, low sociodemographic factors were associated with reported poor mental health and higher levels of parenting aggravation.

Mothers reporting poor mental health were less educated, had lower household incomes, and had lower ratings of their and their child's health than mothers who reported good mental health.

Dabit JY, Romitti PA, Makelarski JA et al (2014) Examination of mental health status and aggravation level among mothers of children with isolated oral clefts. *Cleft Palate Craniofac J* **51**(4): e80–e87 (doi: 10.1597/12-298)