A simple tool that predicts hospital length of stay and mortality from the front door

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Aim
The Glasgow Admission Prediction Score (GAPS) is a simple but accurate clinical tool which can be used in triage to determine the probability that a patient will be admitted to hospital(1). We tested the hypothesis that it also predicts in-hospital mortality and hospital length of stay (LOS).

Method
Electronic records of all patients admitted from the Emergency Department in our hospital were examined over two weeks. Their GAPS scores were generated automatically from triage data, and their LOS and in-hospital mortality were recorded. The association between GAPS and death–censored LOS was modelled using a generalised linear model with a Gaussian log-link function, and the association with mortality was modelled by logistic regression. GAPS was compared to NEWS score and age as a predictor of mortality by comparing the area under the curve (AUC) of their receiving operator characteristic curves using DeLong’s method.

Results
1279 admissions were analysed, of which 81 (6.3%, 95% CI 5.1-7.8%) ended in death. The mean LOS was 5.2 days. GAPS was strongly associated with in-hospital mortality (increase in log-odds of 0.1775 per point, p<0.0001). This means a GAPS score of 1 is associated with a 1 in 1,000 probability of death, whereas a score of 40 predicts 50% mortality. GAPS was a better predictor of mortality than age (AUC 0.826 vs 0.745, p=0.009) or NEWS score (AUC 0.826 vs 0.6969, p<0.001). GAPS was also exponentially related to LOS, with each point on GAPS giving a 0.0568 log days increase in LOS (p<0.0001).

Conclusion
The GAPS score predicts mortality and hospital length of stay in addition to its role in predicting hospital admission. It could therefore be used to identify patients at higher risk of dying in hospital, to plan resources, and as a demographic tool to compare performance across sites or across time.

References
1. A simple tool to predict admission at the time of triage.
Central or Peripheral Delivery: the Amiodarone Dilemma
Ashraf Kamour
Severn Deanery
Roshan Saleh
Andrew Thompson
Nic Wennike

Aim:
To investigate physicians’ practice concerning the use of intravenous amiodarone in the United Kingdom, including their experience with complications associated with either central or peripheral administration. Central administration is recommended by the BNF for repeated/continuous infusion (1) as adverse effects such as phlebitis are common (2).

Methods:
A cross-sectional e-mailed survey of physicians and General Internal Medicine trainees practising in NHS Acute trusts in the United Kingdom was analysed. The questionnaire, created and hosted using online survey software, was available from September 2010 to February 2011.

Outcome/Results:
248 doctors responded to the survey, mostly doctors in training (212, 86%), consultants (25, 10%), associate specialists/clinical fellows (7, 3%), and doctors of unknown grade (4, 2%). More than 50% of physicians use intravenous amiodarone frequently; and almost half of the correspondents were unaware if their hospitals had a policy on IV amiodarone administration; and the majority used both central and peripheral routes for administering amiodarone.

Complication rates reported were not significantly different between both groups (19% peripheral Vs. 13% Central) (Odds ratio [OR] 1.58, 95% confidence interval [CI] 0.96 – 2.60 P value= not significant).
Of those who had a problem with central administration, 51% were due to delayed insertion of a central line. 35% of complications were related to insertion of the central line.
In the peripheral route group, 17% of doctors experienced a severe reaction, and 13% reported mild to moderate ones, and the rest did not specify the severity or nature of the complications.

Conclusion:
This survey highlights the discrepancies in amiodarone administration practice in acute NHS trusts in the UK. The peripheral administration of amiodarone may be associated with adverse events and complications. Similarly, insertion of central venous catheters is associated with risks, which can be fatal (3). Hospitals should have clear guidelines on administering intravenous amiodarone. If a central approach is adopted, it should be done in a timely fashion by a competent doctor. If peripheral access is used, a care bundle for managing the catheter should be in place to avoid and properly manage local adverse events.

References:
(2) Medicines and Healthcare products Regulatory Agency (online ed.): Amiodarone 50mg/ml Sterile Concentrate - PL 18157/0008 http://www.mhra.gov.uk/home/groups/par/documents/websiteresources/con120289.pdf [Accessed on (01/06/2014)].
Aims
It has been anecdotally suggested that Emergency Department teams may be more likely to refer patients inappropriately to in-patient medical teams to alleviate pressure on the ED staff. This study aimed to test this idea by looking at the proportion of patients who are admitted onto a Medical Admissions Unit (MAU) from ED for a short period (<24 hours) as a surrogate of unnecessary admissions, on quiet versus busy ED days.

Methods
10,752 non-elective, adult admissions from the ED to MAU at a single Acute Trust over a 6-month period were analysed. A “busy” ED was then defined as “when the number of patients admitted in one day exceeds the 75th centile for all patients seen per day over the 6-month period.” Short” length of stay (LoS) was defined as any admission which lasted for less than 24 hours. The proportion of patients admitted on “busy” days vs. “non-busy” days were then compared.

Results
3197 (29.73%) patients were admitted from a “busy” ED and 7555 (70.27%) from a “non-busy” ED. On the “busy” ED days 1553 admissions (48.58%) resulted in a “short” LoS and 1644 admissions (51.42%) resulted in a longer LoS. On the “non-busy” ED days 3665 admissions (48.51%) resulted in a “short” LoS and 3890 admissions (51.49%) resulted in a longer LoS.

Conclusions and recommendations
These findings suggest that there is no evidence that busy ED shifts lead to inappropriate referrals, albeit using a surrogate outcome measure. The most significant finding of this study is actually that 48% of all admissions to the MAU are for <24 hours. Identifying whether more of these patients can be managed without admission may provide a way to reduce bed pressure in Acute Trusts.
Interprofessional education (IPE) has the potential to promote better understanding of other health professional role and to promote a better understanding between professions by encouraging students to engage in detailed exploration of health and social roles. (Areskog et al. 1995; Barr 2001; McNair et al. 2005; WHO 1998).

This study aims to undertake a systematic review of the literature to determine the impact of interprofessional education on health care professionals’ communication and collaboration. For this systematic review the following data bases were searched; MEDLINE, CINAHL, AHMED, EMBASE, HMI, NICE, Uptodate.com, Cochrane library, Pub med, Ovid, www.caipe.org.uk and the Journal of interprofessional care. Also the reference lists of all included studies were manually searched.

The results indicated that the impact of IPE on service providers’ communication and collaboration and the use of resources was mixed. Four studies suggest positive impact in the short term but no demonstrable long term impact while two studies were equivocal. Four studies suggest that IPE has a positively impacted on service users experiences while two suggest an equivocal relationship. None of the studies demonstrated a positive or negative impact on service users’ outcome. The impact on staff perception of IPE was overall positive. Out of the fifteen articles reviewed, three articles in their secondary end points reviewed staff perceptions of IPE. Their perceptions were overall positive in the short term. No study could confidently predict long term impact.

It can be concluded that IPE was equivocal in improving staff collaboration and communication, mixed results with regards to staff and service users’ perceptions but no impact on service users’ outcome.

To improve the quality of evidence relating to IPE the following three research gaps will need to be addressed. First, future studies should be designed with the key objectives to assess the effectiveness of IPE interventions compared to separate, profession-specific interventions. Secondly, more rigorous studies with qualitative strands need to be undertaken to examine processes relating to the IPE and practice changes i.e., impact of these interventions on professional practice and/or healthcare outcomes. Thirdly, in the current austere measures being undertaking in the National Health Service (NHS), studies will need to support the cost benefit of introducing IPE.
Does thrombolysis for pulmonary embolism reduce the risk of chronic complications?

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Muhammad Jawad
Martin Dachsel
Daniel Woosey
Christopher Limb
Michael Wilde

Aims
Recurrent thromboembolism and chronic thromboembolic pulmonary hypertension are well known complications of unresolved pulmonary embolism in 3-4% of patients. We wanted to assess the efficacy of thrombolysis in avoiding these complications in patients thrombolysed in our District General Hospital.

Methods
The notes of patients thrombolysed for pulmonary embolism in the 2 years period (March 2012-April 2014) were reviewed. The initial CTPA and echocardiogram results before thrombolysis were recorded. The results of follow up CTPAs and echocardiograms repeated 4 to 6 months later were also recorded.

Results
A total number of 25 patients were thrombolysed for pulmonary embolism in the study period. Out of those patients thrombolysed 17 patients had sub-massive PE and 8 patients had massive PE (see table 1)
All of the 5 patients with a massive PE who had already a follow up CTPA showed complete resolution of clots and no CT evidence of right heart strain. 9 out of 11 patients with submassive PE who had a follow up CTPA showed complete resolution of clots and no CT evidence of right heart strain. A follow up echocardiogram has been performed in 18 patients so far. 5 patients with massive PE had a normal right ventricular (RV) size with pulmonary artery (PA) pressures of 25mmHg ±7mmHg. 11 out of 13 patients with sub-massive PE showed no RV dilation on a repeat echo and mean PA pressure was 26.1±11mmHg.
None of the patients reviewed in clinic so far showed evidence of recurrent PE or evidence of chronic thromboembolism pulmonary hypertension.

Conclusion
Thrombolysis for pulmonary embolism can result in good clot resolution and low risk of developing chronic thromboembolic pulmonary hypertension.

References
1. Thomas DC, Limbrey M. Thrombolysis of acute PE patients reduces subsequent development of CTEPH. Thorax 2012;67:Suppl 2 A125
Impact of the MHRA changes to the treatment of paracetamol overdose; the effect on the number of patients admitted in Newcastle upon Tyne.

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N/A
Muhammad EMO Elamin
Simon L Hill
Simon L Thomas

AIM
On 3rd September 2012 the UK Medicines and Healthcare products Regulatory Agency (MHRA) recommended changes in the management of paracetamol poisoning (1), including use of a single ‘100mg/L’ nomogram treatment line, avoiding stratification according to risk factors and giving acetylcysteine to all staggered ingestions and ingestions of uncertain timing. This study was performed to quantify the impact of these changes on the number of patients admitted for treatment following paracetamol overdose at the Royal Victoria Infirmary, Newcastle upon Tyne, UK.

Method
A retrospective review of all adult patients attending the Emergency Department between 2nd September 2011 and 6th September 2013. The medical records of those with ICD-10 codes consistent with possible overdose or self-harm were screened for paracetamol ingestion. Data was triangulated with plasma paracetamol concentrations, discharge summaries and the inpatient toxicology database to ensure that all patients were identified and duplicates excluded. The study was locally registered; ethical committee approval was not required.

Results
Comparing data between the years before and after the guidance change (Table), increases in the numbers of patients presenting and admitted were not statistically significant, but the number treated with intravenous acetylcysteine increased substantially. (OR 1.74, 95% CI 1.30-2.31; P = 0.0002)

Conclusions
Changes to the guidelines for managing paracetamol overdose have substantially increased use of acetylcysteine. Larger multicentre studies are needed to quantify impact on hospital admissions, length of stay and costs.

Table: Management of patients with paracetamol overdose comparing one year before and after guidance changes

<table>
<thead>
<tr>
<th>Paracetamol Overdose</th>
<th>Before</th>
<th>After</th>
<th>% Change</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients discharged from ED</td>
<td>162</td>
<td>164</td>
<td>+ 1.2</td>
<td>NS</td>
</tr>
<tr>
<td>Admitted for observation/treatment</td>
<td>240</td>
<td>265</td>
<td>+ 10.4</td>
<td>NS</td>
</tr>
<tr>
<td>Total attendances to RVI</td>
<td>402</td>
<td>429</td>
<td>+ 6.7</td>
<td>NS</td>
</tr>
<tr>
<td>Treated with Acetylcysteine</td>
<td>119</td>
<td>181</td>
<td>+ 52.1</td>
<td>0.0002</td>
</tr>
</tbody>
</table>

The data described in this abstract was included as part of a larger data set from 3 hospitals that has now been published in full (Reference 2).

References
Knowledge and Application of DVLA Medical Standards of Fitness to Drive

Tristan Townsend
Royal Liverpool and Broadgreen University Hospitals Trust
Jacob Schofield
Tania Minns
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Aim
The Driver and Vehicle Licensing Agency (DVLA) provides clear guidance[1] for doctors treating patients with conditions or substances which affect fitness to drive. In 2012, of 114,696 personal-injury road accidents with statistics available, 1.8% (2,094) had medical contributing factors, but involved 6.0% (90) of the 1,497 fatal crashes.[2] This cross-sectional study aims to evaluate doctors’ knowledge of DVLA guidance and whether patients were given appropriate advice before discharge at a large teaching hospital.

Methods
A multiple-choice questionnaire assessing knowledge of DVLA guidance was distributed to doctors at the Royal Liverpool University Hospital. Additionally, notes were reviewed for a week’s discharged patients from 11 acute departments. Notes were scrutinised for conditions evident during that attendance, which required driving advice and whether or not it was documented this was provided.

Results
111 questionnaires were returned representing various doctor grades. The average score was 48% (range 21-79%). 596 patients' case notes were reviewed following discharge. 20.3% (121) of patients should have received advice; only 3.3% (4) of these patients received appropriate advice. 6.5% (3 of 46) of eligible patients discharged from medical specialty wards received advice, whilst only 2.1% (1 of 47) of accident and emergency and 0.0% (0 of 28) of acute medical unit patients received advice.

Conclusions
This appears to be the first study examining knowledge and application of DVLA guidance not exclusively in emergency departments. These data indicate driving advice, as mandated by the DVLA, is not being provided to patients, exposing them and the public to increased risk. Intervention is needed to improve performance. We initially recommend a mandatory section in discharge summaries, to prompt doctors to provide driving advice, in combination with training and education interventions. Medically, precedents exist whereby doctors have been judged liable or to have acted negligently when advice was not given and subsequent road accidents occurred.

References:
National Early Warning Score and Charlson Comorbidity Index as predictors of medical admission through an Acute Medicine Unit
Tara Burke
NUIG
Conor Judge
Aaron Liew
David Gallagher
Yvonne Smyth

Aim
University Hospital Galway (UHG) serves as the tertiary referral hospital for the West/Northwest Hospital Group (WNWHG) of seven hospitals in the west of Ireland. The aim of our study was to determine if the National Early Warning Score (NEWS) and Charlson Comorbidity Index (CCI) (1) of patients attending the Acute Medicine Unit (AMU) predicted the decision to admit or discharge them.

Methods
A prospective cohort study of patients attending the AMU in UHG for four weeks was performed. A specially designed REDCap (2) electronic tool was used to capture data. The patient’s vital signs were used to calculate their NEWS. The patient’s past medical history and age were used to determine their CCI. SPSS was used to analyze the data. A chi square assessed if there was a positive association between NEWS and medical admission. The same was done for the CCI. A Spearman’s rank-order correlation was run to determine the relationship between the length of stay (LOS) and the admission NEWS and CCI.

Results
Out of the 251 patients on whom data was captured, 144 (57.3%) were admitted. A chi-square test showed a positive association between high CCI and medical admission (p = <0.001) and NEWS and medical admission (p = 0.485) but it was only significant for CCI. There was a strong, positive correlation between CCI and LOS (rs = 0.349, p = <0.001) but not with NEWS and LOS (rs = -0.093, p = .275).

Conclusion
The Charlson Comorbidity Index is a statistically significant predictor of medical admission and length of stay in an AMU. Future calculation of the CCI for all patients at admission could help to highlight potential admissions and patients prone to long LOS. This would allow resources to be allocated to this subgroup of patients to improve safety and reduce LOS.
Background
The National Confidential Enquiry into Patient Outcome and Death (NCEPOD) aims to promote improvements in healthcare through consideration of key topics. The 2012 report ‘Time to Intervene’ recommended that ‘Cardiopulmonary resuscitation (CPR) status must be considered and recorded for all acute admissions, ideally during the initial admission process and definitely at the initial consultant review’.

Aims
To evaluate communication and documentation of CPR status, as per NCEPOD recommendations.

Methods
Setting: 500 bed District General Hospital with a dedicated Acute Medical Unit.
Study Design: Prospective cohort
Method: For 100 consecutive admissions, we recorded the following: How many for CPR/ DNACPR decisions were made; When the decision was made (initial assessment, senior review, Post-Take ward round (PTWR) or subsequent to PTWR; the grade of doctor making the decision; whether the decision was upheld or revoked on consultant review; and the final outcome of admission for the patient (in-patient death or place of discharge)

Results
Of 100 patients reviewed by a total of 6 consultants on PTWR, only 12 decisions had been documented. All decisions were made by StRs. Follow-up revealed a further nine decisions to have been made subsequently during admission. No patients had a ‘For CPR’ decision documented at any point, which may reflect lack of awareness of guidelines. No DNACPR decisions where rescinded during admission, and no patients suffered in-hospital cardiac arrest.

Conclusions
The recommendations from the NCEPOD report are not currently being implemented within our trust; the reasons for this require further exploration. We have used several methods to improve the process, including educating juniors to both initiate and to prompt decision making on PTWR. Use of a PTWR prompt or checklist including CPR status have both improved these figures, though further educational work is required to embed this within our current practice.
Nursing Observation and Assessment of Patients in the Acute Medical Unit
Debbie Atkinson
Mastercall Healthcare

Objectives
To generate knowledge and understanding of the observation and assessment of patients in the acute medical unit, where patient acuity and activity is unpredictable and length of stay for patients is brief.

Background
Time and temporality pose challenges for the nursing observation and assessment of patients because unlike other hospital wards, the acute medical unit is a dedicated acute short-stay facility, admitting patients with highly complex medical illness on a 24-hour basis. Over the past fifteen years, political drivers for improved efficiency of hospital beds, combined with recent austerity measures, have resulted in shorter length of stay in hospital for patients. The implications of these for nursing practice and the observation of patients have not previously been investigated.

Method
An ethnographic approach was applied to explore the nursing observation and assessment of patients admitted to an acute medical unit. Data were collected from seven nurse participants using participant observation and qualitative interviews over a six-month period. A thematic analysis was undertaken.

Results
The brevity of nurse-patient relationships combined with a problematic ward layout resulted in adaptations to nursing practice to ensure the safe monitoring of patients, including frequent visual and verbal assessments of patients. Nurses observed for facial colour, expression, appearance and the patient’s verbal response. Nurses employed explicit, tacit and intuitive knowledge to interpret observations of patients and safely managed highly complex care despite the challenge of limited time and the brevity of the nurse patient relationship. Nurses demonstrated expertise in the ability to make patient assessments despite having limited experience.

Recommendations
Layout of the acute medical unit must consider ease of visibility for patient observation and impact upon nursing workload. Recognition of nurses’ ability to safely observe patients is essential, rather than relying upon the use of paper-based observation tools. Acute medical nursing must be recognised as a distinct specialism, with appropriate standardisation.

References
**Predicting admission at triage: are nurses better than a simple objective score?**

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Alastair Ireland  
Adam Stark  
Gerard McKay  
Allan Cameron

**Aim**

Our aim was to assess triage nurses' ability to predict hospital admission, and to compare that ability to the Glasgow Admission Prediction Score (GAPS), a simple but accurate tool which uses six objective clinical variables to give a probability of admission (1).

**Methods**

This was a single-center prospective observational study. The patients’ GAPS scores were generated electronically from triage data. Triage nurses, blinded to GAPS scores, completed a 100mm Visual Analogue Score (VAS) to indicate the probability that each patient would be admitted. Computer records were used to determine whether patients were admitted to hospital or discharged.

The VAS and GAPS both had receiving operator characteristic curves created, and the difference between the area under their curves (AUC) was tested using DeLong's method. Monte Carlo power calculation suggested 1800 patients were required to have an 80% probability of detecting a minimum 2% difference in the AUCs.

**Outcomes/Results**

A total of 1838 attendances were suitable for analysis. Of these, 766 (41.7%) were admitted. The VAS showed that triage nurse predictions were better than most reports in the literature, with AUC 0.8644 (0.8477–0.8812), though this was not significantly greater than the AUC for GAPS, 0.8463 (0.8286–0.8640) p=0.072. Subgroup analysis showed that a combined approach was best, with GAPS being used as the main predictor, but the prediction being sense-checked by triaging staff if they had a high degree of confidence (>90%) in the outcome. Using this approach gave a significant improvement on either of the two methods alone, the AUC being 0.8760 (0.8598 – 0.8922), better than VAS (p=0.019) or GAPS (p<0.01).

**Conclusion**

Triage nurses are not significantly better at predicting admission than a simple clinical score, but when they are confident of the outcome they can augment the score’s accuracy. This approach could help patient streaming, bed planning and resource use.

**References**

Overview
Emergency Departments (ED) and Medical Admissions Units (MAU) are under pressure to prevent 4-hour breaches. Identifying patients in the ED who are most likely to breach may allow for individualised, targeted measures to reduce breach numbers.

Aim
The aim of this study was to determine the factors that are associated with the likelihood of a patient breaching.

Methods
Data were analysed from a prospectively collected electronic database of all adult ED and MAU attendances at a single Acute Trust over a 6-month period from August 5th 2013 to February 4th 2014 regarding 68,927 patient events. Relationships were analysed between patients admitted to MAU from the ED who had breached and their attending triage colour, location in the Emergency Department, and the admitting speciality after referral from the ED. Analyses were performed with chi square tests and logistic regression.

Results
There were 68,927 patient events included in the analyses. A statistical significance was found between admission specialties and breaching (Pearson’s Chi-squared test, p<0.05). It was also discovered that increasing priority of triage colour and severity of ED location are related to a statistically significant rise in the probability of breaching (logistic regression, p<0.05) (breach percentages per admission specialty: A&E-11.8%; General Medicine-15.4%; Musculoskeletal-14.8%; Surgery-12.8%). Furthermore, there was no difference in the proportion of patients that breach on a “busy” day when compared with a “non-busy” day.

Conclusions and recommendations
These findings suggest that it is possible to identify the ED patients who are most likely to breach, even from the point of triage. This has the potential to reduce breach numbers by increased attention being paid to such “at risk” patients.
Sleep Quality in General Medical Patients
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Barnabas Gilbert
Joshua Luck
Ruairidh Battleday
Amrit Gosal
Ari Manuel

Aims
Sleep is essential for health and healing[i]. Chronic sleep deprivation is implicated in disease and increases all-cause mortality[i]. Acute deprivation disrupts memory, attention and decision-making[ii].

Previous work has largely focussed on sleep quality in Intensive Care Units, demonstrating significantly disrupted sleep[iii]. We aimed to quantify sleep quality experienced by general medical patients in two settings: 1) the Acute Medical Unit (AMU) and 2) on a general medical inpatient ward, and compare this to sleep quality in patients’ own homes.

Methods
The Richards-Campbell Questionnaire (RCQ), a validated instrument for assessing sleep quality, was administered to assess the quality of 96 inpatient nights: 47 on the AMU and 49 on the inpatient ward; and 43 nights when patients were at home. We collected demographic data and data regarding possible interruptions to sleep. We used a two-tailed T-Test to determine whether observed sleep differences in each setting were significant, and to determine whether observed associations with sleep quality were significant.

Results
Patients on the AMU experienced poorer sleep quality than patients on the general medical ward. This was significant (p=0.002). Patients at home experienced significantly better sleep than on AMU or the general medical ward (p<0.001).

Obesity (BMI>30) and age over 80 were significantly associated with poorer quality sleep (p<0.05).

Conclusion
For the first time, we show that NHS general medical patients experience significantly poorer sleep than at home, with poorest sleep quality on the AMU. Interventions such as ear plugs, eye masks and soft-close doors/bins should be considered.

References
The Impact of Bed Occupancy on Patient Flow through a Medical Admissions Unit

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James Ritchie
Anu Trehan
Darren Green

Overview
Patient flow is a broad term that refers to the movement of patients and resources as part of a patient’s care pathway. Ensuring that patient flow is sustained at its optimum level can improve outcomes, patient satisfaction and efficiency.

Aim
The study aimed to examine the link between bed occupancy and patient flow in an Emergency Assessment Unit (EAU). To do this, the following markers of patient flow were used:
1) Breaching in the emergency department (ED)
2) "Out of hours" ward transfer

Methods:
Cases from a six-month study period were selected using the hospital’s electronic patient database. The study ran from the 5th August 2013 to the 4th February 2014. Data from the accident and emergency department and bed occupancy data were also collected. These data were then collated and the hypotheses were tested using logistic regression models.

Results:
The cohort included 10,913 individual patient events. When there were no beds available across the hospital, patients in the ED were 76% more likely to breach than when beds were available (logistic regression, OR = 0.754, 95% CI 1.328-2.321). Generally, as more beds became available, the likelihood of breaching in the ED decreased. During the night, patients were less likely to be transferred to a ward when there were more beds available. During times where the EAU was at its capacity, night transfers on the unit were 39% more frequent than when there were free beds (logistic regression, OR = 0.604, 95% CI 0.376-0.971). Also of note was that 27% of transfers from EAU were happening overnight (between 00:00 and 04:00).

Conclusions:
Bed occupancy has a statistically significant effect on both tested aspects of patient flow. In order to address this, recommendations include:
1. Overflow protocols to prevent the impact of overcrowding
2. Management-focussed training for clinicians
3. Interventions to reduce night transfers.
The role of socio-economic risk factors in the epidemiology of Infective Endocarditis.

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Clare Castledine
Catherine Sargent

Aim
The study determined if there was an association between infective endocarditis (IE) rates and socio-economic deprivation status (SEDS).

Methods
A prospective cohort study of patients with a clinical or microbiological diagnosis of IE between January 2012 and January 2014 was undertaken. SEDS was defined as the Index of Multiple Deprivation (IMD) score based on the patients residential postcode. IMD scores for the tertiary referral area of Brighton and Sussex University Hospital (BSUH) were divided into quintiles based on the score. Characteristics were compared by Poisson regression and chi-squared tests.

Results
90 cases of IE were identified. The incidence rate in Brighton & Hove was significantly higher than other NHS Sussex districts (Incidence rate ratio 2.2 [95% CI 1.3-3.5], p<0.001) and thought to be due to differential referral patterns. There were 28 cases of IE in Brighton & Hove, 6 of which were prosthetic-valve IE. 78% (n=22) were male, 64% (n=18) aged 45-82 years and 21%(n=6) were >82 years. Cases due to Streptococci and Staphylococci species were 50% (n=14) and 14 % (n=4) respectively. IE patients tended to be more deprived with 42.9% (n=12) cases coming from the most deprived group and no cases from the least deprived. The rate of IE in Brighton and Hove was 4.6 per 100,000 year and was consistent with rates from other population studies

Conclusions
IE Rates at BSUH are similar to other studies but more work is required to explore variation in rates between UK hospitals. IE does seem to be associated with lower SEDS.

References
To Thrombolyse or not to Thrombolyse - Two Years’ Experience of Thrombolysis of Sub-massive Pulmonary Embolism in a District General Hospital

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Muhammad Jawad
Martin Dachsel
Daniel Woosley
Christopher Limb
Michael Wilde

Aims
Current BTS guidelines only recommend thrombolysis of pulmonary embolism (PE) in patients, who are haemodynamically compromised. Newer evidence suggests a mortality benefit for thrombolysis of sub-massive PE with right ventricular strain. We wanted to assess the outcome and safety of thrombolysis in patients with sub-massive PE in a DGH.

Methods
The notes for thrombolysed patients with sub-massive PE from a 2 year period (March 2012–April 2014) were reviewed. Evidence of right ventricular strain and myocardial necrosis based on bedside echocardiography and Troponin were indications for thrombolysis. Notes were made of contraindications before thrombolysis and complications afterwards.

Results
A total number of 25 patients were thrombolysed for PE in the study period (56±14 years). 17 patients were classified as sub-massive PE (54±14 years). Out of 8 patients thrombolysed for massive PE (58±15 years), 3 were initially classified as sub-massive PE but deteriorated within the next 48 hours and became haemodynamically unstable. In all patients the diagnosis was confirmed with a CTPA. Mean Troponin was 106.8 in the sub-massive PE group and 108.7 in the massive PE group. The clinical condition and haemodynamics of patients improved rapidly within few hours after thrombolysis.

Post thrombolysis echocardiography was performed in 19 patients so far. 14 patients had normal right ventricles with normal pulmonary arterial pressures. There were no deaths due to thrombolysis. 3 patients had bleeding complications (one haematuria (77 years), one bleeding from knee surgery site requiring blood transfusion (58 years), one 2.5 cm intracerebral haematoma which resolved spontaneously (82 years)).

Conclusion
Thrombolysis of submassive pulmonary embolism is feasible in a district general hospital and seems to be a safe procedure, particularly in younger patients, which is in agreement with Chatterjee et al. It results in rapid improvement in clinical condition of patients with a small incidence of bleeding complications.

References
Tolerable risk in patients presenting with lone acute sudden headache
How far have we progressed?
Alice Binbay
Amber Chadwick
Taj Hassan

Aims
Managing patients with lone acute sudden headache (LASH) remains a significant challenge. 10-15% will have some significant pathology, the most serious and difficult exclude being subarachnoid haemorrhage (SAH). This study aims to define current practice in assessing neurologically intact LASH patients to exclude SAH in an acute observation unit setting.

Method
A structured data retrieval tool was developed to perform a retrospective quality improvement study in adult patients attending with LASH to twoED between 23/7/2012 - 26/8/2013. The diagnosis of SAH was defined radiologically by CT of the head, cerebral angiography (CTA) or MRI, or xanthochromia in the CSF.

Results
Of the 704 patients, data was included on 604. 38% were male and 62% were female; 49% were aged under 40. 81% had a CT scan but only 41% of those had lumbar puncture (LP). Decision for no LP was 40% led by the patient and 30% clinician. However, verbal consent for the procedure included highly variable risk statistics via clinicians.
There were 7 (1%) diagnoses of SAH. 6 were made by non-contrast CT and 1 was made by CTA. Of the 7 SAH patients, 4 were female and 6 were aged >40. Five presented within 4 hours of symptom onset and 6 arrived by ambulance. One patient attended 10 days post headache onset but still had a positive non-contrast CT for SAH. 2 died within the first 30 days including one patient with severe hypertension. Of the 604 patients, 43 (7%) had pathology other than SAH identified that required treatment.

Conclusion
Our study adds to the body of evidence on the lack of usefulness of xanthochromia in this setting. Further work is ongoing to provide a consistent structured approach in this vital area of informed consent for LASH.

Table 1: High risk clinical characteristics to indicate need for CT applying Perry’s criteria.

<table>
<thead>
<tr>
<th>Clinical Characteristic</th>
<th>Our SAH patients (n=7)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aged &gt;40</td>
<td>6</td>
</tr>
<tr>
<td>Complained of neck pain / stiffness</td>
<td>4</td>
</tr>
<tr>
<td>Witnessed loss of consciousness</td>
<td>2</td>
</tr>
<tr>
<td>Associated with exertion</td>
<td>2</td>
</tr>
<tr>
<td>Arrival by ambulance</td>
<td>6</td>
</tr>
<tr>
<td>Vomiting</td>
<td>4</td>
</tr>
<tr>
<td>Diastolic blood pressure &gt;100</td>
<td>1</td>
</tr>
<tr>
<td>Systolic blood pressure &gt;160</td>
<td>1</td>
</tr>
<tr>
<td>Number of our SAH patients not to be identified with Perry’s risk clinical characteristics</td>
<td>0</td>
</tr>
</tbody>
</table>