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Northern Devon Healthcare NHS Trust, Exeter. |
| OC 2              | Cognitive and academic predictors of a pharmacy students’ performance in a prescription-screening task  
Greg Scutt¹, Sabrina Hasan¹ and Myrna Gayed¹. 1. School of Pharmacy and Biomolecular Sciences,  
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| OC 3              | A Region Wide Evaluation of Pharmacy Contributions in East Midlands Acute Hospital Trusts  
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East Midlands Clinical Pharmacy Network (EMCPN), Pharmacy Department,  
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| OC 4              | Improving the provision of 7-day Pharmacy Services in a large teaching hospital  
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Sheatha Latifi¹, Seetal Jheeta¹ and Bryony Dean Franklin²  
1. Imperial College Healthcare NHS Trust, London UK, 2. UCL School of Pharmacy, London |

**UKCPA Awards (Poster) Section**

The following papers won an award during 2015

**UKCPA/Biogen Multiple Sclerosis Award 2015**

A cross sectional survey of patient-reported side effects experienced with dimethyl fumarate for the treatment of relapsing remitting multiple sclerosis  
Weir, NM and Murray, LJ, Pharmacy and Prescribing Support Unit, Southern General Hospital, NHS Greater Glasgow and Clyde

**UKCPA/Astellas Antimicrobial Management Award 2015**

The impact of a pharmacist led multidisciplinary review of restricted antimicrobial prescriptions at a Teaching Hospital  
Orla Geoghegan¹, Nick Cooley¹, Elli Demertzi², Rekha Lopez², Berge Azadian², ¹Chelsea and Westminster Healthcare NHS Foundation Trust, ²Imperial College Healthcare NHS Trust

**UKCPA Clinical Research Grant (Poster) Section**

The following paper successfully secured UKCPA research funding

**Unlicensed medicines use in the UK: A systematic review and quality assessment of published guidelines**  
Donovan GR, Parkin L, Wilkes S, Brierley-Jones L, University of Sunderland, Sunderland

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| 2             | Pharmacist Involvement in Pre-Operative Assessment Clinics  
Wigg, D.N., Blain, F., Riley, S., Mayers, L. North Bristol NHS Trust |
| 3             | The impact of ready-to-use vials on fentanyl usage in critical care  
Gillian Cavell, King’s College Hospital NHS Foundation Trust. London |
| 4             | An Audit Assessing the Prescribing and Monitoring of Sodium Chloride Containing Fluids in Children  
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Marie Fotos-Guifo¹, Gayle Campbell², Imran Hafiz², Victoria Collings², King’s College London², St Thomas’ Hospital, Guy’s and St Thomas’ NHS Foundation Trust, London² |
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Rick Cooper, John Warburton, University Hospitals Bristol NHS Foundation Trust |
| 7             | Towards an improved service “Seven Days a Week”  
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**BPSA Conference 2015 Winning Poster**

**Regional Pre-Registration Pharmacist Winners 2015**

| A | Assessing the impact of enhanced meropenem surveillance on course length | Tomisin Adedipe; Hayley Wickens. University Hospital Southampton NHS Foundation Trust |
| B | An Audit of Calcium Level Monitoring associated with Denosumab Treatment for Osteoporosis | Muhammad Ali and Ritti Desai, Kingston Hospital NHS Foundation Trust, Kingston-Upon-Thames |
| C | A Clinical Audit of the Documentation of Medicines Reconciliation on Admission | Heather Axford, Leeds and York Partnership NHS Foundation Trust (LYPFT) |
| D | Recording of Descriptions of Penicillin Drug Allergy on the Electronic Prescribing Program JAC | Emily Bishop & Debora Gabble, Chesterfield Royal Hospital |
| E | The Timely Review of Intravenous Antibiotics and the Appropriate use of Cultures | Gemma Bray, Yeovil District Hospital, Jonathan Urch, North Bristol NHS Trust (NBT) |
| F | An Audit to Determine the Quality of IVIg Prescribing and Management at CUH | Cook H, Non-resident Pharmacist and de Monteverde-Robb D, Lead IVIg Pharmacist, Cambridge University Hospitals (CUH Trust) |
| G | The Prevalence and Cost Implications of Redundant Antibiotic Combinations | Richard Cowan, Rebecca Keenan, Dr Rashmi Dube, Jane Robson, University Hospital of North Tees, Stockton-on-Tees |
| H | Review of current chemotherapy supply and assessment of the impact of dose banding | Emily Flanagan, Supervisors Alex Davies, John Landers and Jennifer Silverthorne, Salford Royal NHS Foundation Trust (SRFT) |
| I | Audit of medication storage at Cwm Taf UHB | Adnan Higgi, Julie Davie, Rachel Owens and Peter Baker, Prince Charles Hospital, Gurnos, Merthyr Tydfil |
| J | Audit investigating the compliance of safety initiatives in paediatric intensive care | Monisha Sahni, K and Rhian Isaac, Birmingham Children’s Hospital NHS Foundation Trust |
| K | An Audit of Pharmacy-led Medicines Reconciliation within Buckinghamshire Healthcare NHS Trust | Rosalind Webb and Shu Yi Tan, Buckinghamshire Healthcare NHS Trust, Aylesbury |

**Exempt from Poster Award**

Development of specialist training for Antimicrobial Pharmacists to support reduction of antimicrobial resistance

Macdonald A¹, Roberts S¹, Brailey A², McMillan F², Noble S², Sneddon J¹, Wilson A¹, 1 Association of Scottish Antimicrobial Pharmacists, 2 NHS Education for Scotland (Pharmacy), 3 Healthcare Improvement Scotland, 4 NHS Borders

(Please note, the abstract for this poster does not feature in this conference handbook)

**Disclaimer**

The abstracts contained in this handbook have been produced using author-supplied copy. The UKCPA does not accept responsibility for any claims, instructions, methods or drug doses contained in the abstracts. The UKCPA would recommend that these are verified independently.
Background
The Exeter cluster pharmacy service is based within an integrated community health and social care team, providing a citywide domiciliary pharmacy service. It consists of three pharmacists (1.8wte) and two technicians (0.8wte). The service optimises medication for frail elderly patients at risk of medicines related harm, reducing harm and preventing hospital admission. It provides level 3 clinical medication review1, medicines reconciliation and advice at home. Most referrals come from GPs and the community health and social care team.

Objective
To evaluate the effectiveness of the service to inform future commissioning plans.

Method
Activity data was analysed retrospectively (Feb–July 2014) and prospectively (Sept–Dec 2014). Data included details of referral type, source, patient contacts made, subsequent interventions and outcomes. The prospective analysis collected additional detailed information about patient demographics, clinical activity and outcomes. Potential admissions avoided were recorded and the resulting data independently validated using NPSA2 and adapted RIQ3 risk assessment tools. Patient and professional stakeholder surveys were undertaken. This study did not require ethics approval.

Results
Over the nine month combined data analysis period, 346 patients were referred, resulting in 599 patient contacts. 58% of patients referred were aged 80 years or over. Prospective data analysis showed that 79% of patients were unable to visit their GP or community pharmacy for a medication review at the time of referral (n=112). Patients were pharmaceutically complex: 54% were prescribed ten or more medicines; 85% had an impairment affecting their ability to manage medicines. 57% of patient contacts resulted in proposals for medication changes; 79% were accepted as proposed by GPs and a further 12% accepted with modifications. Patient and professional stakeholders rated the service positively; service quality was rated positively by 100% of patients.

Risk of harm from medicines in the prospective data analysis was high or extremely high in 76% of patients at referral, reducing to 21% at final contact (assessed using the NPSA risk assessment tool). The retrospective and prospective analyses demonstrated admission avoidance as a result of 53 patient contacts (n=441) and 27 contacts (n=158) respectively. Extrapolating this over a year gives an average of 108 admissions avoided. This equates to a cost saving of £240,000 per year, based on an admission cost of £2230 for patients aged 65 or above at the local acute trust.

Conclusions
The cluster pharmacy team provides patient-centred care to vulnerable older adults with complex and changing medicines management needs. The service is well regarded by patients and professional stakeholders. It has a positive impact on patient safety: risks for patients are reduced and a significant number of hospital admissions and their associated costs avoided. The evaluation supports the need to ensure proactive pharmaceutical care is available to the frail elderly to optimise medicines use and prevent hospital admissions.

References

OC2. Cognitive and academic predictors of a pharmacy students’ performance in a prescription-screening task
Greg Scott (g.scott@brighton.ac.uk)1, Sabrina Hasan1 and Myrna Gayed1, 1. School of Pharmacy and Biomolecular Sciences, University of Brighton, Brighton, 2. Brighton and Sussex Centre for Medicines Optimisation, University of Brighton

Background
Over the course of their studies undergraduate pharmacy students develop knowledge and skills that enable them to assess prescriptions for safety and efficacy. Clinical competence in this area is commonly assessed using Objective Structured Clinical Examinations (OSCEs). Success is variable however, and not fully explained by previous academic performance.

When assessing a prescription, the process of gathering data, and identifying and solving medicine-related problems requires skills including planning, reasoning, and decision-making. The cognitive processes that underpin performance in these tasks include working and implicit memory. We therefore asked the question: does working and implicit memory function, along with academic ability predict performance in an OSCE prescription-screening task?

Objectives
In MPharm students:
• Measure cognitive function
• Establish previous-year exam score
• Assess performance in a prescription screening task
• Build a model to predict prescription screening success

Methods
MPharm students (years 2–4) at a UK University were eligible to participate in the study. In a 1-hour session, participants were asked to provide their previous-year exam score (PES) and sit 3 established cognitive tests assessing: verbal working memory (VWM), visuospatial working memory (VSWM), and implicit memory (IM). Participants then sat a Prescription Screening (PS) task that involved identification and resolution of a medicines-related problem. Binary logistic regression was used to establish whether scores obtained in these cognitive tests (and PES) could predict task success. This study required, and received ethics approval.
Results

Twenty-nine students took part in the study. Twelve students did not provide PES and were subsequently excluded. The mean scores for each cognitive test (±SEM, n=17) were: VWM, 61.7%±5.6; VSWM, 4.3/15±0.9; IM, 0.90±0.01, and mean PES was 65.4%±1.2. Six (out of 17) students were successful in the PS task.

Two binary logistic regression models were constructed to assess whether cognitive test scores and PES could predict PS success. Model 1 included all predictors and was found to successfully predict PS success in 82.4% of cases (compared to 64.7% in a model with no predictors; chi²=11.147, df=4, p=0.025; Nagelkerke R²=0.661). The significance of the model was improved by removing IM (Model 2, chi²=11.143, df=3, p=0.011). However Nagelkerke R², and classification of PS success remained identical to Model 1. In both models, all predictors have Odds Ratios >1, with the exception of previous exam mark. Tolerance, and VIF values were >0.8 and <1.3 for all predictors indicating minimal multi-collinearity.

Conclusions

This is the first report of cognitive performance being successfully incorporated into a model to predict prescription-screening performance in student healthcare practitioners. Model 2, which incorporated the predictors: VWM, VSWM and previous exam mark was able to successfully classify 82.4% of participants correctly, and explain 66% of variability in performance. Further work needs to be performed to establish whether exercises to improve WM can influence PS success.

References


**OC3. A Region Wide Evaluation of Pharmacy Contributions in East Midlands Acute Hospital Trusts**

A Braithwaite. East Midlands Clinical Pharmacy Network (EMCPN), Pharmacy Department, Chesterfield Royal NHS Foundation Trust. Chesterfield.

**Background**

Screening prescriptions to optimise accuracy, safety, quality and efficacy of prescribing is both a traditional role for hospital pharmacists and technicians. There are numerous published references which seek to put a process and cost avoidance figure to pharmacy contributions. However recording and analysing pharmacy ‘contributions’ to patient care still varies enormously from one Acute Hospital Trust to another. This study describes the annual contribution data collection in the East Midlands. This is used to compare performance between Trusts, to identify strengths and weaknesses, trends, training requirements and help develop clinical pharmacy strategy. It is invaluable in providing information which helps qualify and quantify the impact of clinical pharmacy activity for Trusts.

**Objectives**

To collect and analyse pharmacy contribution data across the region’s Acute Trusts using a standardised data collection and analysis tool. Emphasis is placed on categorising contributions in critical areas as identified by Commissioning for Quality and Innovation, NHS England Never Events and Patient Safety Alerts.

**Method**

This Study did not require ethics approval.

Lead Clinical pharmacists in the region developed and agreed a standardised contribution data collection form with accompanying guidance notes and Excel® data collection tool. Contribution data is collected annually by each pharmacy department over one week in November. The lead clinical pharmacists in each Trust validate the data to ensure quality and consistency in categorisation.

**Results**

- Data collection occurs across 7 acute Trusts.
- Approximately 11000 contributions are documented annually during the data collection week.
- Major contributions as defined by the EMCPN ie errors which cause or have the potential to cause serious harm within 48 hours fell in 2014 to 3% compared to 5% in previous years.
- No never events were documented during 2014 week.
- Cost Avoidance of major contributions (calculated annually using School of Health and Related Research Sheffield tool (SchARR)) fell in 2014 to £17,264,000.00
- Increasing use of electronic prescribing has changed the nature of contributions. Contributions involving incomplete allergy sections and illegible prescriptions fell to zero from 8% and 5% respectively in hospitals with electronic prescribing.
- Proactive pharmacist prescribing is an increasing positive contribution to patient care in high risk areas e.g. cytotoxics, anticoagulation
- An average of 49% contributions occurred on first pharmacy contact - an increase from 45%.

**Conclusions**

This region-wide standardised data collection provides a rich source of information on clinical pharmacy activity. It is a means of identifying trends in prescribing contributions, highlighting areas for improvement and noting the impact of electronic prescribing systems and pharmacist independent prescribers on patient safety. The short data collection period is a limitation of the study. This is a compromise in order to manage the volume and intensity of the contribution data collection and analysis.

**References**

2. Systematic review of the effectiveness and cost effectiveness of interventions aimed at preventing medication error (medicines reconciliation) at hospital admission, The University of Sheffield, School of Health and Related Research (SchARR), 2007.
OC4. Improving the provision of 7-day Pharmacy Services in a large teaching hospital
Andrew Lowey (andrew.lowey@nhs.net), Jane Andrews, Stephen Ashmore, Gill Sunderland, Rachel Smith, Julie Mansell, Catherine Hughes, Chris Acomb, Deborah Armstrong, Graham Cox, Mark Stringer, Gillian Horne, Una Laverty.
All authors - Leeds Teaching Hospitals NHS Trust

This study did not require ethics approval

Background
The need to prioritise the improvement in the provision of pharmacy services across seven days was highlighted in a recent national report. Many of the report’s 10 key standards can be applied to pharmacy services. Particular focus is attached to the need to have pharmacy staff as part of the multi-disciplinary team, and a recommendation to complete medicines reconciliation within 24 hours of admission. In January 2014, a working group was formed to respond to the report.

Objectives
1. Improve the presence of pharmacy staff on wards at weekends
2. Improve medicines reconciliation performance across seven days
3. Improve discharge turnaround times

Method
New integrated 7-day rotas of pharmacists, technicians and support staff were created for each of the 5 main clinical teams, with a particular focus on acute medical admission areas. All new staff were employed with an increased weekend rota commitment of 1 in 4 (previously 1 in 5); there were no enforced changes to terms & conditions for existing staff.

A patient prioritisation system and a beginning of shift “staff huddle” was devised in to enable staff to be directed where needed. A new pharmaceutical care section was embedded in the medicines chart to improve clarity of completed and outstanding tasks, and an electronic handover tool was used to create a team handover tool for each shift.

The resident on-call service was replaced with 24 hours on-site pharmacist shift cover, and dispensary rotas were strengthened until 10pm. Routine aseptic services opening hours were increased to 8am-8pm Monday-Friday and 8am-6pm Saturday & Sunday.

A three year structured training programme was put in place to support the foundation pharmacists who provide the overnight service. A set of competencies need to be completed by each pharmacist during their first year before working alone overnight in their second year.

Results
The creation of new integrated rotas facilitated access to at least one specialist pharmacist in each clinical team, seven days per week (e.g. access to a paediatric pharmacist across seven days). Overall, 10 specialist pharmacists and 8 technicians & support staff are typically employed per weekend day across the 5 teams (previously only 3 pharmacists). For context, the Trust has around 1900 beds.

There was no increase in staffing establishment to facilitate these changes. Medicines reconciliation rates within 24 hours of admission (measured at the completion of the review process but not resolution of all issues) increased from 68% in September 2014 to 79% in March 2015, despite winter bed pressures. Medicines reconciliation rates for patients admitted on a Saturday improved from 0% to 41% during the same period.

Near-to-patient presence in acute medicine helped improve the turnaround of discharge prescriptions with 96% being processed in less than 2 hours, and 84% in less than an hour.

Conclusions
Significant progress has been made in order to meet the needs of our patients across seven days. Further work is needed to roll out and improve resilience.

References

Testimonials
“It made such an enormous difference - patients received their non-stock medication promptly, and discharge medications were delivered without delay, helping patient flow, and reducing patients’ waiting. The service ran smoothly and efficiently and we had no complaints. The difference was massive”

Romy Smith, Senior Sister – Acute Medicine

OCS. Post-hospital medicines reconciliation: The impact of providing enhanced information regarding medication changes
Amadu R*, Adebimpe F**, Onatade R*
*Kings College Hospital NHS Foundation Trust, **University College London School of Pharmacy

Background
The provision of accurate, comprehensive information on medication changes after a hospital admission is important. In older patients, medication discrepancies may negatively impact morbidity. A Trust initiative was started to improve the information on medication changes sent to GPs at discharge. A separate clinical medication review letter (CMR) was developed, with sections for details/reasons on medications continued, stopped and changes. The project aim was to investigate whether the provision of the CMR impacted on post-hospital medication reconciliation. The primary objective was to compare the rate of medication discrepancies in GP lists between patients who did and did not receive a CMR, 4 weeks post discharge.

Method
This was a non-randomised study. Data was collected over a 7 week period (February - April 2015). The two wards where the CMR service is commenced were labelled as intervention wards; two similar wards were selected as natural controls. At discharge, the intervention patients and their GPs received a standard discharge notification (TTA) plus an additional CMR letter. Control patients and GPs received a TTA but no CMR. Current medication lists were requested from the patients’ GPs four weeks after discharge and compared to their discharge medication lists. Statistical analysis was conducted using SPSS v21. Ethics approval was not required because there was no change or intervention in patients’ treatment/management during the study.

Patients who died prior to data collection were excluded.
Results
149 patients were discharged from the four wards during the study period (87 interventions, 62 control). Data was available for 86 patients (49 intervention, 37 control); 30 patients had died and 24 patients had no current GP information on record. 9 patients had no CMRs/TTAs. Mean number of drugs at discharge was 11 for intervention and 9 for control.

- Groups were similar with respect to age, gender, length of stay and comorbidity (Mann-Whitney U, p > 0.05)
- Medication lists of 86% patients from the intervention wards and 60% from the control wards fully matched four weeks after discharge. (Chi Square, p = 0.006)
- 7/49 patients in the intervention group had 12 discrepancies, while 15/37 patients in the control group had 35 discrepancies
- Patients without CMRs were more likely to have at least one discrepancy (Chi Square, p<0.005, odds ratio = 4.1, 1.45 – 11.5)
- There was a significant difference between the groups regarding the number of discrepancies (Mann-Whitney U, p = 0.024)
- The only variable that predicted if a patient would/would not have a discrepancy was having a CMR (logistic regression p = 0.030).

Conclusions: Patients with a CMR had significantly fewer medication discrepancies than patients without. GP medication lists were more likely to match hospital records if a CMR had been provided. The provision of detailed information on medication changes at discharge supports reconciliation in primary care, leading to fewer errors and increased patient safety. The main limitation of this work is that the clinical significance of the discrepancies was not assessed.

References

OC6. Are prescribers identifiable from inpatient medication orders?
Sheathat Latif1 (sheathat.latif@imperial.nhs.uk), Seetal Jheeta1 and Bryony Dean Franklin2
1. Imperial College Healthcare NHS Trust, London UK, 2. UCL School of Pharmacy, London UK

Background
Despite local hospital policy stipulating that prescribers must print their name and contact number on inpatient medication orders on paper drug charts1, previous local work has shown that prescribers often only provide their signature. Consequently, prescribers may be unidentifiable and difficult to contact for questions relating to medication orders or to provide feedback on prescribing errors. A recent local initiative for Foundation Year 1 (FY1) doctors helped improve prescriber identification from approximately 6% to 50% of FY1 medication orders in 2013-14. However, the prescribing practice of prescribers across all grades and professions was not known. We aimed to determine if our overall cohort of prescribers were adhering to hospital policy and were identifiable from their inpatient orders. Personalised name-stamps had been issued to all FY1/2 doctors, and other prescribers who requested them during August 2014.

Objectives
To measure the percentage of inpatient medication orders where prescribers: 1) printed their name in addition to their signature; 2) were identifiable either through a printed name or legible signature; and 3) printed their contact number.

Method
An audit approach was used, with standards (set at 80%) derived from local policy. All NHS wards were included except critical care, which used electronic prescribing. A data collection tool was developed and piloted. Data were collected from the first three drug charts encountered on each ward in January 2015. Medication orders were assessed for the presence of the prescriber’s signature, printed name (handwritten or stamped), legible signature (as determined by the auditor) and contact number. Data were summarised descriptively. This study did not require ethics approval and was approved locally as an audit.

Results
Data were collected from 1,987 medication orders on 156 drug charts sampled from 52 wards across four hospitals. Overall, 5.8% (n=115) of medication orders included both a printed name and signature; for 6.6% (n=135) the prescriber was identifiable from either a legible signature or a printed name, and 10.5% (n=208) included a contact number.

Conclusions
Findings suggest that identification of prescribers of all grades across various specialities is poor within our trust. This may potentially jeopardise patient safety in the event of a query and limits the feedback prescribers receive on prescribing errors.

While the large sample size was representative of the trust, the data collection method did not take into account that healthcare professionals can sometimes identify prescribers due to familiarity. However, prescriber identification is essential as multiple staff encounter prescriptions from unfamiliar prescribers due to shift patterns and patient transfers.

Despite high name-stamp usage during a previous audit, the present findings suggest that their use is not widespread, questioning their impact on prescribing behaviours in the absence of other interventions and education. Further interventions, including prescriber education, are recommended to improve prescriber identification while paper prescribing is still in use.

References
Background
Disease modifying treatments (DMTs) for relapsing remitting multiple sclerosis (RRMS) act to reduce relapse rates and slow disease progression. Dimethyl fumarate is a novel, orally active DMT which offers administration advantages over the previous parenteral DMTs. The phase 3 trials CONFIRM and DEFINE found that dimethyl fumarate reduced relapse rates by 34% and 49% respectively. With treatment, there is a decrease in lymphocyte counts of approximately 30% and there are concerns over the development of progressive multifocal leucoencephalopathy, a complication which can be potentially fatal. Common side effects include flushing (34%), abdominal pain (9%), diarrhoea (14%) and nausea (12%) which are known to reduce in incidence over one month. Little is known about the experience of these side effects in routine clinical practice, particularly as trials excluded patients with comorbidities, and there is a lack of consensus regarding management of these side effects.

Aims and Objectives
To determine the profile and management of side effects experienced with dimethyl fumarate with the following objectives:
- Determine baseline demographics of a cross section of patients prescribed dimethyl fumarate for RRMS and determine their adherence to treatment.
- Quantify the incidence, severity and profile of side effects.
- Statistically analyse changes from baseline lymphocyte counts.
- Determine treatments effective at alleviating side effects.

Method
28 patients prescribed dimethyl fumarate for RRMS for over a month and attending nurse-led MS clinics were included. Over a six week period from October to November 2014, electronic medical records were reviewed to extract patient demographics, medical and drug history and lymphocyte counts before and during treatment. Using a purposefully designed questionnaire which was peer-reviewed and piloted, patients were invited to a 10-20 minute interview at their routine clinic appointment. It consisted open and closed questions and symptom severity was patient reported. Selection bias was prevented by interviewing all patients willing to participate. All means are shown with standard deviation and a paired t-test was used to determine significant differences in patients’ lymphocytes. Ethics approval from the health board was sought but was deemed not necessary.

Results
Patient demographics were similar to trial population with respect to age (39±9 years), weight (77±17 kgs), gender (79% female), race (96% white) and time since MS diagnosis (7±5 years). 46% of patients had comorbidities and 75% were taking other medication. Most patients had been on a previous DMT unlike the trial population (79% vs 28% and 40%).

Mean treatment duration was 3.9 months (range 1.5-7). Overall incidence of side effects was 93% (n=26). Patients experienced a higher incidence of all side effects compared to trial population. Most resolved or reduced in severity over time (Graph 1), generally after a month of treatment, and were predominantly reported as mild or moderate. All patients took treatment at appropriate times and most with food. 57% (n=16) reported forgetting occasional doses, 11% (n=3) temporarily stopped treatment due to nausea and vomiting, sore throat and diarrhoea and 4% (n=1) discontinued treatment due to flushing, lower abdominal pain, diarrhoea, decreased mood and fatigue.

Graph 1. Initial and Ongoing Side Effect Incidence and Severity

All side effects had similar onset of approximately 1-2 hours post-dose. Cutaneous side effects were more likely to be ongoing than gastrointestinal side effects, however persisted for a shorter daily duration. Patients reported that taking dimethyl fumarate with protein-rich and fatty foods (n=2) reduced side effect severity. Taking on an empty stomach (n=5), caffeinated drinks (n=2) and sugary foods (n=1) worsened severity. Aspirin (n=7), ibuprofen (n=1), codeine (n=1) and antihistamines (n=1) were effective for cutaneous side effects. Gaviscon® (n=1), ibuprofen (n=1) and PeptoBismol® (n=1) were effective for abdominal pain. Loperamide (n=4) was effective for diarrhoea, and prochlorperazine (n=1) and levomepromazine (n=1) were effective for nausea.

The mean lymphocyte count decrease from baseline was 16% (p=0.16). For patients on treatment for over three months (n=12), the mean lymphocyte decrease was 30% (p=0.02). No patients required to discontinue therapy as a result of lymphopenia.

Discussion
This study shows that in routine clinical practice, side effects with dimethyl fumarate occur with greater incidence than in trial population. However, there is a reduction in incidence and severity of side effects over time. Most patients tolerated side effects and discontinuation rates were lower than trial population, possibly due to improved patient education following trial data. This study also shows effective treatments tried although with poor statistical power. Other limitations include the subjective manner patients rated symptom severity and the scope for recall bias. Interesting findings include the difference in the profile of the cutaneous and gastrointestinal side effects suggesting different pathophysiology, and the effect of concomitant gastrointestinal contents on side effect severity. The results have been disseminated to MS clinicians to improve patient care and will be used to complement a local patient information leaflet on side effect management. Potential lies for the questionnaire to be further disseminated and used in structured clinic reviews in primary and secondary care.

References
The impact of a pharmacist led multidisciplinary review of restricted antimicrobial prescriptions at a Teaching Hospital

Orla Geoghegan1, Nick Cooley2, Elli Demertzis2, Rekha Lopez3, Berge Azadian2, 1Chelsea and Westminster Healthcare NHS Foundation Trust, 2Imperial College Healthcare NHS Trust

Background:
Antimicrobial resistance is one of the greatest public health threats to society. Optimal use of antibiotics is essential in order to conserve them for future use.1 The introduction of electronic prescribing in our Trust has facilitated a pharmacist led review of patients prescribed restricted antimicrobials on a daily basis (Monday to Friday) since July 2012 however the impact of this review has not previously been examined.

Aims and objectives:
To explore the impact of a pharmacist led review of patients on restricted antibiotics in combination with microbiology at a London teaching hospital between April 2014 and March 2015. Specifically the purpose of this review is to determine the:
• Number of restricted antimicrobial prescriptions reviewed.
• Proportion of prescriptions that were deemed appropriate.
• Proportion of prescriptions that the microbiology team was not aware of prior to the pharmacist led review.
• Number and types of interventions made.
• Proportion of recommendations that were actioned.

Method:
A report of restricted antimicrobial prescriptions was created by an antimicrobial pharmacist on a daily basis (Monday to Friday) using a report created from the electronic prescribing system. This report was added to a Microsoft Excel spreadsheet of active restricted antimicrobial prescriptions. Microbiology and all other pathology results for each patient were reviewed daily by the antimicrobial pharmacist and then discussed with the Microbiologist on clinical duty. Patients requiring intervention were highlighted and the Microbiologist contacted relevant medical / surgical teams to discuss the management of the patient. Recommendations made were recorded in the spreadsheet and reviewed to check if they were actioned. All adult inpatients prescribed restricted antimicrobials were included with the exception of those in critical care areas. Ethics approval was not required for this study as this was a review of existing practice.

Results:
A total of 3048 restricted antimicrobial prescriptions were reviewed between April 2014 and March 2015. A breakdown of the agents reviewed is illustrated in figure 1.

Figure 1: Breakdown of antimicrobial agents reviewed

Table 1: Nature of interventions made
<table>
<thead>
<tr>
<th>Intervention</th>
<th>Number</th>
<th>Percentage of total interventions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stop antimicrobial therapy</td>
<td>305</td>
<td>45%</td>
</tr>
<tr>
<td>Change agent due to patient factors</td>
<td>105</td>
<td>16%</td>
</tr>
<tr>
<td>De-escalate</td>
<td>77</td>
<td>11%</td>
</tr>
<tr>
<td>Intravenous (IV) to oral (PO) switch</td>
<td>77</td>
<td>11%</td>
</tr>
<tr>
<td>Escalate therapy</td>
<td>35</td>
<td>5%</td>
</tr>
<tr>
<td>Dose optimisation</td>
<td>34</td>
<td>5%</td>
</tr>
<tr>
<td>Change agent due to resistance</td>
<td>30</td>
<td>4%</td>
</tr>
<tr>
<td>OPAT</td>
<td>10</td>
<td>1%</td>
</tr>
<tr>
<td>Other</td>
<td>4</td>
<td>0.006%</td>
</tr>
</tbody>
</table>

Discussion:
A pharmacist-led review in combination with microbiology is an effective way to prevent prolonged courses and stop inappropriate antimicrobial therapy with 56% of inappropriate prescriptions discontinued within 72 hours. Inappropriate and prolonged antimicrobial therapy is associated with an increased risk of hospital acquired infections and the development of antimicrobial resistance.2 Notably since the introduction of this daily multidisciplinary review the Trust has had a 47% reduction in hospital acquired toxin positive Clostridium difficile cases. This daily review reduced IV antibiotic administration with 11% of the interventions being based on an IV to PO switch. It is important to avoid prolonged IV treatment which increases the risk of line infection and requires increased nursing time. This review appears to be an effective stewardship strategy as 67% of the interventions were relating to stopping, de-escalation or IV to PO switch compared to only 9% that were escalated or changed based on failure to respond or resistance. The need for further education of non-specialist pharmacists on antimicrobials is highlighted as 21% of interventions made were due to patient factors or dose optimisation, despite the patient having already been reviewed by a clinical pharmacist.

This review is limited by the fact it cannot be concluded if these actions would have occurred even in the absence of these interventions. In conclusion, a pharmacist led multidisciplinary review of patients on restricted antibiotics has had a positive impact on antimicrobial stewardship with the Trust, resulting in a significant number of interventions. However the need for further education of non-specialist pharmacists is highlighted.

References:
Background

An unlicensed medicine is defined as a medicinal product for which there is no marketing authorisation granted by the Medicines Healthcare and Regulatory Agency (MHRA). Unlicensed medicines are widely used within the UK and there are many guidance documents which exist to support their use. However, each guidance document is published for individual organisations and there has never been an analysis of the different approaches these documents take nor an evaluation of their quality.

Aims and Objectives

To analyse the content and quality of unlicensed medicines guidance documentation in use in the UK.

Methods

A systematic search of the published literature was conducted between April and June 2015. Databases used to identify published guidance included Medline, Embase, ISI Web of Knowledge, Google Scholar, PubMed and International Pharmaceutical Abstracts. Search terms included ‘unlicensed medicine’ or ‘specials’ combined with; guideline, policy, framework, standardized operating procedure, standard operating procedure or recommendation.

Additionally, a call for guidance was also distributed to encourage organisations to submit their guidance documentation for the review. This was distributed to secondary care, primary care, community pharmacy and pharmaceutical industry networks both locally and nationally.

The quality of the guidelines was assessed using the AGREE II tool and content was evaluated by conducting a thematic analysis. The AGREE tool rates the quality of the documentation across six domains and provides a score from 0% for very poor quality to 100% for excellent quality.

Results

A total of 52 guidance documents were included in the analysis. This included those from NHS secondary and tertiary care trusts (n=28), professional bodies and regulators (n=11), community pharmacy organisations (n=3) and others (n=10). Documents included within the analysis ranged from guidelines (n=28), policies (n=10), standard operating procedures (n=9) and frameworks (n=5).

AGREE II scoring revealed that the content of the documents assessed overall scored well in the ‘Scope and Purpose’ (70.6%) domain and the ‘Clarity of Presentation’ domain (70.4%). This was due to the documents having specific objectives that were well described within the content of the document and the target audience being easily identifiable. In the majority of cases the presentation of information was good, enabling key recommendations to be easily identified that were specific and unambiguous. In contrast to these positive results the ‘Rigour and Development’ domain (12.1%) and the ‘Editorial Independence’ domain (2.6%) scored poorly. Rigour and development had low scores throughout, due to the lack of documented reference to a clear evidence base. With regards to editorial independence, it was not clear in the majority of cases if there were any funding bodies or competing interests from the guideline development group. In terms of the ‘Applicability’ domain (23.9%), whilst some documents provided advice and tools in implementation of the recommendations, many did not and there was a deficit in the acknowledgement of the potential barriers and facilitators to implementation of recommendations. The ‘Stakeholder development’ scores (30%) revealed that it wasn’t always apparent if there was a diverse mix of professionals involved in the development of the guidance documentation and there was little to no involvement of the target population in which the guideline was to be used in, in this case patients within the NHS.

Thematic analysis of the guidance documents revealed four parent themes across the documentation which included; responsibilities of individuals and organisations involved in using unlicensed medicines, risk versus benefit in using unlicensed medicines was another strong theme across the guidance documentation. This included discussing the evidence base of the recommendations contained as revealed in the AGREE scores is likely to reflect a wider issue around lack of evidence for unlicensed medicines use. It has also shown that there is a large deficit in patient involvement in guidance development which needs to be addressed.

The practicalities of using unlicensed medicines included subthemes on selecting the pharmaceutical formulation, the role of the pharmacist and the wider pharmacy team in managing the use of unlicensed medicines, patient involvement, the different stages of using an unlicensed medicine from prescribing to administration, and issues around continuing treatment with unlicensed medicines.

Risk versus benefit in using unlicensed medicines was another strong theme across the guidance documentation. This included discussing the evidence to support use of unlicensed medicines and the place of unlicensed medicines in the treatment of a patient and potential alternatives to their use. Describing and assessing risk associated with unlicensed medicines and emphasising reporting of errors and adverse effects associated with unlicensed medicines was also contained within this theme.

Controlling the use of unlicensed medicines was a theme that described the strategies that various organisations employ in an attempt to address costs associated with unlicensed medicines, audit of unlicensed medicines use against guidance and recommendations, placing restrictions on the use of unlicensed medicines to minimise risk and the use of organisational decision making surrounding unlicensed medicines, such as the use of formulary applications and stratifying risks according to a wide range of criteria.

Discussion

Thematic analysis demonstrated a lack of consistency of content across guidance documentation used for unlicensed medicines.

The AGREE scores exhibit that there is also a lack of transparency around who writes and updates guidance on unlicensed medicines and on what foundations they base their recommendations. The lack of evidence base for the recommendations contained as revealed in the AGREE scores is likely to reflect a wider issue around lack of evidence for unlicensed medicines use. It has also shown that there is a large deficit in patient involvement in guidance development which needs to be addressed.

There was a lack of contribution of documentation from the community pharmacy and primary care sector and it is not clear if this is due to a lack of guidance or a lack of submission to the project for analysis.

Conclusion

Healthcare organisations would benefit from agreeing a ‘core content’ for unlicensed medicines documentation and there is a need for evidence surrounding unlicensed medicines use to be gained and shared to inform decision making around use of unlicensed medicines.

References

**Background**

While the use of general triage tools for pharmacists has been reported in several studies, physiological changes during pregnancy make it difficult to apply a general pharmacy tool in obstetric wards. However, having only 2.2 full-time equivalent pharmacists to cover neonatal and obstetric services (5,860 births annually) makes it impossible to review every patient, emphasising the need for a new strategy to improve safety and enhance workflow.

**Objectives**

- To design a triage tool for pharmaceutical care services in obstetric departments.
- To evaluate the sensitivity and specificity of the tool in identifying high-risk patients.
- To analyse and validate the underlying reasons for specialized clinical pharmacists reviewing patients in obstetric wards.

**Method**

This study did not require ethical approval, as it reviewed general pharmacy triage tools (1, 2), hospital lists of high-risk medications, and a wide application of maternity complications and mortality reports. The first version of the obstetric triage tool was developed in April 2014 and assessed in a 47-patient pilot study using general practitioner (GP) referral letters, clinical notes and drug Kardexes. Additional review and approval by a wider multidisciplinary healthcare team was subsequently performed and the validity of the updated triage tool assessed in August 2014 with a total of 200 clinical notes and drug Kardexes.

**Results**

Pilot data showed that one patient had presented to the maternity hospital with no referral letter; there were considerable discrepancies in details provided by GPs for the remaining 46 patients, with no information on medication and relevant medical conditions in 64% and 60% of letters respectively. A review of clinical notes and drug Kardexes showed that 45% of patients were deemed high risk.

Applying the final version in 200 women suggests that 28% of patients could be classified using the triage tool as low risk, requiring no review, while 72% were deemed high risk, needing pharmacist review. However, the triage outcome showed 100% sensitivity, which presented as over-triage, whereby in 70.1% of those patients initially coded as high risk, this was based on prescription errors or missing information that could be resolved within 24 hours of admission.

**Conclusion**

The tool showed high sensitivity in identifying high-risk patients. However, it is recommended for the electronic implementation of a clinical decision support system incorporating clinical guidelines and hospital policy on electronic health records that would automatically capture patient’s data. Such a system could automatically resolve 56.3% of the high-risk category issues, thus providing better utilisation of pharmacists’ time on clinical high-risk patients. This study was limited to a small sample, potentially excluding incorporation of less common conditions.

**References**

2. Wheelan C., Stirton J. A study to determine whether the use of a novel triage tool can reliably identify those patients within the Rehabilitation and Assessment Directorate at Glasgow Royal Infirmary with the greatest requirement for pharmaceutical care, and to determine the most appropriate stage of admission to apply this tool. [Unpublished MSc thesis]. In press 2013.

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**Background**

Pre-operative assessment (POA) is an essential part of the planned surgical care pathway, with increased pharmacist involvement in recent years. North Bristol NHS Trust (NBT) is a large teaching hospital and major trauma centre for the South West of the United Kingdom. The Trust incorporates a wide range of specialties including bariatric surgery, vascular, urology, breast and upper and lower gastrointestinal surgery. During the study period, surgical pharmacists were responsible for medicines reconciliation, peri-operative medication advice, in-patient chart transcribing and discharge letter writing.

**Objectives**

- The objective of the study was to demonstrate the effect of pharmacist involvement in the pre-admission process, particularly in relation to length of stay (LOS)

**Method**

The study incorporated a large patient sample including LABG (Laparoscopic Adjustable Gastric Banding) and RALP (Robotic-Assisted Laparoscopic Prostatectomy) patients. The procedures were selected owing to heavily protocol-driven post-operative prescribing, allowing discharge summaries to be written accurately at POA. Owing to the nature of the project, ethics approval was not required. Study outcome measures were: To Take Away Medication (TTA) completion time; Length of Stay (LOS) and patient and surgical staff satisfaction, with data collected between 2012 and 2014. TTA completion time and LOS data were measured by collecting data from the ICE IT system used within the Trust to generate discharge letters. The results were compared both to baseline data (April to June 2012) and a comparator sample of patients undergoing similar procedures without pharmacist involvement at POA. Questionnaires were also administered to pre-operative assessment nurses, junior doctors and patients, to gather feedback on pharmacist involvement.

**Results**

The average time between admission and TTA completion was significantly lower ($p < 0.05$) in the pharmacist POA arm, with a decrease by up to 37 hours/patient ($n = 287$). LOS also decreased significantly ($p < 0.05$) with a cost saving of £79.80 and £50.40/patient stay for LABG and RALPs respectively. Feedback from both surgical team members and the POA team was highly positive, with benefits such as comprehensive medication management, effective patient counselling and prevention of delayed discharge being particularly highlighted. Of the 13 patients who responded to the POA questionnaire, 92% classified the pre-operative pharmacist as highly knowledgeable, approachable and empathetic.
Conclusion
The trial of surgical pharmacists’ involvement in POA was demonstrated as highly beneficial, with a significant reduction in LOS and subsequent cost saving. The project was successful in securing funding for ongoing development and further recruitment of specialist pharmacists to POA.

References

3. The impact of ready-to-use vials on fentanyl usage in critical care
Gillian Cavell (gillian.cavell@nhs.net), King’s College Hospital NHS Foundation Trust, London.

Background
Fentanyl infusions are commonly used in critical care units (ICUs) where it is commonly administered as 50 microgram/ml infusions from 50 ml syringes. The contents of five 500mcg/10ml ampoules are drawn up into a syringe and administered undiluted from a syringe driver. The National Patient Safety Agency (NPSA) recommends that high risk injectable medicines are provided as ready-to-administer (RTA) or ready-to-use (RTU) products to minimise risks in dose preparation. Fentanyl is a High Risk Injectable Medicine.

We describe the impact of a RTU vial on fentanyl usage and expenditure in ICUs in an acute trust.

Objectives
To measure the impact of a new presentation of fentanyl 2500 microgram in 50ml on usage and expenditure in ICUs.
To identify the product’s risk reduction potential.

Methods
In December 2014 we purchased a licensed product containing 2500 micrograms fentanyl in 50ml vials for use in ICUs. The product change was discussed at Medication Safety Committee and information disseminated to ICU and Pharmacy staff. Numbers of 10ml ampoules and 50ml vials issued via the Pharmacy computerised stock control system were monitored monthly. Incident reports were searched for syringe preparation errors. Ethics approval was not required.

Results
Introduction of these vials reduced the usage of fentanyl 500mcg/10ml units from an average of 4312 per month over 17 months (median 4190, range 3346-5368) to 817 for the 4 months post-implementation (median 740, range 583-818). Post-implementation average total usage of fentanyl expressed as 500mcg/10ml units was 4307/month for the months January – April 2015 (median 4296, range 3500-5137).

Monthly expenditure on fentanyl 10ml and 50ml vials increased from an average of £1250 to £1620 per month (£370/£1250, 30%).

The NPSA risk score for the preparation of fentanyl 2.5mg/50ml syringes is reduced from 3 (amber) to 2 (green). Two reported incidents were identified. An ampoule of noradrenaline was mixed up with fentanyl ampoules while a syringe was being prepared but was identified during checking. In another incident an ampoule of ketamine was used instead of fentanyl during infusion preparation. No syringe preparation incidents were reported after introduction of the 50ml vials.

Conclusion
Implementation of RTU fentanyl infusions promotes compliance with national guidance for safe injectable use in ICUs. There are additional advantages for nurses who now open 100 fewer ampoules a day during infusion preparation. Nurses say that RTU vials are ‘easier, simpler, safer’ than using 10ml ampoules. Two errors involving syringe preparation are unlikely to happen with the RTU product.

We believe that the advantages of using this product outweigh the small financial impact.

References

4. An Audit Assessing the Prescribing and Monitoring of Sodium Chloride Containing Fluids in Children
Clarke, D. Palfreyman, T. Haley, H., University Hospitals of North Midlands NHS Trust, Stoke-on-Trent.

Introduction
Hyponatraemia is characterised by a serum sodium concentration of less than 135mmol/L and it is the most prevalent electrolyte disturbance observed in hospitalised children. A National Patient Safety Agency (NPSA) patient safety alert identified risk of hyponatraemia, secondary to the administration of intravenous fluids in children. The NPSA recommends that sodium chloride 0.9% should be used for maintenance therapy in patients exhibiting hyponatraemic risk factors, with appropriate daily monitoring. This is clinically significant as the paediatric population is at higher risk of hyponatraemic encephalopathy, which can occur due to hypervolemia secondary to intravenous fluids.

Previous audit work identified non-compliance with this guidance. In response to these results feedback and education was given to medical and nursing staff and changes to stock lists made. This paper reports on a re-audit to identify the impact of this process on patient care.

Objectives
• Identify the level of adherence to the NPSA safety alert.
• Compare results with those of previous audit

Method
This study did not require ethics approval. Audit data was collected retrospectively over a 3 week period for 20 patients from the paediatric wards prescribed intravenous fluids for maintenance therapy. Exclusion criteria included: intensive/specialist care patients; those <1 month and >16 years; or prescribed fluids for resuscitation. Data collected included risk factors for hyponatraemia, appropriateness of fluid choice and rate for indication and level of monitoring conducted ie weight, fluid balance and biochemistry.
Results
75%(n=15) patients displayed risk factors for hyponatraemia. All patients were prescribed the isotonic fluids and at the correct rate (n=20). Fluid balance was monitored correctly in 90% (n=18) of patients. However, weight was monitored for only 10% (n=2) of patients and in those receiving intravenous fluid therapy beyond 24 hours (n=8), only 38% (n=3) had their biochemistry appropriately monitored. No incidents of intravenous fluid-induced hyponatraemia were detected from notes review, the number of borderline or asymptomatic cases cannot be established as sodium levels were not available to review.

Discussion
This audit demonstrates that actions taken following the initial review have demonstrated a positive impact, with all patients now receiving the appropriate choice and rate of fluid for maintenance therapy. However, the frequency of monitoring was lower than achieved in the previous audit. Further action is required to address this issue particularly in those patients exhibiting hyponatraemic risk factors. A limitation of the study were the small numbers of patients reviewed, although even with this small population, short-falls in clinical practice have been identified an action plan is in place to address these issues.

References

5. An Evaluation of Pharmacist-led Community Hypertension and Lipid Clinics.
Marie Fotso-Guifo1, Gayle Campbell2, Imran Hafiz2, Victoria Collings2 (victoria.collings@gstt.nhs.uk),
King’s College London, London1, St Thomas’ Hospital, Guy’s and St Thomas’ NHS Foundation Trust, London2

Background
In 2013, the pharmacist-led (PL) community hypertension (HTN) and lipid clinic was commissioned to help improve cardiovascular outcomes by primary prevention. [1] This came about as a result of the 2012/13 Quality and Outcomes Framework (QOF) data showing that 25% of hypertensive patients were poorly managed.[2] The current HTN and lipid service runs at community sites; accepting referrals from general practitioners (GPs) for patients not achieving targets despite following guidelines. Pharmacists devise personalised treatment focused on medication optimisation and lifestyle advice.

Objectives
To assess the impact of PL community HTN and lipid clinics by reviewing clinic activity, measuring patient outcomes, evaluating intervention types and assessing patient satisfaction.

Method
The study was a retrospective service evaluation, which did not require ethics approval, of all patients who were referred between August 2013 and August 2014. Electronic Patient Records was used to access GP referral letters and clinic letters. All data was gathered on anonymised spreadsheets (Microsoft Excel 2007® and IBM SPSS® version 22.0) and analysed using simple descriptive statistics and paired t-tests. Due to low lipid referrals (n=8) and lack of visits; outcomes could not be assessed for the lipid clinics. Intervention types and GP acceptance rates obtained from the clinic letters were classified to obtain a frequency of occurrence. A patient satisfaction questionnaire was devised from NHS templates and approved by the Trust patient experience team.

Results
Sixty-one patients were referred to the clinic. The clinic did-not-attend (DNA) rate of 18% (n=11), with 9.8% (n=6) and 8.3% (n=5) being first and subsequent DNA rates respectively. Of the 53 patients seen in clinic; the discharge rate was 37.7% (n=20) with an average of 1.9 (±0.9) visits until discharge.
Overall, 37.8% (n=17) met their BP targets at the end of the study compared to 13.3% (n=6) at the start of the study. When comparing baseline and recent BP readings (±5.0), improvements from 162/88mmHg (±27/15) to 148/81mmHg (±21/14) (P=0.001) were calculated with a mean BP decline of 12/8mmHg (±18/11). A total of 366 interventions were made. Non-drug advice (42.9%; n=157) was the most common intervention, followed by addition of a new drug (19.7%; n=72). Number of medicines increased from 3.0 ± 1.9 to 3.7 ± 1.8 (P<0.001). GP acceptance rates of 70.2% were calculated.
Response rates for the patient satisfaction questionnaires was disappointingly low at 25.5% (n=12). Of the responders, patient satisfaction was at 100%. Only 33% of patients admitted to putting into practice all of the pharmacists’ recommendations.

Conclusions
The PL clinic was effective in its aim of reducing BP, achieving the clinically appropriate target in 37.8% of patient. This was achieved through strong focus on non-drug advice and medicines optimisation. Results show the service is currently underutilised and increasing clinic referral rate from other health care providers may help lower the disease burden. Attendance rates and provision of written information can be addressed by ensuring that patients understand the service and the likely benefits.

References
6. Unforeseen factors affecting E-prescribing and medicines administration system (EPMA) implementation

Rick Cooper, John Warburton, University Hospitals Bristol NHS Foundation Trust, Bristol

Background
In 2013, 6% of 168 UK NHS trusts were using EPMA systems with a further 34% planning to implement EPMA imminently. Implementation is generally performed with little organisational experience of large scale clinical software deployment, whilst software developers lack the breadth of clinical experience of the trusts’ project teams. Previous studies compare strengths and weaknesses of EPMA systems versus paper, but few have considered the impact of implementation issues on the project’s success.

With 50% of the identified critical care areas already using critical care EPMA and a pilot for the separate trust-wide system imminent a review of the process so far was important.

Objectives
1. Determine key unforeseen issues as perceived by the multidisciplinary project team
2. Compare critical and non-critical care project team perspectives of EPMA implementation

Method
Focus groups were conducted on 25/02/15 with key stakeholders (n=14) identified through purposive sampling from both project teams, comprising a varied selection of roles and representatives from clinical and non-clinical areas. Sessions were run as semi-structured interviews with further prompts given by the investigators, conducted in seminar rooms remote from the participants’ usual area of work, and arranged at times to maximise participant availability. Focus groups were recorded electronically; audio files were password protected, transcribed and coded for thematic analysis. This was conducted independently before comparison of results to increase reliability of findings. Participants were recorded by role, no identifiable information was taken. NHS R&D determined ethics approval unnecessary as there was no patient involvement.

Results
The number of unforeseen issues arising from both projects was lower than anticipated by the investigators, however, the extent of the impact of many issues were more challenging than expected.

Key themes from non-critical care focus group include: trust requirements are poorly defined, EPMA not perceived as integral to patient care and users’ desire to mimic otherwise unpopular paper systems underestimated. Key quote: “more process steps than expected are unseen on paper”

Key themes from critical care focus group include: clinicians demand faster change than managers, change to daily workflow underestimated, impact of format of displayed information and lack of practically of default settings underestimated. Key quote: “Actions taken on the system cannot be undone”.

Common themes include: difference in expectation and reality of the ease of implementation (with negative and positive consequences), underestimation of the number and breadth of other systems affected.

Conclusions
Numerous unforeseen challenges have arisen in each project, which have been grouped into high level themes. This reflective exercise has informed both project plans moving forward, adapting implementation technique and project team expectations, hopefully increasing the efficiency of implementation of both systems.

Limitations include the lack of junior staff in the focus groups due to current project staging; although likely resulting in fewer themes arising from user experience, the aim was to investigate factors effecting implementation methods.

References

7. Towards an improved service “Seven Days a Week”

Sharn Day (Sharn.day@hey.nhs.uk), Hull and East Yorkshire Hospitals NHS Trust*, Ann Page, Hull and East Yorkshire Hospitals NHS Trust, David Corral, Hull and East Yorkshire Hospitals NHS Trust.

Background
In 2013 Sir Bruce Keogh described the goal of seven day working in NHS services. In response to this and criticism by the Care Quality Commission of levels of ward pharmacy activity, Hull and East Yorkshire Hospitals implemented a number of radical changes to the pharmacy service to provide clinical cover and increase the impact of pharmacy services across the week.

Objectives
• To increase medicines reconciliation to levels recommended by NICE/NPSA.
• To increase the proportion of patient contact time for pharmacists and technicians
• To decrease dispensing times for discharge medication

Methods
• A successful business case (based on CQC feedback) resulted in employment of 15 band6 pharmacists in 2014-15 (usual cohort 3-4 per year).
• This increased overall pharmacist numbers and balanced skill mix.
• Projects involving embedded pharmacy staff on wards and ward-based dispensing aimed to decrease length of stay by facilitation of discharge.
• All pharmacists are now given the opportunity for flexible working (e.g. four weekdays plus 1/4 weekends).
• Review of working patterns increased weekend cover, enabling 7/7 clinical services to high turnover areas.
• Weekend opening hours were increased (from four to seven hours per day).
• Outpatient dispensing was outsourced and pharmacists released from dispensaries ensuring all clinical work is processed on wards. A discharge bleep was implemented for fast turnover wards.
• Better communication with pharmacy staff included daily emails reporting performance against medicines reconciliation target and discharge dispensing targets.
• This study did not require ethics approval.

Results
Levels of medicines reconciliation have improved since service review commenced. In the period March-October 2014 the average level of medicines reconciliation across the Trust on any given day was 54%. In February 2015 changes to increase time spent on wards by pharmacy staff were implemented. In the period February-May 2015 the average level of medicines reconciliation across the Trust on any given day had increased to 74%.
The number of hours pharmacists and technicians spent in direct patient contact has increased with changing working patterns and increased staffing. In the period Sept 2014-January 2015 the average number of hours per month pharmacy staff spent on wards was 986. For the period February-May 2015 it was 1655 hours. Dispensing times for discharge medication have decreased. Between January and May 2015 the proportion of discharge prescriptions completed in less than one hour has increased from 18.7% to 27.2% and the proportion completed in less than two hours has increased from 49.2% to 66.3%.

**Conclusions**

Increased staffing and changing patterns of working has enabled us to achieve measurable improvements in key performance indicators. Changes in working patterns to enable service enhancement were agreed individually and without the need for formal HR/union involvement. While we recognise that flexible working is hard to implement and that not all departments have benefitted from successful funding bids, we believe that some of the improvements we have demonstrated could be reproduced in other organisations.

**References**


### 8. Development of case scenarios to support decisions on polypharmacy reviews

**Gillian Elkin, Anne Kinnear, Moira Kinnear, NHS Lothian Pharmacy Service, Edinburgh**

**Background**

National guidance provides support for undertaking polypharmacy reviews. Knowledge and experience is required to interpret the guidance in individual patients. Training materials using case examples developed by experts may help the application of guidance for less experienced practitioners.

**Objective**

Obtain consensus among consultant physicians and senior pharmacists on decisions to continue/modify or stop medicines in three different polypharmacy case scenarios.

**Methods**

Case scenarios were designed using examples from Medicine of the Elderly hospital practice including at least three co-morbidities in patients from different social care settings. Cases one, two and three included 22, 19 and 25 medicines respectively. A questionnaire was developed to allow an expert panel to record whether they would continue, modify or stop each medicine for each scenario. The questionnaire was piloted with one consultant physician and specialist pharmacist. An e-mail invitation letter and copy of the STOPP/START criteria were sent in April 2014 to 37 consultant physicians and 19 senior pharmacists in one regional NHS board with a link to the online questionnaire. A reminder email was sent to physicians from the clinical director and to pharmacists from the specialist pharmacist one week prior to the questionnaire closing in May 2014. Responses from the final panel of 8 (22%) physicians and 14 (74%) pharmacists were collated using SurveyMonkey. Consensus was defined as 75% of the experts reaching the same decisions. This study did not require ethics approval.

**Results**

Consensus (i.e. 75% of the panel) was reached for 13/22 (59%) medicines in case one, 17/19 (89%) medicines in case two and 19/25 (76%) in case three (overall consensus 74%, 49/66 medicines). Situations where consensus was not reached included anticholinergics in dementia patients, vasodilators in patients with recurrent falls, and laxatives. Panel comments included importance of considering additional patient details (e.g. pain scores, bowel charts) and family/patient wishes that would aid decision making.

No apparent difference was observed between the two professional groups but physician variability was evident. For example in case one, one consultant stopped 6/22 medicines whilst another stopped 16/22 medicines, case two 4/19 medicines were stopped versus 12/19, and for case three 4/25 medicines stopped versus 10/25. Similar physician variability was observed for continuing/modifying medicines.

**Conclusions**

Consensus was reached to continue/modify or stop for 74% of medicines within three polypharmacy case scenarios. Consensus may have been higher if more physicians participated in the panel but unlikely to provide a broader range of practice opinions. It is proposed to use the case scenarios in facilitated discussion/teaching sessions, supported by a facilitator’s brief incorporating additional comments from the panel, for training junior members of the multidisciplinary team to carry out polypharmacy reviews. Evaluation will review and develop the scenarios.

**References**

9. Antimicrobial Pharmacist Input to Diabetic Foot Outpatient Clinic: Description of Multi-Disciplinary Team (MDT) Working

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Background
Diabetic patients have risk of severe health complications including foot ulceration that is the commonest complication causing hospital admission and results in more than 125 amputations per week in the NHS. 80% of these are potentially preventable with correct management. People with diabetes who have an amputation or foot ulcer have a relative increased likelihood of death within five years of up to 80 per cent, which is greater than colon, prostate or breast cancer. When infection complicates a foot ulcer, it can be limb or life-threatening. Management by a multidisciplinary footcare team is proven to reduce amputation rates. Although clinical pharmacists are described as part of MDT in outpatient setting for diabetes[2,3], a role for antimicrobial pharmacists in the diabetic foot team has not previously been described.

Objectives
To determine whether an antimicrobial pharmacist (AMP) at MDT outpatient diabetic foot clinic improves antimicrobial management.
To determine whether the diabetic foot team consider an antimicrobial pharmacist a useful addition.

Method
The AMP attends weekly outpatient clinics with approximately 20 patients alongside the diabetic consultant, podiatrists and assistants. Antimicrobial choice, doses and course lengths are discussed and agreed between the consultant and AMP with relevant microbiological results. An MDT meeting takes place post clinic reviewing patient investigations to determine ongoing management plans. The antimicrobial pharmacist is also available for queries and advice outside clinic time.

This study did not require ethics approval.

Results
There has been the following input into patient care:

Advice during clinic:
- Alternative antibiotics
- Dosing advice
- How to manage/avoid side effects
- Alternative formulations
- Advice on other (non-antimicrobial) medicines

Improved patient flow:
- Prescriptions are pre-assessed at clinic, approval for restricted antibiotics is obtained and prescription endorsed prior to patient presenting at pharmacy, improving flow through pharmacy and improved patient experience (less delay) and limiting interruptions to clinic by pharmacy.

Improved communications between teams
- A diabetic foot infection guideline has been written by the antimicrobial pharmacist in consultation with the diabetic, podiatry, microbiology and vascular teams.
- Communication between the microbiology, pharmacy, diabetic and podiatry team is improved as AMP is a common link within all teams.
  - This improves o patient follow up, particularly with complicated patients and resistant organisms
  - communicating issues with and alternatives to out of stocks,

Response to complex queries from consultant
- antimicrobial use and recommended doses eg voriconazole for osteomyelitis
- side effect profile of antimicrobials eg teicoplanin and thrombocytopenia

Conclusions
The AMP has improved communication between the teams improving follow up of patients on antimicrobials. Input into antimicrobial choice, dose and duration in guidelines and during clinic has promoted consistency and been valuable to clinic MDT. Pre-assessment of outpatient prescriptions has reduced both clinic interruptions and patient waiting time.

References

10. Detecting serious adverse drug events using multiple trigger tool methods – A pilot study

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Background
In the UK, 10% of patients experience an adverse event during their hospital stay, 15% of which are related to medicines[11]. The Institute of Healthcare Improvement ADE Trigger Tool[12] detects the use of trigger drugs (reversal drugs or antidotes) as an indicator of harmful events and its use within the UK is evolving[13]. It is unknown whether use of the IHI tool can be adapted to UK systems to reduce time and improve ADE detection.

Aim and Objectives
To assess feasibility of five methods to detect ADEs using trigger drugs.

Method
The 12 week study was conducted across medical and surgical wards at two London hospitals. Ethics approval was not required. Data were collected on six trigger drugs: calcium gluconate, glucose 20%, glucagon, flumazenil, naloxone and phytoomenadione.
Methods used to detect trigger drug usage included ‘Patient level’ detection methods 1) electronic prescribing & medicines administration (EPMA), 2) electronic drug cabinet (EDC) alerts, 3) incident reports and 4) IHI ADE Trigger Tool. Multidisciplinary panels reviewed ‘patient level’ triggers detected with patients’ clinical records, to confirm (true positive trigger) or refute (false positive trigger) occurrence of ADEs as per IHI guidance.

‘Ward level’ detection was ward drug stock counts with pharmacy supply data for trigger drugs.

Results
Of 424 patient level triggers detected, 70%(296/424) were reviewed, notes were unavailable for 30%(128/424). Multidisciplinary review confirmed 26%(76/296) ADEs; These were: EPMA alerts, 37%(35/94) triggers confirmed as ADEs, EDC alerts 18%(32/174), incident reports 56%(9/16) and IHI Trigger Tool 0%(0/12). False positives totalled 74%(220/296).

Clinical notes reviews confirmed ADEs for calcium gluconate triggers 20%(11/56), glucose 17%(13/77), glucagon 100%(19/19), flumazenil 10%(1/10), naloxone 64%(18/28) and phytonadione 15%(16/106).

‘Ward level’ methods detected 791 triggers.

Conclusion
The study demonstrates feasibility of adapting the IHI ADE trigger tool to current UK systems. ‘Patient level’ detection methods appear reliable compared with ‘ward level’ data, providing there is opportunity for clinical note reviews. ‘Ward level’ estimates of the number of ADEs assumes that a single dose unit corresponds to a single ADE event over-estimates the ADE rate, as multiple doses of trigger drugs may be used to treat an ADE. Furthermore stock issue data includes stock expiry and wards ‘borrowing’. EDC alerts are less specific than EPMA alerts at detecting ADEs: higher numbers of false positives were attributed to incorrect use of EDCs. Low numbers of ADEs were found in incident reporting searches. The IHI ADE Trigger Tool detected zero ADEs contrasts with previous studies38.

Detection rates of ADEs differed between trigger drugs, those with multiple therapeutic indications such as phytonadione generated greater numbers of false positives compared to more specific naloxone.

Further work includes refining methodologies, include more triggers and determine the sensitivity and specificity of trigger drugs and methods.

References

11. Pharmacist prescribers clinical supervision: A regional perspective
Gibson DA, County Durham & Darlington NHS Foundation Trust and North East Clinical Pharmacy Network

Background
Clinical supervision describes a structured approach to professional support and learning, focusing on developing skills and knowledge. Individuals reflect upon their practice identifying strengths and weaknesses. Supervisors support practitioners to develop through reflective practice. Clinical supervision is embedded in the clinical governance agenda, with evidence based practice and patient centred care as key principles. Clinical supervision seeks to support individuals, developing maturity of thought and confidence in action.1

The majority of evidence for clinical supervision is from nurses undertaking extended roles. Designated medical practitioners provide clinical supervision during pharmacist prescribing training but there is no expectation this continue after qualification. Clinical supervision could support advancement of pharmacists prescribing skills and competence.

Objectives
Determine current provision of, and identify opportunities to strengthen, clinical supervision for prescribing pharmacists across secondary care physical and mental health trusts in the North East of England.

Method
Electronic surveys were sent out in August 2014 to all registered pharmacist prescribers working in secondary care within the North East of England. Ethics approval was not required as it is service improvement. Data was collected for 1 month anonymously. Prescribing pharmacists experience, grade and clinical settings where they were prescribing was collected. Pharmacists were asked about the types of clinical supervision for their prescribing practice post qualification. They were given the opportunity to comment on their experiences of clinical supervision which was analysed thematically.

Results
A response rate of 56.5% (58/103 pharmacist prescribers) was achieved. Experience was evenly distributed, from newly qualified to prescribing for over 5 years. The majority of responders were 8a (65.5%), ranging from 7 to 8c. General inpatients was the area where prescribing was being most utilised (75.9%).

Responses showed that 20 pharmacists had no supervision, whilst 38 pharmacists undertook clinical supervision with an average 2.3 supervision activities each. The most common supervision activities were multidisciplinary supervision, meetings with medical supervisors and MDT meetings. Themes identified were prescribing qualifications did not prepare individuals to be competent prescribers, on-going support and skill development were essential to embed prescribing into practice. Respondents who utilised pharmacist peer clinical supervision often did this on an ad-hoc informal basis. Respondents felt pharmacist prescribing involved a new set of skills and knowledge which needed to develop over time.

Conclusion
Pharmacists are keen to develop prescribing roles, utilising clinical supervision to facilitate this. Respondents may be more likely to set up their own clinical supervision if they are motivated, meaning results could be an over estimation of the rates of clinical supervision as inactive pharmacist prescribers where not included.

Supervision is being applied inconsistently as no nationally approved mechanism in place. The North East clinical pharmacy network is developing and piloting a clinical supervision framework for pharmacist prescribers. The framework will provide support for pharmacists to develop prescribing practice, acknowledging a flexible approach is required to support individuals. The aim would be to share this nationally to allow pharmacist prescribers to enhance their prescribing practice through clinical supervision.

References
Background
Carbocisteine is commonly prescribed for people with Chronic Obstructive Pulmonary Disease (COPD). National\(^1\) and local guidance recommends mucolytic therapy, e.g. carbocisteine, for people with chronic productive coughs. Therapy should only be continued if an improvement in sputum expectoration is reported, with treatment being reviewed four-weeks after initiation\(^2\). Local prescribing data suggests prescribing and review of carbocisteine is not as per guidance and there is scope for improving patient care. We performed an audit to assess the quality of carbocisteine prescribing and identify areas for improvement.

Objectives
To identify:
1. the percentage of people initiated on 2250 mg carbocisteine daily [Audit standard: 100%].
2. the percentage of people who have their dose reduced to 1500 mg, if symptomatic relief reported at 4-weeks [Audit standard: 100%].
3. the percentage of people who have their therapy stopped if no clinical improvement at 4-weeks review [Audit standard: 90%].
4. the proportion of people who have their therapy stopped if diagnosed with active gastrointestinal ulceration [Audit standard: 100%].
5. the proportion of people with a history of peptic ulceration co-prescribed anti peptic ulcer therapies [No audit standard].

Methods
Patients prescribed carbocisteine were included in the audit. A data collection form was piloted and used to collect data for inpatients on cardio-respiratory wards at Glenfield Hospital between 18th May and 5th June 2015. Microsoft® Excel\(^3\) was used to undertake basic mathematical and statistical calculations. Ethics approval was not required.

Results
Thirty-six prescriptions were identified. Three of these were newly initiated but only one at the recommended dose. Only 27.3% of patients were receiving the advised maintenance dose of 1500 mg/day while others remained on initiation doses (45.5%) or were prescribed sub-therapeutic doses (27.3%) as low as 375 mg/day (3%, n=1). Three-quarters of the patients spoken to believed they were getting benefit from their treatment, with 25% stating they were not. Pharmacists only took action to initiate treatment review in less than half of patients (48%) that needed it. Eighty-eight percent (n=32) of patients were co-prescribed an anti peptic ulcer therapy but only three of these patients had a history of peptic ulcer. One patient suffered an active peptic ulcer but did not want to stop taking his carbocisteine.

Conclusion
None of the audit standards were met, showing there is scope for improving carbocisteine prescribing. This audit is limited by its sample size. A future audit will require a longer data collection period and larger sample to identify changes in practice implemented following this audit. Pharmacists can play a key role in the management of carbocisteine but are currently not intervening. Education of pharmacists and prescribers on the optimisation of carbocisteine is recommended.

References
Conclusion
- This year’s results reveal the highest number of prescriptions with a clearly documented indication. This supports effective antimicrobial stewardship and appropriate review of antimicrobials, especially if patients move wards or between clinical teams.
- Decreases in the number of restricted antimicrobials prescribed outside of guidelines have been observed. The majority of cases for prescribing outside of guidelines occurred on maternity and paediatric wards, where appropriate guidelines are lacking. 55% of all antimicrobials prescribed on these wards consisted of ‘restricted antimicrobials’.
- Since the introduction of mandatory review dates a drop in stop dates has been observed. Invalid review dates could lead to longer duration of antimicrobials making them counterproductive.
- Maximising the use of review dates for IV to oral switch after 48 hours and improving documentation of antimicrobial review on ward rounds would support earlier switch to oral agents, narrow spectrum or discontinuation. Review of the IV to oral switch guidelines may facilitate this.

References

14. Antimicrobial Prescribing at a District General Hospital (DGH)-- A Point Prevalence Study
Sommaya Hussain-Lead Antimicrobial Pharmacist, Princess Royal University Hospital- KCH sommaya.hussain@nhs.net, Sheena Kothari-Pre-registration Pharmacist, Kings College Hospital NHS Foundation Trust, London

Background
Antimicrobial resistance is a growing global concern, found to threaten effective prevention and treatment of infections. Inappropriate use of antimicrobials is increasingly causing resistance to existing first-line treatments. 1,2 As a result the DoH has introduced strategies for surveillance of antibiotic-resistant infections; promoting responsible prescribing and use of antibiotics as well as good infection control measures. 2,3 This study is a one-day snap-shot conducted to determine the quality of antimicrobial prescribing at a medium sized DGH, aiding DoH strategies; by assessing against the following standards: (based on Trust’ monthly Antibiotic KPI audit standards)

90% of patients on antimicrobial(s) should receive appropriate agent(s); as per Trust Guidelines/ advised by Microbiology
90% of patients on antimicrobial(s) should have a stop/review date documented
100% of patients should have an allergy status documented on their drug chart.

Additionally, it is an interventional audit which challenges inappropriate prescribing and provides a means for referring such to the Antimicrobial Management Team (AMT);
100% of patients on inappropriate choice/duration/route of antibiotics, should be reviewed by the AMT. All patients on Antibiotics at the time of the audit (123), were included.

Objectives
1. Assess current antimicrobial prescribing at the hospital
2. Challenge and make clinical interventions where necessary to encourage prudent use of antimicrobials

Method
The audit was approved by the Trust Pharmacy Research and Audit Group (RAG); “this study did not require ethics approval”.
The study was conducted from 19th-21st November 2014. Data were collected using a data collection form through checking in-patients’ drug charts, medical notes, blood cultures and observation sheets.

All systemic antibiotics were included. Data included information on the antimicrobial(s) prescribed; whether they were a restricted agent, start date, duration and indication, allergy and Guidelines status (adherent or non-adherent, justifiable or not).

Patients with insufficient documentation were also referred to the AMT for assessment. Data were inputted into Microsoft Excel and analysed.

Results
1. 53% of patients received appropriate antimicrobials according to current antimicrobial guidelines
2. 72% of patients prescribed antimicrobials had a stop/review date documented on their drug chart or their medical notes.
3. 100% of patients treated with antimicrobials had an allergy status documented on their drug chart.

Conclusion
The audit highlighted poor compliance with Guideline recommendations and documentation of treatment duration; this will not always translate into non-compliance. However findings were only as good as documentation hence this was a limitation of this study. Findings from this audit have propagated various action plans; a plan for structured training sessions for Pharmacists, strategic focus on monitoring empirical therapy; choice of antimicrobial(s) and documentation of review dates/duration of treatment. Additionally ‘antibiotic referral forms’ were re-launched to enable prompt referrals by ward Pharmacists to the AMT. Results highlight the need for greater engagement by the Pharmacy team in junior doctor training/teaching. Directorate Pharmacists will feedback the results from this audit in their divisional governance meeting each year.

References
15. Increasing medicines related patient safety incident reports submitted by general practices


Background
Primary care providers contribute only a fraction of the patient safety incident reports received by the National Reporting and Learning System (NRLS). Over a million patient safety incidents are received by the National Reporting and Learning System (NRLS) each year. In 2011 general practices in England reported just 4154 incidents. However there are over a million GP consultations in England every 36 hours which offers a large number of opportunities for error.

Many Leeds practices regularly review patient safety incidents using a process similar to root causes analysis called significant event audit (SEA). Don Berwick’s review of patient safety in the NHS highlights how these local lessons can improve the safety of patients if they are shared with and adopted by others more quickly.

The clinical commissioning groups in Leeds (the CCGs) agreed to work with their member general practices to increase the number of patient safety incident reports and SEAs that were shared with the CCG. There are 111 GP practices in this project.

Objective.
Increase the number of medicines related patient safety incident reports that general practices submitted to the CCGs in 2014/15 to above 1 per 100,000 head of patient population (820 reports)

Method
The CCGs launched a programme of support for general practices. The programme was delivered by the medicines optimisation teams, primary care development teams and the governance team for the CCGs. The programme included clinical leadership, reporting infrastructure, human factors training, feedback based on knowledge transfer principles and an incentive scheme.

The practices reported incidents using a web-based database and allocated incidents to a location where they occurred (eg within the practice or in a hospital), degree of harm caused and category of incident (using the NRLS common classification system).

Feedback was considered crucial to success. Targeted thematic review and analysis of submitted significant event audits gave the opportunity to publish, on a monthly basis case studies from which practices could extract and apply safer practice. These were consistently formatted and the link between ‘reporting’ and the provision of lessons in case studies was made explicit.

Ethics approval is not required for this project.

Results
GP practices reported 1724 medicines related issues to the Leeds CCGs in 2014/15. The baseline figure from 2013/14 was 144.

75% of the incidents were “internal issues”, things that went wrong within the circle of control of the practice. 94% of these incidents are classed as no-harm incidents.

The practices submitted 517 significant event audits detailing lessons learnt.

Discussion
The NPSA guidance; Seven Steps to Patient Safety for Primary Care advises that patient safety incident reporting is fundamental to trying to learn what is contributing to patient harm. Our programme to improve the number of incident reports submitted to the CCGs by general practices has been successful.

Human Factors training offered a fresh perspective for practices to re-invigorate incident reporting and significant event audit.

The focused and multi-faceted campaign by the CCGs ensured that all the general practices in Leeds were able and motivated to submit incident reports.

Practices have embraced incident reporting as a learning tool and the use of enhanced SEA, drawing on Human Factors theory, as an effective driver for quality improvement.

The next steps are to improve the quality of the reports and the associated SEA and to develop plans for sustaining the levels of reporting.

References.

16. ACE Inhibitor and Beta-blocker Dose Optimisation following a Myocardial Infarction: A Regional Overview

Nazish Khan, The Royal Wolverhampton Hospitals, Girish Lakanpal, King’s College Hospital, Karamjit Khangura, Sandwell and West Birmingham/Midlands and Lancashire CSU, Andrew Murray, Royal Stoke University Hospital, Katherine Smith, Worcestershire Acute Hospitals, Rupesh Thakkar, Midlands and Lancashire CSU, Deepa Dadhania, Warwick Hospital and Pooja Sharma, The Royal Wolverhampton Hospitals, on behalf of the West Midlands Cardiac Pharmacists Group

Background
The acute coronary syndromes (ACS), including myocardial infarction and unstable angina, are an important cause of premature mortality, morbidity and hospital admissions. Sub-optimal management (both pharmacological and non-pharmacological) can have a significant negative economic and social impact through lost days at work, support for disability and coping with the psychological consequences of the illness. Consequently, cardiovascular disease has the potential to consume large amounts of finite healthcare resources.

Optimal pharmacological management and lifestyle modifications that can reduce an individual’s cardiovascular disease burden have the potential to mitigate against further adverse cardiac events or re-admissions following the index event. However, despite the mortality benefit associated with their use, many patients following a heart attack do not receive optimal doses of beta-blockers or ACE inhibitors.

Objectives
As a group we aimed to:
- Assess whether 100% of all patients following a myocardial infarction are discharged with a full complement of secondary prevention medications as per NICE recommendations (aspirin +/- P2Y12 inhibitor, statin, ACE inhibitor and beta-blocker) [2]
- Determine whether appropriate ACE inhibitor and beta-blocker dose optimisation post discharge takes place.
Methods
A retrospective audit was conducted across three large cardiac centres within the West Midlands. A total of 147 patients were included. This audit did not require ethics approval.
Trusts local cardiac specific databases and electronic discharge summaries were used to identify patients who had experienced an ACS within the last 12 months. Medications on discharge were noted and GP records were utilised to determine whether dose optimisation of ACE inhibitors or beta-blockers took place in the 12 months following discharge. The audit included patients who received percutaneous coronary intervention as well as those patients in whom medical management was the chosen treatment strategy.

Results
Our data demonstrates that across the three centers, only 72% (106/147) of patients were discharged on a full complement of secondary prevention medications (aspirin 99%, P2Y12 inhibitors 95%, statins 96%, ACEI/ARB 80% and beta-blocker/rate limiting CCB 83%). In addition, dose optimisation of beta-blocker and ACE inhibitors post discharge remains poor; with the doses of ACEI and beta-blockers remaining unchanged in 63% and 75% of patients respectively. In those patients in whom dose modifications were made, the majority were undertaken within a hospital setting at the routine 6 week follow up appointment.

Conclusions
Beta-blockers and ACE inhibitors are known to improve survival following a heart attack; the greater the dose prescribed the greater the benefit derived. Despite proven mortality benefits and a robust evidence base, substantial gaps still exist between guideline recommendations for the management of ACS and their implementation into current clinical practice.
Through utilising all sectors of the pharmacy workforce; hospital, community and CCG based, we have the potential to address a large and clearly unmet clinical need and can ensure that this high-risk patient group is appropriately managed to improve their overall health and well-being and reduce the number of hospital re-admissions secondary to sub-optimal pharmacological management.

References
(1) Iqbal J, Fox KA. Epidemiological trends in acute coronary syndromes: understanding the past to predict and improve the future. Arch Med Sci 2010;6, 1A: S3-S14 <accessed 28/01/14>

17. The extent of, and documented reasons for, discrepancies in post-hospital medicines reconciliation
Emily Knight* (emilyknight1@nhs.net), Anila Scaria**, Sujata Lama†, Jennifer Stevenson†, Raliat Onatade*, ‡Kings College Hospital NHS Foundation Trust, **University College London School of Pharmacy, †Pharmacy Department, Kings College London

Background
When patients move between care settings a lack of clear communication can lead to unintended changes in medications which can negatively impact on patient safety.
An initiative at this Trust provides GPs with more detailed information about medicine changes made during admission in older patients. A clinical medication review letter (CMR) is provided after discharge with sections for medications stopped, to continue, new and changed, and the reasons.

Objectives
• Assess the extent of, and documented reasons for, discrepancies between CMRs and GP medication lists after discharge
• Determine the length of time between receipt of CMRs and post-hospital medicines reconciliation

Methods
This study was comprised of two phases, with patients from the same wards.
Phase one: Between October 2014 and December 2014, GP surgeries were asked for a faxed copy of each patient’s current medication list three weeks post-discharge, which was compared to their CMR.
Phase two: Visits to 13 surgeries were arranged between December 2014 and April 2015. The records of patients discharged since December 2014 but at least 2 weeks before the scheduled visit were reviewed. Medication lists were compared with the CMR. Additional information and dates of reconciliation were noted.
This study did not require ethics approval.

Results
Phase one included 105 patients. Three weeks after discharge, 30% (32/105) GP medication lists fully matched the CMR i.e. all changes had been made. In 60% (63/105) some changes were made. No changes were made for 10% (10/105) of GP lists. 626 changes were recommended in total. 75% (468/626) (95% CI 72.7 – 78.4%) of these changes were actioned three weeks post-discharge. The median number of drugs on discharge was 10 (IQR, 7–13).
Phase two followed up 109 patients. 41% (45/109) medication lists completely matched the CMR. There was no difference in this proportion compared to phase one (Chi-Square, p=0.09).
704 recommendations were made in phase two. 83% (584/704) (95% CI 80.3 – 85.7%) were actioned. 5% (35/704) were unactioned with documented reasons. Therefore a definite decision was made for 88% (619/704) of recommendations. The reasons for non-implementation of the remaining 12% (85/704) of recommendations were not documented.
The median time between CMR receipt and reconciliation was 2.5 days (IQR, 0-4). When active changes were made, 82% (397/481) were implemented within 1 week, and 91% (439/481) within 2 weeks of discharge.
Combining results of both phases, 36% (77/214) (95% CI 29.5 – 42.5%) of hospital and GP medication lists matched completely when reviewed soon after discharge.

Conclusions
Phase one showed that when assessing post-hospital reconciliation purely from a hospital perspective, 75% of changes were actioned. However when GP systems were interrogated in phase two, it was seen that 88% of recommendations were reviewed.
Despite the provision of more detailed, structured information, there was no documentation regarding the majority of unactioned changes after discharge, which has clear patient safety implications. Our findings also demonstrate that only a minority of hospital discharge medication lists and GP medication lists will match at any one time. Limitations: 8/21 surgeries did not participate in phase two. It was not possible to ask GPs their reasons for not implementing recommendations.
18. Identifying the minimum and optimum levels of clinical pharmacy services.
Siobhan Conaghan, Hameda Lane, Philip Deady, Pharmacy Department, The Mid Yorkshire Hospitals NHS Trust, Wakefield.

Background
A benchmarking exercise identified that compared to other Trusts in the region, the pharmacy department in this acute trust was less favourably staffed using various comparators. These staff shortages meant that only 60-70% of target pharmacy ward visits were being achieved. The National Institute for Health and Care Excellence (NICE) issued a guideline in July 2014 for nurse staffing levels in acute hospitals based on the patient groups being treated and their care needs. As there was no similar guidance for clinical pharmacy services, we developed this service improvement study based on the premise used by NICE of relating staffing levels to tasks. This study did not require ethics approval.

Objectives
To propose minimum and optimum levels of clinical pharmacy services and perform a gap analysis against this based on the current service.

Method
A multi-disciplinary team consisting of doctors, nurses and pharmacists was set up. This group reviewed literature related to clinical pharmacy services and surveyed opinions of Medical and Nursing staff from a range of specialties to identify which clinical pharmacy activities they considered to be essential (i.e. minimum) and which additional activities they considered to be desirable (i.e. optimum).

We used Clinical Pharmacy Standards from five other Trusts to assist in modelling our services.

Results
A literature search identified that little work has been published regarding clinical pharmacy tasks and related staffing. There are standards of service that hospital pharmacy departments must work to, but only in specialist areas such as critical care are mandates for numbers of staff. The project group produced a list of activities they considered could be delivered as part of a clinical pharmacy service which was used to develop a survey to canvas opinions from a wider group of staff across the Trust. The results from this survey demonstrate how medical and nursing staff categorised some clinical pharmacy tasks such as prescribing, patient counselling and ordering medicines as either essential or desirable in their area of work.

All of the data collected was used to categorise activities as minimal or optimal clinical pharmacy service. Minimal service includes activities such as medicines reconciliation and giving medicines advice to staff. These models of service were used in our gap analysis with costing information applied to submit a business case for additional pharmacy staff. These results have also been used as a basis to develop Clinical Pharmacy Standards for the Trust.

Conclusion
This work has meant that we have been able to identify what constitutes a minimum and optimum clinical pharmacy service to our in-patients. This provides us with a standard to measure against, and a means by which to prioritise our services to ensure that at least a minimum service is maintained across the board. A successful business case was submitted to the Trust, which has allowed us to start recruiting to 15.5 whole time equivalent pharmacy staff of varying grades in order that we can provide this level of service to all of our ward areas.

References
3. The Faculty of Intensive Care Medicine, Intensive Care Society. Core Standards for Intensive Care Units. 2013.

Marshall, EC. University Hospitals Bristol NHS Foundation Trust, Bristol.

Introduction
‘Start smart then focus’ (first published in 2011) highlights the role of antimicrobial stewardship in ensuring prudent antimicrobial prescribing with the aim of reducing the emergence of resistant bacteria and the acquisition of health care acquired infections. Recommendations include prescriptions having an indication documented on the medication chart, having a stop/review date and being prescribed in line with local guidelines or having a justified reason for off guideline use.

One of the Department of Health recommendations to help trusts achieve this is to have an antimicrobial stewardship multi-disciplinary team to review prescriptions at ward level.

Aim
To assess the impact of joint microbiology-pharmacy ward rounds on antimicrobial prescribing compliance at the Bristol Royal Infirmary (BRI).

Method
This was a service development project and did not require ethical approval. From September 2010 until May 2014, joint pharmacy-microbiology ward rounds took place on wards at the BRI. 24 adult wards were visited each week. All medicine charts available at the time of the ward round were reviewed by the team for appropriateness and compliance to the trust antimicrobial prescribing bundle. All prescriptions which did not fully comply with the antimicrobial prescribing guidelines were challenged. Interventions made during the ward rounds were recorded. Weekly and monthly reports were produced for each division to feedback the data collected.

Results
1954 antimicrobial prescriptions were reviewed. 84.1% of prescriptions were fully compliant with the antimicrobial prescribing bundle. 8.4% of prescriptions didn’t have a valid stop/review date. 0.3% of prescriptions did not have a documented indication. 7.4% of prescriptions did not follow trust guidelines. A total of 4571 interventions were made.

9.3% of prescriptions which were compliant with the prescribing bundle still required interventions, these included recommending different review dates/course lengths, changing antimicrobials to narrower spectrum agents or giving monitoring advice.

A progressive increase in prescribing compliance was observed. In September 2010, overall compliance was 68%, this gradually increased to 91.8% by April 2014.
Discussion/Conclusion
Overall 15.9% of prescriptions required an intervention to make them compliant with the antimicrobial prescribing bundle. During the joint antimicrobial-pharmacy ward rounds interventions were made in 23.4% of prescriptions seen. This indicates that the value of joint microbiology-pharmacy wards rounds is not only to be reactive in correcting poor prescribing but also has a proactive role in optimising therapy to tailor it more to the patient’s needs.

The benefits of using narrow spectrum agents wherever possible and the prompt switching of intravenous to oral therapy where appropriate has been well documented1, therefore interventions to proactively assist this is essential, with IV to oral switches made in 231 patients reviewed, this further highlights the benefits of this approach.

Further work is needed to capture additional benefits to microbiology-pharmacy ward rounds, such as teaching provided at ward level.

References

20. The perceptions of community pharmacists of their role in antimicrobial stewardship
Ramy Ghazal and Claire May (cm297@uni.brighton.ac.uk)
School of Pharmacy and Biomolecular Sciences University of Brighton, Brighton.

Background
Since its first recognition as a global threat to public health, the phenomenon of antimicrobial resistance (AMR) continues to advance at a greater rate than initially anticipated. AMR is strongly correlated with consumption of antimicrobials, inappropriate dosing regimens and non-adherence. Antimicrobial stewardship has been identified as a key method of countering resistance and preserving the effectiveness of existing antimicrobials[1]. The UK five-year antimicrobial resistance strategy 2013-2018 is an example of a holistic approach[2]. Pharmacists are expected to take an active role in antimicrobial stewardship by supporting rational prescribing and educating patients on the consequences of inappropriate use[3]. Most efforts have been directed towards secondary care, empowering pharmacists to fully establish a role as antimicrobial stewards. In comparison, less attention has been given to community despite 80% of prescriptions being issued here[4]. Figures showing a rise in AMR has culminated in new evidence-based guidance i.e. ‘Start smart-then focus’ encouraging hospital pharmacists to support and monitor appropriate prescribing using a personalised treatment plan[5] or “Treat Antibiotics Responsibly, Guidance, Education, Tools” (TARGET) which aims to increase awareness of appropriate prescribing[6].

Objective(s)
The main objective was to determine the perceptions of community pharmacists towards their role in antimicrobial stewardship.

Method
A questionnaire was developed based on previous research into the role of community pharmacists in limiting the spread of AMR and was sent via post to 300 pharmacies in the South of England. Questions were adapted from the antibiotic guardian campaign[7]. This study required and received ethics approval.

Results
The response rate was 27%. Several barriers to the provision of antimicrobial stewardship activities were identified, with the majority agreeing or strongly agreeing that there is insufficient access to local guidelines and clinical information (70%/74.4% respectively) that would enable them to challenge prescriptions. Other barriers were: time constraints, heavy workload, lack of support and incentives from GPs/professional bodies.

Conclusions
Community pharmacists recognise the factors contributing to AMR. However, a number of barriers limit their efforts to support prudent antimicrobial prescribing and engagement in stewardship interventions. More attention should be placed to address specific barriers and empower pharmacists with the skills and materials to combat AMR. The main limitation was the low response rate inferring a potential response bias. As the survey was only distributed to pharmacies in the South the results may not be representative of UK.

References
### 21. Evaluation of the Impact of a Pharmacist Free Dispensary

**Claire McGuire (claire.mcguire@cddft.nhs.uk), Lynne Harris and Rachel Leighton,**

**County Durham and Darlington NHS Foundation Trust**

**Background**

At this Trust, discharge prescriptions are traditionally professionally checked by a pharmacist within the dispensary. This check is carried out in isolation from the patient, medical notes, prescriber and any medication brought in. Queries are resolved by telephone with either a doctor or nurse. It is suggested by moving this check to ward level queries can be resolved more quickly by the pharmacist as there is more accessible information and they can speak directly to the patient, prescriber and nurses. Improved access to this information would be expected to improve safety and quality of the clinical check.

**Objectives**

- Develop models for moving the professional check from dispensary to ward level
- Agree on audit measures required to evaluate a new model of the ‘pharmacist-free’ dispensary focusing on both patient safety and cost reduction measures
- Undertake evaluations of the professional check carried out both within dispensary and on an elderly care ward.

**Method**

A literature search and networking with peers showed no similar systems of practice. Focus groups led to development of an agreed model of ward based professional checking and audit measures. This evolved from previous local audit work on discharge quality. Phase 1 data collected (May 2014) on both supply and clinical queries identified via the dispensary based pharmacist on all discharge prescriptions and non-stock requisitions requiring a professional check. Phase 2 data collected (June 2014) on queries identified by moving the professional check from the dispensary to the study ward. Data was collected and analysed using an excel spreadsheet. During both phases additional information was collected on the quantity and cost of patients' own drugs (PODs) reused utilising the pharmacy Ascribe system. This study did not require ethics approval.

**Results**

Following the focus groups, a model of fixed time slot visits by a nominated pharmacist was implemented. This increased the number of clinical queries identified (9 to 27) but reduced the time taken to resolve them (2.7mins to 2.2mins). Doctors were more likely to be involved in resolving queries. Availability of the pharmacist increased the number of non-discharge related queries which would not normally have reached the dispensary. There was an increase in both the quantity (29 to 101) and value (£187 to £770) of PODs utilised on discharge.

**Conclusion**

Ward pharmacy presence has positive impacts on safety, cost and waste reduction targets. More clinical issues are identified and resolved quickly with the most appropriate person. It increases utilisation of PODs and over-label drugs which would be expected to improve discharge turnaround times. A significant amount of time was spent on non-discharge related queries which would not have been carried out previously and would be better suited to a ward based clinical pharmacy service. The medical ward chosen for the audit did not have clinical pharmacy input. Outcomes may vary on wards with less complex patients or wards with access to pharmacy support. Further work would examine the reproducibility of the cost saving and clinical outcomes within other specialities.

### 22. An audit on self-administration of medicines at an elective orthopaedic hospital

**Nisha Mistry (nisha.mistry@moh.nhs.uk), Khyati Shah, Priya Patel-Lakhu. Royal National Orthopaedic Hospital. Stanmore.**

**Background**

Self-administration of Medicines (SAM) allows patients to take responsibility for their medication in a secure and supervised setting. It is a significant step towards medicines optimisation.\(^1\) Medicines optimisation, a key focus of the NHS, is an approach that seeks to maximise beneficial clinical outcomes for patients from medicines with an emphasis on safety, governance, professional collaboration and patient engagement.\(^2\)

**Objective**

To establish whether SAM documentation is completed prior to launch of the Trust’s SAM Policy.

**Standards**

1. All medicines must be prescribed on the drug chart on day one of admission.
2. An assessment form must be completed and patient consent obtained prior to initiation of SAM.
3. A medicines tick chart should be provided by Pharmacy for all patients on SAM
4. Nursing staff must sign the drug chart to indicate self-administration of prescribed medication.
5. All patients must complete the medicines tick chart.\(^3\)

**Method**

Data collection was over a five week period from 15/05/2015 – 12/06/2015 on a long-stay rehabilitation ward. An audit tool was developed and piloted on 5 patients to ensure it was fit for purpose. During the audit period, patients and staff were given questionnaires to complete. This study did not require ethics approval.

**Results**

During the study period, 92% of the ward (n=36) was self-administering medicines (excluding controlled drugs)

- All regular medicines were prescribed on day one of admission in 94% of patients
- Nurses completed assessment forms for 100% of patients on SAM scheme.
- Pharmacy had provided tick charts to 100% of patients on SAM scheme
- 28% of patients had their drug chart endorsed by nursing staff to indicate they had self-administered medicines.
- 86% percent of patients completed the tick chart.
- Six nurses (n=6) completed the staff questionnaire.
- 33% of nurses had received training on SAM.
- Overall patients were satisfied with the programme.
Discussion
Standards 2 and 3 were met 100%. However there is still room for improvement, particularly nursing documentation on the drug chart and patient completion of medicine tick charts. Patients may forget to complete tick charts as it is not their usual routine. Nurses may be reluctant to complete drug charts on the basis that they haven’t witnessed self-administration. There may be a lack of training which highlights an obvious need for clear trust guidance and associated training of staff involved in the scheme.

Limitations
Rationale for non-completion of tick charts and drug chart by patients and nurses respectively was not ascertained. This should be addressed in any future audits

Recommendations
- Promote the new SAM policy once approved.
- Improve communication and training for all staff and patients involved in SAM.
- Implement poster on medicines lockers to remind patients to complete tick chart
- Implement electronic prescribing to enhance documentation of SAM.

References
1. NHS Education for Scotland. Toolkit for the self-administration of Medicines (SAM) in hospitals

This study did not require ethics approval

Background
Medicines reconciliation (MR) is the process of collecting, checking and communicating comprehensive information about patient’s medications upon admission to hospital. NICE and NPSA advise that pharmacists be involved in medicines reconciliation within 24 hours1. Various sources of information can be used2. The Summary Care Record (SCR) is a relatively new source of information driven from patient’s GP record3, 4. Use of SCR can improve patient care by reducing time taken to obtain accurate information thus supporting safer prescribing even for patients with communication difficulties.

Objectives
To assess:
1. The time scale for finishing MR when SCR was available or unavailable.
2. The accuracy and completeness of information in the SCR
3. The discrepancy rate identified by MR when SCR is used or not used by clerking doctors

Methods
This was a prospective analytical study including 341 newly admitted patients between 23/1/13 and 17/5/13. The pharmacist did comprehensive MR for all patients then compared it to information on SCR and to medications prescribed on medicines chart by a doctor; discrepancies were identified. The medical notes were consulted to exclude any intentional changes.

Results
SCR availability reduced the mean time needed to finish MR from 55 to 21 minutes, 61% reduction. 279 patients had a SCR available; 69 (24.7%) contained discrepancies.

The doctor had used SCR to write the medicines chart for 29 (10.4%) of the patients with an unintentional discrepancy rate on medicines chart of 1.72 per patient. When the SCR had not been used a discrepancy rate of 1.79 per patient resulted, a 4% increase (statistical significance not tested).

Conclusions
Therefore all GP surgeries should be encouraged to upload information onto the NHS Spine and regularly update it with prescribing and allergy information as the discrepancies on SCR were due to information not being incorporated accurately or in a timely manner, particularly from recent hospital discharge, home visits and prescribing by other agencies (e.g. psychiatric services, outpatient clinics, family planning clinics, drug rehabilitation services and health care at home).

The unintentional discrepancies made by clerking doctors were multifactorial including lack of training on how to use SCR (e.g. prescribing acute medications as regular) or the lack of comprehensive information on the SCR.

Limitations to this project included lack of standardised methods to assess quality of information on SCR and discrepancies on medicines chart.

References
24. Vaccination of Adult Patients Who Have a Splenectomy at Leeds Teaching Hospitals
Sophie Ridsdale (s.ridsdale@nhs.net), and Charles Walker, Leeds Teaching Hospitals NHS Trust (LTHT), Leeds

Background
National\(^2\) and local\(^2\) guidelines recommend vaccination to reduce the risk of infection and sepsis in asplenic individuals. Vaccines should be given a minimum of two weeks pre- or post-splenectomy in elective and emergency cases, respectively. Healthcare professionals and patients at LTHT highlighted there is inconsistency in the approach to vaccinating adult patients.

Objectives(s)
Complete a retrospective audit of compliance with vaccination recommendations.

Develop and implement aids to promote the provision of recommended vaccinations for splenectomised patients.

Method
A retrospective audit of compliance with vaccination recommendations was completed for patients who underwent splenectomy at LTHT between September 2011 - 2014. Clinic letters, JAC pharmacy dispensing records and discharge advice notes were reviewed. Audit standards included vaccination greater than or equal to two weeks prior to or after splenectomy. This study did not require ethics approval.

Results
Out of 104 patients, 90 were included in the audit. 6 paediatric patients, 3 spurious cases and 5 perioperative deaths were excluded. Of the 90, 11 were emergency splenectomies, 60 were elective splenectomies and 19 were elective cases not initially planned for splenectomy. Overall, the discharge advice note for 29% of patients asked the GP to administer the required vaccinations, 22% of patients had no documentation relating to vaccination, 20% were vaccinated prior to admission and 29% post operatively whilst still an inpatient. Of those vaccinated as inpatients, 42% were greater than or equal to two weeks prior to splenectomy however 58% were within two weeks post operation. Regarding transfer of care, 8% of patients vaccinated as an inpatient did not have this information communicated to their GP. Furthermore, 2% of patients were vaccinated as an inpatient but their discharge advice note asked the GP to give vaccinations.

Conclusions
The audit confirmed there are inconsistencies in the approach to vaccinating patients undergoing splenectomies at LTHT and supported the need for an intervention to improve patient care. A document that details and records what vaccinations are needed and when has been created to be included as an appendix in the local guideline\(^1\). This would be accessible to healthcare professionals in primary and secondary care. It could be given to patients, filed in medical notes and sent to GPs to improve transfer of care and facilitate vaccinations being given correctly.

Once implemented, a re-audit will be performed to establish the impact and sustainability of the intervention.

A limitation of this audit was the assumption patients had not received vaccinations if there was no documentation pertaining to this. It is possible a patient had their vaccinations outside the trust but with no documentation in the electronic hospital systems. Furthermore, the date vaccinations were dispensed was assumed to be the date administered. Medical notes could have been reviewed as another source to confirm vaccination administration.

References

25. A review of medication incidents in north east hospitals
Jane Robson (jane.robson@nlt.nhs.uk), North Tees and Hartlepool NHS Foundation Trust, Stockton-on-Tees;
Lorna Clark, The Newcastle upon Tyne Hospitals NHS Foundation Trust, Newcastle;
Julie Fagan, South Tees Hospitals NHS Foundation Trust, Middlesbrough

This study did not require ethics approval

Background
Medication errors have been defined as “a failure in the treatment process that leads to, or has the potential to lead to, harm to the patient”\(^1\). This includes prescribing, preparing, dispensing, administering, monitoring or providing medicines advice\(^2\).

The Medication Safety Thermometer (MST)\(^3\) has been designed to identify harm from high risk medicines, and monthly use of this tool (as part of a national pilot) allows Trusts to identify situations where patient harm may have occurred.

The North East and North Cumbria Hospitals Clinical Pharmacy Network (CPN) recognises that the safe and effective use of medicines is essential in minimising the risk of medication-related patient harm.

Objectives
1. To identify the number of medication-related incidents across the region
2. To identify common themes that are related to the MST
3. Make recommendations that will promote shared learning in order to improve medication safety across the region.

Method
Medication-related incident reports for January 2014 (as downloads from the respective software, e.g. Datix\(^4\)) were pooled from the participating ten Trusts and analysed regionally. Data were sorted using Microsoft Excel\(^5\) to identify common themes, chosen with specific reference to the MST.

Results
A total of 437 medication-related incidents were identified, an average of 44 per Trust (range 28-110). Incidents associated with administration (wrong drug or dose, or omission) formed the largest group (175, 40%) with prescribing second (109, 21%). There were 39 reports of omitted doses (9%), 21 of which related to high risk or critical medications included in the MST. There were a total of 65 (15%) reported incidents for MST included high risk medications; the largest group was opioids (27), one of which (administration of naloxone in a patient with opioid related respiratory depression) would have triggered a multi-disciplinary review.

There was an apparent under reporting of prescribing errors which was identified in regional discussions of the presented data. This may have been due to pharmacist interventions preventing patient harm leading to interpretation of these as near misses.
Conclusions
Examples of good practice from the opioid incidents are to be shared in the region to develop a consistent approach and improve patient safety.
This data collection has been the first collaborative approach across the region to review medication related incidents. This will be repeated, focusing on emerging trends; this data will be presented individually, including relative reporting rates, allowing for benchmarking between Trusts. Where the level of a particular incident is lower than the regional average this will allow us to identify areas of good practice and promote sharing and local adoption of successful approaches. Key recommendations will be progressed and will contribute to joint working between Medication Safety Officers. Consideration is also being given to possible ways of encouraging greater reporting of prescribing errors. This model could be easily replicated in other regions.

References:

26. Analysing the prevalence and documentation of omitted doses in a large acute trust
Stephanie Shale and Kirandip Mandar, Kings College Hospital, Denmark Hill

Background
In February 2010, the NPSA published an alert highlighting risks with omitted and delayed medicines.1 Recommendations included annual audits of omitted doses. An audit conducted in our Trust is described.

Objectives
To measure rates and reasons for omission in drug administration
To confirm that omissions are documented appropriately on prescription charts.

Method
Ethics approval was not required. A retrospective one day audit of missed doses was carried out. Data was collected on one Wednesday in December 2014. Electronic or paper drug charts for three patients on every ward were included. All regular and ‘stat’ prescriptions were reviewed. Drug names, numbers of doses due and doses omitted were recorded. Documented reasons for omissions were recorded to determine intentional and unintentional omissions. Drugs were categorised as critical or non-critical according to the trust Critical Drugs List. The following standards were applied:
100% of critical and non-critical medicines are administered as prescribed unless omitted intentionally due to the following; clinical reason, on advice of the prescriber, patient nil-by-mouth, or patient refusal
100% of omissions are documented on prescription charts

Results
Of 3026 scheduled doses, 96.2% (2912/3026) were administered as prescribed (intentional omissions were recorded under ‘administered as prescribed’). Of the critical medicines 97.1% (1200/1236) were administered as prescribed. Critical drugs most commonly omitted were anticoagulants, analgesics and intravenous antibiotics. Eighty of 403 intentional and unintentional omitted doses (19.9%) were inappropriately documented. Of 63 omissions documented as ‘Other’, 46% (29/63) gave no reason, and 36.5% (22/63) gave a reason which should have been recorded under another option, and 7.9% (5/63) gave a comment which had no relevance to omission. Fourteen critical medicine omissions had no documented reason. Twenty three doses were missed due to drug non-availability.

Conclusion
Most omitted doses resulted from patient refusal. Some may have been justifiable. In some cases patient refusal may have impacted on length of stay (e.g. enoxaparin). Input by pharmacists to explain the importance of medicines to patients may improve adherence.
Omissions are poorly documented, particularly when the reason ‘Other’ is chosen. The importance of avoiding omissions and correct documentation of unavoidable administration omissions needs to be re-emphasised through training. Pharmacists are ideally placed to provide this.
All the omissions due to drug non-availability are avoidable as drugs are available 24 hours a day.
Due to time constraints, this audit was conducted over a short time-frame. Audits over a longer period could identify medicines regularly omitted due to supply issues and ward stock lists could be adapted to minimise these.
One recent study identified that pharmacy-supported drug administration rounds reduced the number of unacceptable omissions from 18% to 1%.2 Given this high success rate, consideration should be given to piloting this strategy within our own Trust.

References:

27. Time to administration of first dose antibiotics and associated outcomes in respiratory sepsis
Shalini Gujral (shalini.gujral@nhs.net), Raliat Onatade, Reena Mehta, James Hinton and Ritesh Maharaj
King’s College Hospital NHS Foundation Trust, London

Background
Delay in administration of first dose antibiotics in sepsis has been associated with an increase in mortality.1 Sepsis is defined as a suspected infection with two or more systemic inflammatory responses (SIRS). Guidelines recommend that antibiotics be administered within 60 minutes of diagnosis.2 To improve the treatment of patients diagnosed with sepsis due to community-acquired pneumonia (CAP), we investigated time to administration of first dose antibiotics (TTFD) and associations between various outcomes and factors.

Objectives
1. Determine time between diagnosis of chest sepsis and administration of first dose antibiotics in the Emergency Department (ED) and Medical Assessment Unit (MAU)
2. Determine if there is a relationship between TTFD and a) Length of Stay (LoS), b) ICU admission and c) mortality
3. Identify if place and time contribute to delayed antibiotic administration

Method
This was a 6 month prospective study in 2012/13. Patients included had a diagnosis of sepsis (SIRS>2 + suspected CAP) made in ED or MAU. Time of diagnosis, antibiotic administration and outcome were determined using patient records. 10-year estimated survival rate was calculated using Charlson Co-Morbidity Index. Multiple regression was conducted to evaluate associations between TTFD and LoS, ICU admission, mortality and time of day. Other factors potentially influencing LoS were included in the model (appropriate antibiotics, age, gender, estimated 10 year survival). Chi-square analyses were performed to determine if there was a significant difference between TTFD in ED and MAU and if time of diagnosis was associated with delayed administration. This study did not require ethics approval.

Results
120 patients were diagnosed with sepsis; mean age 67 (range 19-88, SD 19), 49% female. 52% received antibiotics within 60 minutes from diagnosis; mean 132 minutes (range 0-1252, SD 186). 5% died during admission and 6% were admitted to ICU. 66% received antibiotics within one hour in ED compared to 19% in MAU (p<0.05). No association was found between TTFD and LoS, ICU admission or mortality. A weak relationship was found between appropriateness of antibiotics and gender; fewer females received appropriate antibiotics according to local guidelines (r = 0.23, p<0.05). Of patients receiving antibiotics outside of working hours (6pm-9am), 56% received antibiotics within one hour compared to 44% in hours (p<0.05).

Conclusion
TTFD in chest sepsis was not found to be associated with specific patient outcomes, which is a similar finding to other studies\(^2\). There was a significant difference in TTFD between ED and MAU, which suggests differing practice in each area. Future work should be carried out to determine if other factors such as fluid resuscitation are more important to outcomes. Limitations – although a prospective study, actual practice was not observed. Not all variables or patient outcomes could be assessed.

References

28. Auditing the prescribing of extended Venous Thromboembolism (VTE) prophylaxis post colorectal surgery

Zahra Shamshudin (zahra.shamshudin@nhs.net), Sophie Blow, Sushil Maslekar, Leeds Teaching Hospitals NHS Trust, Leeds.

Background
Hospital associated VTE leads to approximately 40,000 deaths in England per year, 25,000 of which may be preventable\(^1\). Major abdominal surgery and surgery for colorectal cancer conveys a high risk of VTE. Extended prophylaxis (28 days) is recommended by NICE (2010) for patients recovering from such procedures\(^2\). Leeds Teaching Hospitals NHS Trust (LTHT) has local guidance recommending extended VTE prophylaxis for up to 28 days in patients post major abdominal surgeries\(^3\). The number of patients actually prescribed extended VTE prophylaxis following these procedures at LTHT is unclear.

Objective
- Quantify the percentage of patients who received extended VTE prophylaxis post major abdominal surgery in line with trust guidance.
- Identify how extended VTE is requested, communicated at the point of discharge.

Method
Retrospective review of patients undergoing major colorectal surgery conducted January-March 2015 using the surgical database. The review included; operation notes to see if extended VTE prophylaxis was requested, and the electronic discharge advice note (eDAN) to see if extended prophylaxis was prescribed. Operation notes including VTE in post-operation instructions were categorised as requesting extended VTE prophylaxis. Subsequently the eDAN was reviewed to ascertain if extended VTE prophylaxis was completed. Patients with high risk factors for bleeding or patients with concurrent use of anticoagulants were excluded from this study.

This study did not require ethics approval.

Results
Total of 75 patient data was audited. Of the 75, post-operative instructions included extended VTE in 61% (n=46) of cases, which translated onto the eDAN in 40% (n=30) of cases, in 21% (n=16) it did not.
No written instructions for extended VTE prophylaxis was apparent in 39% of cases (n=29). Despite this 23% (n=17) had VTE prophylaxis added to their eDAN at discharge. In 16% (n=12) of cases, extended VTE was not prescribed despite it being required. Overall 37% of the 75 patients audited (n=28) were discharged without extended VTE, despite both local and national guidance for extended VTE prophylaxis.

Conclusion
This audit demonstrates that the NICE (CG92) standard\(^2\) of 100% of patients undergoing major abdominal surgery receiving extended VTE prophylaxis was not met.
Areas for improvement:
1) Identification of patients requiring extended prophylaxis,
2) Where extended VTE prophylaxis is not requested, the decision needs to be reviewed on discharge by all members of the healthcare team.
Standard documentation is needed to improve communication and record postoperative requirements. Education of the surgical team (nurses, surgeons and pharmacists) regarding need for prophylaxis would support this. Limitations include timeframe within which the data was collected. A bed crisis in January 2015 led to a disproportionate number of consultants writing discharge letters. Follow up of patients not prescribed extended VTE prophylaxis is planned.
Background
At this secondary care Trust, an independent prescribing (IP) pharmacist on AMU has been well established, supported by a small team of technicians and junior pharmacist. Initially, the role was useful in supporting the medicines reconciliation (MR) process. Utilisation of pharmacy technicians, introduction of IP and improved integration into the ward team has allowed the IP pharmacist to concentrate on medicines optimisation.

The aim of this study was to establish the range of prescribing interventions of an IP pharmacist thereby demonstrating the array of circumstances under which IP may occur.

Objective
1. To measure the amount and type of IP pharmacist activity carried out on AMU.

Methods
Phase 1: Prescribing activity carried out over a one year period (April 2013-March 2014) by the IP pharmacist was recorded including number of patients seen and number of items prescribed or discontinued. This provided an overview of the level of prescribing activity. Phase 2: The data collection tool was redesigned to provide a detailed analysis of the range of activities undertaken and the audit repeated over a one month period (October 2014). All prescribing activity was recorded and categorised as initiation, adjustment or discontinuation of treatment. The rationale for adjustment and discontinuation was captured. Prescribing was regarded Consultant-led if requested by the Consultant and Pharmacist-led if on the recommendation of the Pharmacist.

The study did not require ethics approval.

Results
Phase 1: 1708 pharmacist prescribed items for 704 patients (2.4 items/patient) and 333 items discontinued (0.4 items/patient). Phase 2: 272 pharmacist prescribing interventions, 180 on ward rounds (66.2%). Two hundred and twenty one (81.3%) pharmacist-led and 51 (18.7%) at the request of a consultant. Initiation of treatment was the most common reason for prescribing (162 pharmacist-led; 35 Consultant-lead) with 96 (59%) due to inadvertent omission on admission. Forty one interventions were changes in dose, 37 (90.2%) of which were pharmacist-led. Optimisation was the main reason (37; 90.2%) with interactions, adverse-effects and renal function accounting for the remainder. There were 34 incidents where medication was discontinued (22 pharmacist-led; 12 Consultant-led). Twenty-five of these interventions were optimisation with interactions and adverse-effects accounting for other reasons.

Conclusion
This evaluation demonstrates the important contribution of an IP pharmacist on AMU. This goes beyond correcting MR discrepancies. The majority of prescribing is pharmacist-led which demonstrates the unique perspective a pharmacist brings to the team. The majority of interventions are associated with initiation of new treatments as would be expected. However, for existing treatments, optimisation is the main driver for pharmacist prescribing. Future study may wish to provide more detail on the therapeutic areas the pharmacist either initiated or optimised treatment and may wish to look at the effectiveness of these prescribing interventions.

References

30. Start Smart – Then Focus: Benchmarking antimicrobial prescribing decisions
Samantha Lippett1,3, Monika Sokolowska2,3, Greg Scutt2,3, 1. Brighton & Sussex University Hospitals NHS Trust, Brighton & Hayward’s Heath, 2. School of Pharmacy, University of Brighton, 3. Brighton and Sussex Centre for Medicines Optimisation

Background
The ‘Start Smart – Then Focus’ provides an outline of antimicrobial stewardship in the secondary healthcare setting. ‘Then Focus’ refers to the clinical review of diagnosis and continued need for antimicrobials by 48 – 72 hours. The antimicrobial prescribing decision/s (APDs) are: STOP antibiotics, SWITCH intravenous (IV) to oral, CHANGE to different spectrum, CONTINUE and outpatient parenteral antimicrobial therapy (OPAT). The annual audits for evidence of a documented APD at 48-72 hours alongside evidence of documentation of indication and duration on the drug-chart are recommended.

Objectives
- To benchmark the existence and type of APDs made
- To assess prevalence of pharmacist documentation to prompt an APD
- To collect data on type of IV antimicrobials prescribed
- To assess drug-charts for documentation of indication & duration
- To establish the availability of microbiological data needed to facilitate an APD

Method
All hospital in-patient drug-charts (excluding maternity & paediatrics) were reviewed over a six week period for evidence of administration of at least one dose of an IV antimicrobial (excluding surgical prophylaxis) during current inpatient stay. The medical notes of identified patients were reviewed for evidence of an APD at 48-72 hours along with pharmacist influence. Sunquest ICE desktop system was searched to obtain data on type of
microbiology samples sent, timing in relation to initiation of IV antimicrobials & availability of results within 72 hours (defined as no growth or organism identification +/- sensitivities). This study did not require ethical approval.

Results

719 patients were evaluated for inclusion. Three-hundred (42%) patients had been prescribed at least one dose of an IV antimicrobial during their inpatient stay and two-hundred forty-eight (35%) received 269 IV antimicrobials for at least 72 hours. Seventy-five percent had an APD documented in the medical notes within 72 hours. Seven percent of these were STOP, 21% were SWITCH, 9% were CHANGE, 59% were CONTINUE, 1% were OPAT and 3% were multiple. There was no evidence of pharmacist documentation in the medical notes to influence an APD. Piperacillin/tazobactam was the most commonly prescribed IV antimicrobial (31%) followed by amoxicillin (19%) and co-amoxiclav (15%). 96% of IV antimicrobials had an indication documented on the drug-chart and 75% had a duration/review date. 24% percent of drug-charts had ‘review within 24-72 hours’ specified, 51% had a total duration specified and 25% had no duration or review date. There was no difference in the proportion of APD’s made regardless of the nature of duration / review date documentation on drug-chart ($\chi^2$=0.51, p=0.77 (95% CI)).

Two-hundred twenty-six microbiological samples were collected from 165 patients. 78% were collected before or on the day of antimicrobial initiation. Forty-seven of results were available within 72 hours.

Conclusions

- The majority of APD’s are ‘continue’. The quality of the APD was not evaluated within this audit.
- Pharmacists are not documenting influence on APDs; the reasons for this are to be explored.
- Documentation of a duration / review date on the drug-chart does not influence whether an APD is made.
- This audit is to be repeated annually, across multiple hospital sites to further benchmark.

References


31. Assessing the impact of an insulin aide-memoir on practitioners’ knowledge of insulin types

Solanki P, Cavell G, Kings’ College Hospital NHS Foundation Trust, London

Background

Insulin is a high risk drug.1 A review of medication incidents reported to the National Reporting and Learning System over 6 years identified 46 incidents of severe harm or death due to insulin-related errors.7 The Department of Health in January 2004 described confusion caused by the insulin umbrella term ‘Humalog®’ which led to patient hospital admissions.8 Local incident data includes confusion between Levemir® and Lantus®, NovoRapid® and NovoMix®30 and Humulin®I and Humulin®M3. The letter sequences of these pairs of insulins are similar, with potential for error due to ‘look-alike and sound-alike’ names. A need to help practitioners to correctly differentiate between insulins has been identified.

Objective(s)

To measure the impact of an aide-memoir on practitioner knowledge of insulin type.

Method

The project plan was supported by the Diabetes Team. A questionnaire testing knowledge of insulin type was developed and piloted. Data were collected between December 2014 and February 2015. Participants completed the same questionnaire twice: once using knowledge alone and secondly referring to the insulin aide-memoir. Responses were collated and quantified using Microsoft Excel. Ethics approval was not required for the study.

Results

Questionnaires testing identification of 12 insulin names were completed by 143 practitioners: 40 doctors, 68 nurses and 35 pharmacists. Using knowledge alone doctors correctly identified insulin names by type in 81% of answers (390/480), nurses were correct in 67% of cases (549/816) and pharmacists in 86% (362/420) of cases.

Using the insulin aide-memoir 99% (476/480) of doctors, 97% (789/816) of nurses and 98% (413/420) of pharmacists correctly identified the same 12 insulin names by type.

Using knowledge alone short-acting insulins Humalog® and Humulin®S, the biphasic insulin Humulin®M3 and the intermediate-acting insulin Humulin®I were correctly identified in 34%,(48/143), 52% (75/143), 53% (76/143) and 66%, (94/143) of cases respectively. Using the aide-memoir these scores increased to 96% (137/143), 97% (139/143), 98% (140/143) and 98% (140/143).

Actrapid®, Novorapid®, HumalogMix25®, and HumalogMix50® insulins were correctly identified by more than 90% of practitioners using knowledge alone, and Novomix30® was correctly identified by 86% (123/143) practitioners.

The aide-memoir significantly improved the ability of all practitioners to correctly identify insulin types compared to knowledge alone (98% vs. 76%) (Chi-squared 361.5, p<0.001). Results for all insulins increased. There was a 30% increase in nursing ability to recognise insulin by type with the aide-memoir (67% vs. 97%), 17% for doctors (81% vs 99%) and 12% for pharmacists (86%-98%).

Conclusions

Consideration should be given to making the aide-memoir accessible to all practitioners either as a hand-held card or electronically as an ‘app’. This will be followed up by the trust Insulin Safety Group.

References

Introduction
Hypnotic medicines are commonly used to treat insomnia in the NSIC. These drugs should only be used to treat short term insomnia however are frequently prescribed for longer periods of time. Their use should be intermittent with omission of some doses to prevent tolerance and dependence. Chronic insomnia should not be treated with long term hypnotics as this increases the risk of dependence and does not deal with the underlying cause1,2.

Aim
To evaluate for appropriateness the prescribing and administration of all hypnotic medicines prescribed for adult patients in the NSIC at Buckinghamshire Healthcare NHS Trust (BHT).

Objectives
1. To evaluate the percentage of currently prescribed regular hypnotics that were initiated by the NSIC (excluding melatonin).
2. To evaluate the percentage of newly prescribed hypnotics prescribed as ‘prn’ (excluding melatonin).
3. To evaluate which agent is chosen first line when initiating hypnotics in the NSIC.
4. To assess whether all patients initiated on hypnotics whilst an inpatient are reviewed within four weeks of initiation.
5. To evaluate the percentage of hypnotics prescribed as ‘prn’ administered at a rate less than 66.7% (2 nights in 3).

Methodology
Using patient notes, clerking, drug charts and GP faxes data was collected from 31 adult inpatients prescribed hypnotics in the NSIC between 17th and 21st November 2014. As this is a clinical audit ethics approval was not needed.

Results
1. [Standard: 5%]
   a. 1/4 (25%) hypnotics prescribed on the regular side of the drug chart were initiated by the NSIC (excluding melatonin).
2. [Standard: 95%]
   a. 16/17 (94%) newly prescribed hypnotics were prescribed as ‘prn’ (excluding melatonin).
3. [Standard: 100%]
   a. 17/19 (89.5%) patients newly prescribed hypnotics whilst in the NSIC were prescribed zopiclone first line.
4. [Standard: 100%]
   a. 5/22 (22.7%) newly prescribed hypnotics were reviewed within four weeks of initiation.
5. [Standard: 100%]
   a. 10/26 (38.5%) hypnotics prescribed as ‘prn’ were administered at a rate not exceeding 66.7% (2 nights in 3).

Conclusion and recommendations
The results indicate the NSIC very nearly meets the standards set in this audit regarding the initiation of regular hypnotics however this audit was limited by patient numbers.

It is proposed that a specific hypnotic guideline is written for BHT to include information on managing all aspects of insomnia, detailed prescribing guidance for doctors, endorsements for doctors and pharmacists as well as guidance on administering ‘when required’ hypnotics for nurses.

References

33. An audit of dexmedetomidine use in critical care and associated patient outcomes
Warburton J, Clarke T and Walker R, University Hospitals Bristol NHS Foundation Trust, Bristol.

Background
Dexmedetomidine is licensed for critical care patients requiring sedation not deeper than arousal in response to verbal stimulation. It represents a change in practice whereby patients are more cooperative and better able to communicate pain when compared with conventional sedatives1. It is not yet clear where dexmedetomidine fits in to routine sedation practices, not least because of the increased expenditure over propofol. The use of dexmedetomidine locally has been limited to assisting extubation in patients who have failed previously due to agitation.

Objectives
• Evaluate adherence of dexmedetomidine prescribing to the critical care guideline
• Assess patient outcomes of dexmedetomidine therapy

Method
This study did not require ethics approval. A search of the ICU electronic prescribing system was performed to identify all dexmedetomidine prescriptions between April and September 2014 inclusive.

Audit standards:
1) Dexmedetomidine was started following failure of extubation on conventional sedation
2) Dexmedetomidine was prescribed for a maximum of 72 hours
3) Dexmedetomidine was stopped within 24 hours where monotherapy was insufficient and propofol was restarted

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The expected adherence was 100% for all standards. The 4 outcome categories were: successful extubation whilst on dexmedetomidine (treatment success), tracheostomy or failed extubation (both treatment failures), and death whilst on dexmedetomidine.

Results
The overall use of dexmedetomidine was fully compliant in 17/33 patients identified. The compliance with standards 1 and 2 was 22/33 and 28/33 respectively. Dexmedetomidine monotherapy was insufficient for 16/33 patients and it was stopped within 24 hours in 11 of these patients in accordance with standard 3.

Fourteen of 33 patients prescribed dexmedetomidine had a 'treatment success' and 6 prescriptions complied with the guideline. Eighteen patients experienced treatment failure. Six patients subsequently received a tracheostomy and 11 patients experienced a failed extubation on dexmedetomidine. The remaining patient had received a tracheostomy prior to the initiation of dexmedetomidine and so was classified as neither treatment success nor failure. No patients died whilst receiving dexmedetomidine.

Conclusions
Dexmedetomidine prescribing did not meet the required standard in this small group and methods to improve guideline compliance should be implemented. It appears that the success of dexmedetomidine in this patient group was limited. However, this outcome data may underestimate the benefit of dexmedetomidine as those patients complying with standard 1 have already failed extubation on conventional sedation. Physicians are prescribing dexmedetomidine for patients who do not satisfy standard 1. The reasons for this should be explored to determine whether the perceived clinical benefits outweigh the additional cost. At present dexmedetomidine is not approved by the trust formulary outside this small subset of patients.

Most dexmedetomidine prescriptions were stopped within 72 hours which suggests appropriate use over the peri-extubation period. The benefits of dexmedetomidine in conjunction with propofol were not studied in the PRODEX study. The pragmatic approach that the two are mutually exclusive may need to be revised should such evidence be published.

References:

34. The impact of pharmacist led medicines reconciliation in critical care
Warwick M. Altnagelvin Site, Western Health & Social Care Trust, N. Ireland

Background
At the 6th Australian International Conference on Safety Quality Audit & Outcomes Research in Intensive Care, it was reported that up to 67% of medication histories have at least one error, one third of which have the potential to cause harm and 85% of which originate from poor medication history taking. Significantly 50% of medication errors are reported to occur at transitions of care, with one in six patients having one or more clinically significant discrepancies. Recognising vulnerabilities for errors, medication reconciliation at care transitions has become an important recognised element of patient safety.

Objectives
To determine both the impact of pharmacist led medicines reconciliation on the incidence and type of discrepancies that occur to medication regimens due to a critical care stay and the significance of pharmacist interventions related to medication reconciliation on patient care.

Method
A retrospective, service evaluation that compared medicines reconciliation in 40 patients admitted and discharged prior to and post the establishment of a clinical pharmacy service to a 10 bedded mixed medical/surgical critical care unit. Interventions related to medicines reconciliation were classified using the EPICS data collection tool and graded using the Eadon Scale. To collaborate significance a random sample of 10 interventions were peer reviewed by a critical care consultant, consultant pharmacist and critical care pharmacist working in another trust. This study did not require ethics approval.

Results
Mean number of unintentional discrepancies on admission decreased from 3.05 per patient at baseline to 1.6 post intervention. Omission of a pre-admission medication was the most consistent unintentional error identified in both groups (70.5% vs 54.7%). Mean number of unintentional medication discrepancies at discharge decreased from 6.8 per patient at baseline to 0.6 per patient post intervention. Medication Reconciliation Success Index (MRSI) increased by 32.2% and 51.3% at critical care admission and discharge respectively post implementation of the service. A total of 538 interventions related to reconciliation of medication were made, with 85.5% being graded as Eadon Grade 4 or above. Reliability analysis of 10 interventions yielded a Cronbach’s alpha of 0.897 (95% confidence interval 0.729, 0.971, p <0.001).

Conclusion
The introduction of pharmacist led medication reconciliation improves medication safety by identifying and correcting discrepancies, thus preventing Adverse Drug Events (ADEs). The number of pharmacist interventions related to medication reconciliation indicates that pharmacist involvement significantly improves patient care and indicates a potential need for extension of the role to include prescribing.

References:
35. Do commercially available triple chamber parenteral nutrition bags match estimated patient requirements?
Weston, Jennifer D (jennifer.weston@ouh.nhs.uk), Oxford University Hospitals NHS Trust, Oxford. Price-Davies, Rebecca, Cardiff University School of Pharmacy and Pharmaceutical Sciences, Cardiff. White, Rebecca J, Baxter Healthcare Limited, Newbury.

Background
Parenteral nutrition (PN) is used to support patients unable to absorb sufficient nutrients from their gastrointestinal tract. There is a trend towards the provision of more standardised formulations such as the use of commercially available triple chamber bags, due to reduced aseptic services capacity, and a need to lower costs and improve safety. However, the suitability of these triple chamber bags has not been established.

Objectives
The aim of this service evaluation was to compare estimated total energy, lipid energy, nitrogen, and fluid requirements of adult patients in a tertiary referral trust with commercially available triple chamber PN bags.

Method
University School of Pharmacy Ethics approval was obtained since this study was part of a postgraduate research programme. Following a pilot study, data for all adult patients commenced on PN were collected prospectively for a three month period and retrospectively for a six month period at the Oxford University Hospitals. Patients were excluded if they were established on home PN or had received a transplant. The data were obtained from electronic and paper patient records. A planned sample size of 200 patients was based on the approximate number of PN patients over a historical 12 month period. The estimated total energy, lipid energy, nitrogen, and fluid requirements for each patient were calculated using standard formulae, adjusted by dietitians, and compared with available triple chamber PN bags available in the UK (matched if within calculated range for nitrogen and lipid or 10% tolerance for fluid and energy)\(^1\). Nonparametric statistics were used where the data were skewed.

Results
The target sample size was met (n = 200, 56.5% male). The majority of the patients were surgical (62%) and most had type 1 intestinal failure (63% type 1 and 37% type 2). The mean patient age in years was similar for males and females (61.1 vs. 59.8), as was the median patient weight (67.3kg (IQR 24.5) v. 66.9kg (IQR 20.8)). Median estimated energy, fluid and nitrogen requirements differed by gender (for females total energy 1615kcal, lipid energy 486kcal, nitrogen 12.2g and fluid 1950mL; and for males total energy 2060kcal, lipid energy 603kcal, nitrogen 15.3g and fluid 2325mL). When compared with the available triple chamber PN bags, 3.5% of patients’ estimated needs were fully met by at least one PN bag, and this increased to 80% of patients’ estimated needs when lipid energy was excluded from the analysis.

Conclusions
The estimated total energy, lipid energy, nitrogen and fluid requirements of most adult patients were not found to be met by the available triple chamber PN bags. Whilst this study is limited by the inclusion of patients from a single centre, and by not assessing the electrolyte contents of the triple chamber products, the results suggest it is important to carefully assess how triple chamber PN bags are used locally.

References

36. Multi-compartment Compliance Aids – following the trust guidance or not?
Williams, K, Bury, H & Janvier. A Wirral University Teaching Hospital (WUTH) NHS Foundation Trust

This study did not require ethics approval

Introduction
Multi-compartment compliance aids (MCAs) can aid medicines adherence as they act as a visual reminder prompting patients to take medicines\(^1\) and are helpful for patients that have complicated medicines regimes. However, MCAs are often started without considering other alternatives available. Guidance published by The Royal Pharmaceutical Society (RPS)\(^2\) states that MCAs are not a panacea for all patients and that a robust assessment tool should be implemented by care providers.\(^3\) Wirral University Teaching Hospital (WUTH) has guidance available on the management of MCA’s for in-patients and includes an initiation assessment tool.

The aim of this audit is to ascertain if the trust is complying with the MCA guideline.

Objectives
- To ascertain the number of compliance aids initiated in hospital
- To determine the proportion of patients newly commenced on a MCA that had an assessment form completed
- To determine the amount of MCAs that are highlighted on the Electronic Prescribing System (EPS) upon admission (if applicable) and at discharge
- To assess the number of community pharmacies which are contacted at the point of admission and discharge
- To identify the percentage of the necessary MCA details that are being recorded on the (EPS)
- To determine the proportion of MCAs that are dispensed appropriately upon discharge.

Method
For a two week period in January 2015 all adult patients that had a MCA dispensed on discharge the previous day were identified using the WUTH’s prescription tracker MCA report. Each patients EPS record was reviewed to determine if a MCA was prescribed, community pharmacy details were documented and to establish if the patient’s community pharmacy were contacted on both admission and discharge.

Results
There were 109 patients included in the audit; seven patients had their MCA initiated in hospital during this admission and 107 patients were already using a MCA. Of the patients commenced on a MCA, zero had an assessment form completed. It was determined that 23% of MCA’s were prescribed on admission on the EPS and 66% prescribed upon discharge. It was ascertained that 88% of community pharmacies were contacted on admission and 39% on discharge. In 88% of cases the community pharmacy responsible for dispensing the MCA were stated on the EPS. However, the number of MCA’s at home and supplied at one time was detailed in 12% and 10% of cases respectively. It was also calculated that of all discharge prescriptions dispensed during this two week period, 5% were MCA’s.

Discussion & Conclusion
The results clearly indicate that WUTH does not comply with trust guidance\(^3\) as no assessments were carried out to evaluate the appropriateness of the MCA in each individual.
A limitation of this audit is that a retrospective analysis could not be carried out to determine the appropriateness of the seven patients initiated on a MCA prior to admission.

References

37. Assessing the safety of non-formulary medicines – a cross-sectional survey of pharmacists in England
Hallam Wiltshire, Deborah Layton, Jane Portlock, University of Portsmouth, Portsmouth;
Drug Safety Research Unit, Southampton

Background
A medicine formulary is a tool used to ensure standards of prescribing are uniform and of high quality, but may vary in a number of aspects such as the range of medicines included. Formulary exclusion does not prohibit use and prescribers may prescribe a medicine that is not listed within the formulary ('non-formulary') if clinically justified. In 2012 the European Union (EU) introduced new legislation regarding pharmacovigilance (PV), including expanding the definition of an Adverse Drug Reaction (ADR) to include medication error. [1] Lack of awareness of this new PV requirement, particularly use in clinical practice is limited such as for non-formulary medicines have the potential for sub-optimal PV. Three complementary studies were conducted to investigate knowledge of pharmacists’ medicines PV regulation, of which one focused on PV aspects of non-formulary medicines.

Objectives
To describe the evidence documented by prescribers to support a suspected clinical diagnosis of bacterial infection before prescribing an antibacterial.

Results
57 questionnaires were returned, primarily from hospital (n=34; 59.6%) and community (n=14, 24.6%) sectors. Pharmacists showed basic PV knowledge but only 14.0% (n=8) displayed working knowledge of the new ADR definition. Processes regarding non-formulary medicines supply and PV were reported for 54.4% (n=31), and knowledge of circumstances when non-formulary medicines were considered appropriate reported for 75.4% (n=43). However, where a response was provided (n=42), the majority (n=23, 53.5%) believed non-formulary medicines did not require additional PV surveillance compared to other licensed medicines. Where reasons were specified (n=18), most believed that non-formulary medicines were generally licensed products approved by the regulators and that no further surveillance would be required; n=9 reported that additional PV was only undertaken on the instruction of the relevant formulary committee.

Conclusions
This study shows pharmacists have a basic overview of what PV entails, but that they are not up to date with the latest legislation. Non-formulary medicines were shown to have supply and monitoring procedures which are similar through many hospitals, but there were marked differences when it comes to monitoring safety. A recurring theme through responses in all sections was the concerning belief that licensed medicines were shown to have supply and monitoring procedures which are similar through many hospitals, but there were marked differences when it comes to monitoring safety. A recurring theme through responses in all sections was the concerning belief that licensed medicines are unequivocally safe. Future work should use a larger, broader sample utilising more quantitative questioning to discover the extent that these processes take place.

References

BPSA Conference 2015 Winning Poster

38. How often is evidence of infection documented when starting antimicrobials?
Yasmeen S, Pankhania A, Wickens H, University Hospital Southampton NHS Foundation Trust

Introduction
The overuse and incorrect use of antibacterials has been associated with a rise in antimicrobial resistant infections, annually claiming 25,000 lives across Europe. According to the Department of Health guidance ‘Start Smart then Focus’, we have a duty of care to ensure antibacterials are only prescribed where there is clinical evidence of bacterial infection and that a review/stop date should be documented. However, prescribers can be reluctant to stop antibacterials once started, even in the absence of evidence of infection; this can lead to selection pressure for resistance and increases the risk of adverse drug events.

Aim
To describe the evidence documented by prescribers to support a suspected clinical diagnosis of bacterial infection before prescribing an antibiotic.

Objectives
To measure performance against the following standards at the point of prescribing:
1. 100% of patients prescribed an antibacterial to have at least one clinical reason documented in support of suspected bacterial infection
2. 100% of patients prescribed an antibacterial to have an indication documented
3. 100% of patients prescribed an antibacterial to have a review/stop date documented

Method
A prospective review of medical notes and laboratory results via eQuest (electronic system) was undertaken for all patients initiated on antibacterials over a 2 week period in December 2014. ECDC (European Centre for Disease Prevention and Control) guidance was used to define objective criteria to be documented before initiating antibacterials. Patients were identified on 5 medical wards using the electronic prescribing system. For each
patient, the medical notes and eQuest were examined to determine at the point of prescribing: documented indication; documented stop/review dates; and clinical evidence of infection (systemic/peripheral signs or symptoms; temperature >38ºC; white cell count >11x10^9/L; neutrophils >7.5x10^9/L; CRP >8mg/L; positive microbiological cultures; and imaging tests). Ethics committee approval was not required.

Results

45 patients on 5 medical wards were initiated on antibacterials in the 2 week period. Of these, 41/45 (91%) patients had at least one clinical reason documented in the case notes and electronic records (Fig.1). 80% of patients had an indication documented. Of the 45 patients reviewed, only 49% of patients had a documented stop/review date.

Discussion and conclusion

Documentation was generally better on admissions wards, which may be due to the use of an Admissions Proforma prompting completeness of documentation of a number of indicators on admission. The lack of documented evidence of infection in some cases suggests that communication between healthcare team members may be suboptimal in up to 20% of cases. Findings from this study advocate the use of a template for documenting evidence of bacterial infection such as an ‘Antimicrobial Stewardship’ sticker to be filled out at the point of prescribing.

References


Regional Pre-Registration Pharmacists Project Winners 2015

Tomisin Adedipe; Hayley Wickens. University Hospital Southampton NHS Foundation Trust, Southampton

Background

Meropenem is a carbapenem antibiotic with broad spectrum activity used ‘last-line’ for multi-drug resistant infections. In 2013, 36/39 European countries reported cases of carbapenemase-producing Enterobacteriaceae (CPE), with numbers increasing year on year. In 2014, three cases of CPE were reported at University Hospital Southampton. This has led to increased focus on appropriate meropenem prescribing, as all use confers resistance.

In January 2014, the pharmacy department started to circulate daily (Mon-Fri) meropenem reports (DMRs) to the consultant medical microbiologists (CMMs). These reports listed all patients prescribed meropenem on the e-prescribing system.

Objectives: To measure the impact (if any) of circulating DMRs to CMMs on:
- Total issues of meropenem,
- Length of meropenem courses,
- Documentation of microbiology plan in e-notes/paper notes.

Methods

1. The number of dispensed doses of meropenem were compared before and after starting to circulate DMRs (Jan-Apr 2013 v. Jan-Apr 2014).
2. All patients included in a DMR (Jan-Apr 2014) were reviewed (n=304, receiving 358 meropenem courses) for: course length, whether meropenem was discontinued within 48h of initiation, and evidence of microbiology input in e-notes.
3. For the 90 meropenem courses with an e-notes entry by a CMM, we assessed whether their plan was followed.
4. A subset of patients (n=49), sampled by taking DMRs for the first 5 working days (Mon-Fri) of each month, had their paper notes reviewed to check for documentation of microbiology plan.

This service evaluation did not require ethics approval.

Results

1. From January-April 2014, 5503 defined daily doses (DDDs) were prescribed (1053 courses). DDD in the comparable period in 2013 was 6107 (956 courses).
2. In January 2014, 26% (n=99) of courses were stopped within 48 hours. This percentage increased every month to 38% (n=86) by April 2014.
3. 97% (n=75) of CMM plan was followed.
4. For courses >7 days, documented justification in e-notes was 83% in January (n=12) and 100% in February (n=9), March (n=18), and April (n=7). In paper notes, this was 100% in January (n=1), 50% in February (n=2) and 66% in March (n=6).
Conclusions
Despite the increase in number of meropenem prescriptions, DDD has decreased: more patients were on shorter courses (<48 hours) and this proportion increased as the intervention progressed. CMMs e-documentation authorising prescriptions for patients receiving meropenem for >7 days increased. In patients on meropenem for >7 days, the intervention facilitated specialist involvement in appropriate use of meropenem through documentation in e-notes.
Through the dissemination of DMRs, the pharmacy department has been proactive in supporting effective, safe and sustainable treatment of patients with ‘last line’ antibiotics.

References

B. An Audit of Calcium Level Monitoring associated with Denosumab Treatment for Osteoporosis
Muhammad Ali and Ritti Desai (ritti.desai@kingstonhospital.nhs.uk), Kingston Hospital NHS Foundation Trust, Kingston-Upon-Thames

Background
Denosumab 60mg is administered subcutaneously every 6 months to treat osteoporosis. In response to reports of fatal hypocalcaemia associated with denosumab treatment, the Medicines and Healthcare Products Regulatory Agency (MHRA) recommend checking calcium levels prior to administering a dose of denosumab, and two weeks post dose if the patient has risk factors for hypocalcaemia (e.g. renal impairment). There are currently no guidelines in place, at Kingston Hospital, to ensure the safe administration of denosumab.

Objectives
To determine adherence to the following standards:
1. 100% of patient’s prescribed denosumab have an adjusted calcium level taken no longer than 24 hours before denosumab is administered.
2. 100% of patient’s prescribed denosumab have an adjusted calcium level higher than 2.2mmol/L 24 hours prior to a dose being administered.
3. 100% of patients with an estimated glomerular filtration rate (eGFR) less than 30ml/min/1.73m² (measured no longer than 72 hours prior to administration) have a repeat adjusted calcium level taken within 2 weeks of denosumab administration.

Method
This audit did not require ethics approval. A data collection form was piloted and amended accordingly. All patients prescribed denosumab 60mg for osteoporosis between 1/8/14 and 29/1/15 were included (56 patients). The pharmacy dispensing system was used to highlight patients supplied denosumab. Date of denosumab administration and clinical indication, were identified using patient notes and drug charts. Adjusted calcium levels and eGFR values were found using the Trust’s electronic pathology reporting system. The date laboratory results were available was compared to the date of denosumab administration. Data was collected at various points up until 30/1/15. When corrected calcium levels were unavailable 24 hours prior to administration, this was considered as a failure to meet standard 2. Moreover, standard 3 would be deemed unmet if eGFR was not measured 72 hours prior to denosumab administration.

Results
3.6% (2/56) of patients prescribed denosumab, for osteoporosis, had corrected calcium levels taken within 24 hours of denosumab administration. These patients were not hypocalcaemic; hence standard 2 was also met in 3.6% of patients. 7.1% (4/56) of patients had an eGFR level taken within 72 hours prior to denosumab administration. These patients did not have renal impairment, thus did not require additional calcium level monitoring. Because eGFR levels were unavailable within 72 hours prior to denosumab administration for the remaining patients, adherence to standard 3 could not be determined.

Conclusions
None of the standards relating to the safe administration of denosumab were met. Significant changes to practice have been implemented to ensure patient safety. A re-audit will be carried out to ensure that the standards are being met. This audit only observed patients receiving denosumab 60mg for osteoporosis as other strengths and indications are rarely used at Kingston Hospital. Recommendations made after this audit should be adapted to all denosumab treatments to minimise the risk of hypocalcaemia.

References

C. A Clinical Audit of the Documentation of Medicines Reconciliation on Admission
Heather Axford (heather.axford@nhs.net) Leeds and York Partnership NHS Foundation Trust (LYPFT), York

This study did not require ethics approval

Background
Medicines reconciliation is the process of ensuring medication prescribed on admission accurately reflects the patient’s medication history with consideration of clinical presentation and adherence. Nationally, there is reported to be a 30-70% variation in this. National guidance for medicines reconciliation was published by the National Institute for Health and Clinical Excellence (NICE) in 2007 to target this high rate of medication related errors on admission. This guidance and an implementation guide from the National Prescribing Centre (NPC) set out the requirements for trusts’ own policies for standardising the collection and documentation of the required information.

Objectives
To assess compliance to both National standards and LYPFT’s policy for completion and documentation of medicines reconciliation on admission using the LYPFT ‘Medicines Reconciliation on Admission’ pro-forma; to be completed for all patients. Forms will be assessed against required criteria
and the information sources used will be quantified and documented, with particular reference to the service user as a source. Reasons for non-compliance will be discussed to recommend improvements to the process.

Method
The LYPFT medicines reconciliation forms were sourced for all current inpatients admitted between 01/09/14 and w/c 20/10/14 at Bootham Park Hospital Ward 1, Ward 2 and Ward 6 (EAU), Peppermill Court, Meadowfields and for those under the care of the Intensive Home Treatment Team (IHTT). Where available, they were checked against a data collection tool outlining the required criteria.

Results
49% of included patients had forms available for assessment. These were generally well completed except for in a few specific areas; the formulation of medicines was documented on 18.52% (n=27) of forms, the nature of the allergy in only 31.25% (n=16) of cases and the administration of medicines (self/carer) only once (3.33%). Compliance to the national standard for two sources to be used to confirm medication history was poor at 33.33% and the patient was documented as a source in only 10%.

Conclusion
Across the included sites, it appears the process does not meet the standards. It is likely that this outcome is due to poor documentation rather than the completion itself. The results concluded that service users were rarely used, or documented, as information sources. This is likely to have contributed to the poor compliance to documentation of adherence, administration aids and the nature of allergies. A key recommendation is therefore that service users should always be spoken to and where not possible, there should be a documented reason and a carer/relative used in place. Educational sessions will be offered to improve confidence of staff in approaching mental health inpatients to discuss medication. Improvements to follow up of incomplete med recs and communication of discrepancies must also be made.

References

D. Recording of Descriptions of Penicillin Drug Allergy on the Electronic Prescribing Program JAC
Emily Bishop & Debora Gamble, Chesterfield Royal Hospital, Chesterfield.

Background
Penicillin allergy is the most common type of drug allergy with approximately 10% of the population claiming to have a penicillin allergy. However, when investigated, only 1% of the population have a true penicillin allergy, therefore penicillin allergy could be excluded in 9% of the population. Patients who fall into this 9% could be denied the best treatment for their infection and the use of alternatives could promote bacterial resistance. In order to achieve this, the recording of the nature of a penicillin allergy is of great importance to determine if someone has a true allergy. NICE have recently released guidance on this issue and they recommend that the signs, symptoms and severity of the reaction should always be documented on a prescription. This recommendation is also in line with the Chesterfield Royal Hospital (CRH) Medicines Management Policy that states that drug allergy status should be determined for each patient before medicines are prescribed.

Objective
The objective of the audit is to assess whether CRH meets the following standard, adapted from NICE guidance: 100% of all inpatients with a penicillin allergy should have an accurate description of their allergy on the JAC electronic prescribing system.

Method
S3 penicillin allergic patients were selected from a variety of wards. The accuracy of the recorded allergy description was established by checking in the medical notes, the Summary Care Record (SCR) and also asking the patient. If there was a discrepancy between the description of the allergy on JAC and one of the other sources then the allergy as described by the patient was deemed to be the most correct. This study did not require ethics approval.

Results
Of results collects, 51% had an accurate description of the allergy recorded on JAC, 41.5% had no description and 7.5% had an incorrect description. Therefore the standard was not met. The percentage of patients with an accurate description of their allergy from each information source was also looked at. In 74% of cases the patient was able to inform on the symptoms of their allergic reaction. In 32% of cases this information was found in the notes and 30% the information was on the SCR.

Conclusions
In conclusion many patients with a penicillin allergy do not have an accurate description of the symptoms of their allergic reaction on JAC. This may be due to the user having to select from the pre-determined list of descriptions. It was also identified that there were discrepancies between the different information sources. This is inconsistent with NICE guidance which states that information regarding allergy status should be shared between healthcare providers. In some cases the patient or other sources could be used to reconcile this information onto the JAC program. This could ensure that the most appropriate antibiotic is used to treat an infection in the patient and it could help minimise the development of bacterial resistance. A key recommendation is for pharmacists and technicians to include recording the description as a part of the medicines reconciliation process.

References
E. The Timely Review of Intravenous Antibiotics and the Appropriate use of Cultures
Gemma Bray [Gemma.Bray@ydh.nhs.uk], Yeovil District Hospital, Yeovil, Jonathan Urch, North Bristol NHS Trust (NBT), Bristol

Background
The prevalence of antimicrobial resistance has increased rapidly and it is vital that action be taken to reduce its emergence and spread. “Start smart - then focus” (SSTF)\(^1\) contains guidance for antimicrobial stewardship in hospitals within England. One of the “Start Smart” recommendations is to obtain appropriate specimens for Microscopy, Culture and Sensitivity (MC&S) testing wherever possible. One of the “then focus” recommendations is to review the continuing need for antibiotics by 48 hours and make a clear plan of action. The guidance states that this review and subsequent decision should be clearly documented in the medical notes.

Objectives
1. To identify whether intravenous antibiotics (IVABs) are reviewed within 48 hours of being prescribed at North Bristol NHS Trust (NBT)
2. To assess whether appropriate specimens are sent for MC&S testing at NBT
3. To assess whether the results of MC&S testing are being acted on at NBT

Method
Data was collected during January 2015. Patients prescribed IVABs were identified by reviewing prescription charts on the acute assessment unit at NBT. Patients were then followed up 48 hours after prescribing and medical notes were used to assess whether the prescribed IVAB had been reviewed. The ICE clinical database was used to determine whether appropriate specimens had been collected for MC&S testing. Medical notes were reviewed at least 48 hours after issuing of the MC&S report to establish whether MC&S results had been acted on. The study did not require ethics approval.

Results
A total of 63 patients prescribed IVABs were identified. Nine patients were excluded as they were discharged or deceased by the 48 hour point. Hence 54 patients have been included. IVABs were reviewed within 48 hours in 89% (n=48) of cases and appropriate specimens were collected for MC&S testing in 78% (n=42) of cases. Of the 42 patients that had specimens sent for MC&S testing, 4 were excluded as they were discharged before the MC&S report was issued. Hence 38 patients were included. The results of MC&S testing were acted upon in 76% (n=29) of cases.

Conclusions
The SSTF guidance is not being fully adhered to within NBT. It was unclear whether this was due to a lack of action or a lack of proper documentation. Failure to collect samples for MC&S testing may be explained by the fact that it may have been impractical to collect samples in some patients. Clinician and pharmacist education surrounding the SSTF guidance should be improved. The importance of adequate documentation should be reiterated to clinicians. Alterations to the inpatient prescription chart should also be considered. Limitations of the audit include the small sample size and the publication of updated SSTF guidance\(^2\) which now recommends review 48 – 72 hours after prescribing.

References

F. An Audit to Determine the Quality of IVig Prescribing and Management at CUH
Cook H (harrietcook@live.co.uk), Non-resident Pharmacist and de Monteverde-Robb D, Lead IVIg Pharmacist, Cambridge University Hospitals (CUH Trust)

Background
Quality management of IVIg is essential due to high expense and limited availability to the NHS. The average cost for a course is nearly £5000 per patient. The Department of Health recognised the importance of quality IVIg management and developed an initiative to secure the UK’s supply of IVIg and ensure that an evidence-based approach guides prescribing. This initiative includes the release of a ‘Demand Management Plan...’\(^{[1]}\) and ‘Clinical Guidelines for Immunoglobulin Use.’\(^{[2]}\) These guidelines outline the indications for which IVIg may be used and categorise them according to the evidence base. They also outline that all patients receiving IVIg should be recorded on the national IVIG database. Trust policy\(^{[3]}\) outlines that, where appropriate, all IVIg prescriptions should be dosed using a calculated dose determining weight (DDW.) This adjusted dosing allows for lower doses of IVIg to be used (especially in obese patients) without a loss of efficacy.

Objectives
1. To measure compliance to the Trust’s policy on IVIg prescribing
2. To measure the quality of compliance to the Trust’s policy on IVIg prescribing after the introduction of e-Hospital system (EPIC)

Method
A list of patients prescribed IVIg within the data collection period (25th October 2014 - 25th January 2015) was generated. A sample of 122 patients was used (285 treatment episodes.) A data collection form was used to collect data from EPIC, the IVIg database and Trust request forms. Exclusions for the study included patients receiving IgM-enriched IVIg (Pentaglobin) for neonatal sepsis, IVIg use outside the audit period and subcutaneous IVIg therapy.

This study did not require ethics approval.

Results
Overall, IVIg prescriptions were reserved for appropriate patients. 100% of prescriptions for IVIg were for an approved indication. In addition, 99% of prescriptions were in line with Trust Formulary. However, discrepancies between these indications and those recorded on the database suggest these results may be falsely positive. There were also promising results for administration standards; 92% of IVIg treatments were administered in their prescribed sequence and a batch number was recorded in 94% of administrations. In terms of dosing; only 16% of prescriptions were correctly dosed using DDW. A limitation of this result is that the DDW and IBW were unable to be calculated for 55% of prescriptions as no patient height had been recorded.

The key area for improvement is ensuring funding. According to national guidelines, it is essential that all patients who receive IVIg have correct records on the national database. However, only 81% of patients were linked to the database; 59% had a correct indication and 49% a correct dose
recoded. Not adhering to these guidelines puts the Trust at risk of not being reimbursed for IVIg. In addition, 0% of prescriptions for ‘grey’ indications had funding in place.

References

G. The Prevalence and Cost Implications of Redundant Antibiotic Combinations
Richard Cowan [richard.cowan@nth.nhs.uk], Rebecca Keenan, Dr Rashmi Dube, Jane Robson,
University Hospital of North Tees, Stockton-on-Tees

This study did not require ethics approval

Background
Inappropriate use of antibiotics is a common issue contributing to antimicrobial resistance1, increased risk of hospital acquired infections, exposure to unnecessary drug-related adverse effects and increased healthcare costs2. The Department of Health recommends an antimicrobial stewardship programme3 should be in place to ensure prudent prescribing of antibiotics by selecting an appropriate agent at optimal dose and duration. However some clinicians prescribe antibiotic combinations with overlapping spectra of antimicrobial activity known as "redundant" combinations. Focusing on reducing redundant antibiotic combinations and the overuse of antimicrobials is one of the most promising areas in reducing antimicrobial resistance and healthcare costs.

Objectives
1. Highlight the prevalence and cost implications of redundant antibiotic prescribing.
2. Provide recommendations for improvement.

Methods
A prospective kardex audit was conducted on eleven wards. To prevent bias, all antibiotic combinations were recorded using the audit proforma. Data were collected for 100 patients. Combinations were discussed with a consultant microbiologist and specialist antibiotic pharmacist to assess for redundancy. Costs were calculated using the Trust cost price of individual oral and IV antibiotics per day, including VAT.

Results
27% of patients were prescribed redundant antibiotic combinations. Metronidazole and broad spectrum antibiotics were the most frequently prescribed redundant combinations (33%). Clarithromycin and levofloxacin was the second most frequently prescribed combination (30%). However this regime was included within the trust guidelines for treatment of community acquired pneumonia in penicillin allergic patients. This result can therefore be regarded as permissible. These guidelines have since been reviewed.

The cost of redundant IV therapy over a presumed seven day course length amounted to £671.15 and oral therapy £36.26. This did not take into account IV-to-oral switch, administration equipment, consumables and nursing time.

Conclusion
We have determined the prevalence of redundant antibiotic prescribing and the cost implications to the trust. Recommendations consistent with those provided in the antibiotic stewardship guidelines were proposed. A Cochrane review on methods of intervention with regards to antibiotic prescribing were also considered when providing recommendations4,5. An inexpensive intervention involves the use of "antibiotic review" stickers, which can be placed within the medical notes as a reminder to review antibiotics that may have been overlooked3. Altering the current kardex by including a separate antibiotic section or a separate kardex altogether solely for antibiotics will provide a clearer record of patients’ antibiotic therapy and highlight areas for review4. A regular cycle of audit, feedback and education would prove advantageous to all prescribers. Regular auditing can enable timely feedback and isolate areas for improvement, providing an opportunity to educate clinical staff who may not have implemented best practice3.

References
H. Review of current chemotherapy supply and assessment of the impact of dose banding

Emily Flanagan, Supervisors Alex Davies, John Landers and Jennifer Silverthorne,
Salford Royal NHS Foundation Trust (SRFT), Salford

This study did not require ethics approval

Introduction
Recent guidance published by NHS England has identified the potential benefits of implementing a national strategy for chemotherapy dose banding. From this the Chemotherapy Clinical Reference Group (CNG) predicts efficiency improvements and cost reduction. They have agreed on two dose banding tables, currently used by the Merseyside Cancer Network, for implementation. This project will focus on assessing the R-CHOP (rituximab, cyclophosphamide, doxorubicin, vincristine and prednisolone) dose banding table for a teaching hospital. R-CHOP is a six-cycled chemotherapy regime used principally for the treatment of Diffuse Large-B-Cell Lymphoma.

Aim:
- To evaluate whether the implementation of the Merseyside dose banding table would be financially and clinically beneficial

Objectives
- To determine if the Merseyside dose banding table would allow more products to be dispensed as opposed to preparation of individual doses
- To compare the percentage variance in dose prescribed from the exact calculation to The Trust’s current practice and the Merseyside dose banding table
- To calculate if the Merseyside dose banding table is cost-effective compared with current practice

Method
The study included the cycle of any patients who had R-CHOP over a set six month period, and excluded patients with dose reductions for clinical reasons. A data collection form to fulfil the aim and objectives of the project was used. The aseptic, dispensing and drug costs used derive the overall cost. Data analysis was performed using Microsoft excel and findings reported using simple descriptive statistics.

Results
Over the six month period, 67 R-CHOP cycles were included. Through current dose rounding practice, 99 less products have been aseptically made than if the exact dose had been used. Had the Merseyside dose banding table been used, a further six products could have been dispensed instead of being aseptically made.

The mean percentage variance from the original calculated dose with dose rounding is 2.82% and with dose banding would have been 2.86%. The number of doses with a percentage difference greater than 5% for dose rounding was 25 and for dose banding was 28. The total number of doses with a variance greater than 7.5% for dose rounding was 12 and dose banding was 9. The largest variance for the dose-rounding method was 15%, for the dose banding method this was 10%.

Using the original calculation the R-CHOP regime over the six month period would have cost £95,075.43. Using dose rounding the regime cost £89,823.89. Dose banding would have cost £87,338.86.

Conclusion
Overall the Merseyside dose banding system showed that financial savings could be made, along with a slight increase in aseptic capacity and efficiency. No large increase in percentage variance of dose using the Merseyside table was shown and therefore no additional risk for the patient.

The next step for this project could be trialling the implementation of the dose banding table complemented with an audit to assess the cost savings made, and any difficulties in its enactment.

Reference

I. Audit of medication storage at Cwm Taf UHB

Adnan Higgi (+Julie Davie, Rachel Owens and Peter Baker), Prince Charles Hospital, Gurnos, Merthyr Tydfil

Background
Incidents such as the Stepping Hill Hospital in 2012 highlighted how tampering with medication can be potentially fatal to patients. The trusted to care report focusing deficiencies in medication storage in welsh hospitals. These failing provide a potential for serious patient harm. As a result a medicine safety audit was conducted by the local Health Board to assess the compliance of its wards, outpatient department and theatres to the medicines storage procedure at two of its hospitals.

Aims
The aim was to assess the compliance to the local medicines storage procedure at all patient access areas within two hospitals within the Health Board.

Objectives
Evaluate medication stored within the hospitals against the local storage procedure
Highlight any areas of deficiency within the Health Board in the storage of medicines.

Criteria / acceptance standard
The audit standards were designed in line with the local medicine storage procedure:
- All medicinal products are stored in a locked cupboard, trolley or an appropriate area with restriction to access
- Keys for restricted access areas, medicines cupboards, trolleys, refrigerators and freezers are kept on the person of an appropriate registered health care professional.
- Keys for controlled drug cupboards are kept in the possession of a registered health care professional and kept separately from all other keys.
- Medicines requiring storage between 2-8°C are kept in a locked, well maintained refrigerator, that is hard wired and has up to date compliant records of daily minimum and maximum temperature monitoring.
- Products not for ingestion e.g. Products for external use, disinfectants, reagents, are stored separately from medicines for internal use.
- Medicines must be stored safely and appropriately. (i.e. No loose ampoules, tablets, stored within original containers etc)
- Fluids must be stored separately within locked restricted access areas.
Methodology
All areas were audited at both hospitals between 24/11/14 and 11/12/14 using a data collection form designed to incorporate the seven audit standards. An initial data collection form was drafted and then piloted on a medical admission ward at one hospital. The layout for this data collection sheet was improved to simplify data collection. After all data was collected it was divided into directorates (i.e. medical) and a percentage compliance to each of the seven standards calculated.

Results
The audit revealed that no ward, outpatient department or theatre was complaint (100%) to all seven standards.

Conclusion
The audit reveals many areas within both hospitals which do not comply with the local medicine storage procedure. No standard achieved 100% across any directorate highlighting major areas of non-compliance. Greater staff training in regard to the medicines storage procedure and regular auditing to monitor could help to improve compliance. Additionally conducting research into potential barriers to storing medication safely could help resolve fundamental issues to safe storage.

References

J. Audit investigating the compliance of safety initiatives in paediatric intensive care
Monisha Sahni, K (monisha_sahni@outlook.com), and Rhian Isaac, Birmingham Children’s Hospital NHS Foundation Trust

Background
Paediatric Intensive Care (PIC) is a clinical area where high risk medicines are used in critically ill children with medication related incidents frequently reported. As part of the safety strategy 2014, the PIC Safety Team introduced medication safety initiatives to minimise medication errors. Three of these formed the audit standards.

Objective
To audit compliance with the three safety initiatives and feedback results to the PIC Safety Team. Audit standards:
1. 100% of prescriptions clinically screened by a pharmacist before doses are given
2. 100% of prescriptions have a specified administration time
3. 100% of infusion pumps are using the dosing units only or drug library mode (i.e. pump displaying units/kg/time and ml/hour)

Method
Data from 50 randomly selected patients were collected. Data collected from charts and pumps included drug details, whether drugs were screened prior to dose administration, drugs prescribed without a time and whether smart pumps displayed dosing units or drug library mode. A pilot study was conducted to ensure appropriate data collection. Final data collection, by a single observer, occurred over three weeks at a single time daily. This study did not require ethics approval.

Results
Fifty charts contained 602 prescriptions. Of the 50 patients included, 37 were receiving continuous infusions, requiring 66 smart pumps.
Standard 1: Of the prescriptions 41% (247/602) were clinically screened by a pharmacist before doses were given. Of the 355 prescriptions not clinically screened, 65% (230/355) were once-only medicines for immediate administration e.g. peri-intubation.
Standard 2: A specified time for administration was indicated for 93% (558/602) of prescriptions. Of the 44 prescriptions with no specified time 34% (15) were time critical medicines.
Standard 3: The correct mode, i.e. dosing units only or the drug library was being used for 95% (63/66) of smart pumps.

Conclusions
Firstly, increasing pharmacist time on the PIC unit may assist with clinical screening prior to administration. This could include a weekend service. Secondly, it is important to make new prescribers to PIC aware of the mandate to specify prescribing times. This should be added to new doctors’ introduction and the prescribing assessment given to trust prescribers. Thirdly, an increase in continuous infusions with predefined dosing rules in the drug library should be prioritised. A guide to remind staff on using the different modes and the advantages should be introduced. Results of this audit should be shared with the PIC staffing group and the initiatives re-audited.

Furthermore this audit provides a baseline to see if e-prescribing can improve compliance with safety initiatives on the PIC unit. Auditing of the safety initiatives highlights where the PIC Safety Team needs to concentrate further staff training to ensure compliance.

References
Background
An integral part of medicines reconciliation (MR) is ensuring an accurate drug history (DH) is compiled. Pharmacist involvement has reduced medication errors and discrepancies. Pharmacy-led MR is integral in ensuring patients’ medicines are managed appropriately, a 2010 audit demonstrated over 8600 patients had at least one wrong dose or omitted drug after admission.

There is a concern that Buckinghamshire Healthcare NHS Trust is not meeting the Trust target for MR started within 24 hours. Currently, pharmacy-led MR is available between 9:00am and 5:00pm on weekdays and a limited service between 10:00am and 4:00pm on weekends.

Objectives
- To measure the percentage of MRs started within 24 hours of admission. (Standard 80%)
- To measure the percentage of patients that have had a MR during their admission. (Standard 100%)
- To measure the percentage of DHs that use two or more sources. (Standard 90%)
- To measure the percentage of charts which have the date, time and signature of when the MR is started and completed. (Standard 100%)
- To determine whether unintentional changes to inpatient medication are resolved within 72 hours of admission (except where patients are admitted on Fridays, these should be resolved within 96 hours). (Standard 100%)

Method
A list of adult patients discharged from Stoke Mandeville and Wycombe hospital during a 7 day period in October 2014 was obtained and a random sample of 200 patients taken. Scanned drug charts were audited against the audit criteria. Exclusion criteria involved patients on wards without pharmacist cover and those without a scanned drug chart. This study did not require ethics approval.

Results
None of the standards was met. Out of 200 patients, 81.0% had a MR started during admission of these 55.0% were started within 24 hours, and 71.0% were completed. Of the 162 DHs, 64.8% used more than 2 sources. Percentages for completing the date, time and signature of MR when started were 61.1%, 55.6%, and 77.8% respectively and 69.7%, 65.5% and 70.4% for MR when finished. Out of 60 unresolved discrepancies, 46.7% were resolved within the timeframe.

Conclusions
The audit revealed that the Trust is currently not meeting any of the standards for MR. In conclusion, to improve the practice of medicines reconciliation, staff should have training sessions on chart completion. The Trust should consider redesigning the MR page of the drug chart and allowing MMTs to write directly on the drug chart. The pharmacy-led MR service delivery should be redesigned by utilising a better skill mix, including training more MMTs, focusing on areas with higher turnover and extending the current hours of the service. The implementation of summary care records may increase the accessibility of a DH source. A re-audit should be carried out to measure the effectiveness of the recommendations.

References