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Background
For patients with limited life expectancy – typically surviving for less than one year – polypharmacy is common as medication is prescribed to manage acute symptoms associated with the life limiting illness (e.g. cancer) and to treat or prevent other long-term conditions (e.g. cardiovascular disease). This polypharmacy is linked with an increased risk of developing drug-related toxicity due to drug-drug or drug-disease interactions. This risk is exacerbated in patients with limited life expectancy owing to likely dynamic pharmacokinetic and pharmacodynamic parameters (e.g. changing volume of distribution or altered drug excretion secondary to declining renal/hepatic function). In view of the potential for polypharmacy to cause harm amongst this patient group, it is essential to optimise all medication to align with therapeutic goals and life expectancy. To date, however, evidence suggests inappropriate medication continues to be prescribed to patients with limited life expectancy.

Objectives
The objectives of this work were to:
1. Assess the prevalence of inappropriate medication use in patients attending a day care centre in a specialist palliative care unit; and,
2. Identify and assess any potential drug-drug interactions.

Methods
This was a prospective study that gathered data from December 2012 until February 2013. The medication histories for patients attending a day care centre within a specialist palliative care unit were assessed along with their medical history. Medication was assessed for appropriateness using the conceptual framework described by Holmes and colleagues [1]. The following factors were considered when deciding on medication appropriateness: remaining life expectancy, time until benefit of the treatment, goals of care and treatment targets. Consensus was reached via Delphi methodology using a range of clinical pharmacists and consultants experienced in palliative medicine. Drug interactions were identified and assessed according to significance using the drug interaction recognition software, Proscript®. Drug interactions identified as significant were further sub-classified as moderate or severe based upon the potential to cause harm or hospitalisation, if they were reversible or irreversible and, finally, if any treatment would be required to manage the drug interaction. This work was registered as an audit with the Trust and thus ethics approval was not required.

Results
A total of 66 patients were assessed during the study period, 62 had cancer, 1 congestive heart failure, 2 severe chronic obstructive pulmonary disease and 1 Parkinson’s disease. In total, the number of medications taken was 715 (mean per patient, 11; range 1 to 21). Using the conceptual framework as a guide, from the 715 medicines assessed, 101 (15%) were considered to be inappropriate given the patients’ limited life expectancy. Out of the 66 patients assessed, 44 (67%) were taking at least one inappropriate medication. The most common medication considered inappropriate were the statins, prescribed in 16 patients (24%). Other common inappropriate medications were aspirin in 11 patients (17%), calcium supplements in 10 patients (15%) and ACE inhibitors in 10 patients (15%).

The drug interaction recognition software identified a total of 104 potential drug interactions occurring in 39 patients (59%): 54 were considered non-significant, while 50 were classified as significant. Among those identified as significant, 43 were considered moderate and 7 severe. In our study, discontinuing inappropriate medicine would prevent 22 non-significant, 12 moderate and 4 severe potential drug interactions. Among patients identified as having a potential drug interaction, discontinuing inappropriate medication would prevent at least one potential drug interaction in 18 patients (46%). The most frequent major potential drug interaction that could be prevented by discontinuing inappropriate medication was between simvastatin (> 40 mg OD) and amiodipine, a well-defined interaction, which increases the risk of myopathy; this was identified in three patients. Another major potential interaction that could be prevented was identified between haloperidol and quinine sulphate, an interaction that increases the risk of developing torsade de pointes – a serious ventricular tachycardia.

Discussion
Our results show that the majority of people accessing the day care centre are using many inappropriate medications in view of their life limiting illness. These inappropriate medications contribute to potential drug interactions and thereby increase the risk of patients developing drug-related toxicity. Our findings concur with the literature and build upon our previous work that showed patients with advanced lung cancer take many inappropriate medications – some of which can potentially interact with chemotherapy potentially causing negative outcomes for patients [2]

In view of these findings, there is potential for pharmacists to become involved in the review of patients with limited life expectancy to manage inappropriate medication. However, unlike discontinuing medicines in elderly patients – where the STOPP-START [3] and Beers criteria [4] can be used – there is a lack of guidance for discontinuing inappropriate medication in patients with limited life expectancy. The framework used in this study is highly conceptual and does not necessarily help as a working tool in the clinical environment. Further guidance is required to assist clinicians in decision-making around discontinuing inappropriate medication in patients with limited life expectancy.

Conclusions
Patients who accessed the day care centre take many inappropriate medications in view of their limited life expectancy. These medications increase the pill burden for the patient and the possibility of developing a drug related toxicity. These patients should have their medications reviewed in the context of their original therapeutic goals taking into account their life-limiting diagnosis.

References
Introduction
The quality management of pharmacy trainees such as pre-registration trainee pharmacists (PRP) and technicians (PRPT) and more recently foundation pharmacists has been part of the annual Kent Surrey and Sussex (KSS) Pharmacy Deanery Contract Review since 2010. This process aims both to audit and develop NHS Trusts’ capacity for education management. Each pharmacy department must produce a i) Quality Manual (QM) showing how the department complies with national and regional statutory and regulatory requirements, including those of KSS Pharmacy, General Pharmaceutical Council (GPhC) and Awarding Bodies; ii) Annual Audit and Review (AAR) of education and training arrangements by the Local Faculty Groups (LFG). These groups focus on infrastructure of practice, monitor the progress of each trainee group and ensure good systems and processes are in place. LFGs report into a Local Academic Board thereby ensuring a system of Education Governance within the organisation.

The Contract Review (CR) process involves a verification visit to verify and sign off the QM. followed by the multiprofessional CR meeting to discuss the verification visit results, the previous years Action Plan and the AAR of which the Trust Chief Executive is present. Recently it was agreed by KSS Pharmacy that earned autonomy may be granted dependent on Pharmacy achieving set criteria (Table 1) and thus not require a verification visit. Earned autonomy illustrates excellent practice and contributes to the quality assurance of pharmacy education provision within the Trust.

Aim
To establish and maintain quality management of pharmacy trainees and satisfy the KSS Pharmacy requirements for earned autonomy.

Objectives
1. Establish formal pharmacy LFGs with clear communication streams and infrastructure.
2. Identify which of the KSS Pharmacy criteria for autonomy have been achieved.

Method
- Pharmacy LFGs were established in line with the Graduate and Assessment Regulations. Membership included a trainee representative from each trainee group. They were required to attend the multiprofessional (medics and pharmacy) trainee representative training to support this role.
- Monthly meetings with the Educational Programme Directors (EPDs) and their respective trainee group enabled regular review and continuous development and improvement of their educational programme within the Trust.
- Trainees were required to complete KSS Pharmacy exit surveys.
- Action points from the LFGs were incorporated into relevant Pharmacy meetings including Senior Operational Team Meetings, Clinical Leads Meetings and Chief and Principal Technicians Leads as well as included in the Local Academic Board.
- Pharmacy was invited to be a member of the Trusts Educational and Management Operational Group as additional support for the education management of trainees.
- EPDs attended KSS Pharmacy network meetings to support peer review of their role. In addition they attended the annual KSS Pharmacy “best practice” day to share good practice from all the CRs and trouble shoot any areas that needed strengthening. Opportunities for EPDs to be part of the verification team for other Trusts were welcomed to gain a deeper insight into the CR process.
- The QM and AAR were agreed by the LFGs prior to Chief Pharmacist approval.

Results
QM and AAR were submitted annually. Action points identified by KSS post verification visits were achieved. Following the 2012 CR all criteria for Earned Autonomy were achieved enabling this to be granted.

Table 1 Criteria for Earned Autonomy achieved by Acute Trust

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<td>1. 100% trainee pass rate in previous years GPhC PTP examination</td>
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<td>2. &lt;15% PRP and PTPT attrition in last 12 months</td>
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<td>3. PRP and PTPT exit survey score &gt;4 for recommending the Trust as a place to train plus no major issues identified by</td>
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<td>4. Clearly written AAR which reflects trainee feedback and CR actions includes notable practice and has clear timelines for actions</td>
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<td>5. No merger/changes in Chief Pharmacist or EPD roles in the last 12 months</td>
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<td>6. No developmental or exception visits by KSS Pharmacy in the last 12 months</td>
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<td>7. CR action plans do not include actions relating to LFG functioning</td>
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<td>8. No new training programmes planned in the next 12 months that have not been delivered in the Trust in the last 12 months</td>
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Discussion/Conclusion
The Contract Review process provided an opportunity for the pharmacy department to highlight good practice as well as critically review any outstanding issues or challenges that the department faces. The formation of LFGs has developed educational governance within the pharmacy and ensured there are transparent systems and processes in place to develop learning programmes as well as quality assure trainee teaching and assessment. Regular LFG updates at Senior Pharmacy meetings has raised the profile of pharmacy education within the department and encouraged debate as to development and future of how trainee education can be delivered to a high standard within the current service pressures. The earned autonomy status has reflected the consistent high quality workplace education and training for pharmacy trainees. It should be recognised that trainees feedback is central to the CR as indicated by the criteria stated for earned autonomy including their exit survey score and attrition rate. Currently autonomy is granted for one year by KSS and this is to be evaluated before extended to a longer term arrangement. The LFG model could be applied to other groups of trainees for example pharmacy support staff undergoing nationally accredited courses and this is to further investigated. The process has increased the amount of work needed to collect and document various evidence required for the QM. The medical model has addressed this by allocating personal assistant time for each of its educational supervisors and this should be further investigate for the pharmacy model.

References
1. Postgraduate Dental and Medical Education for Kent Surrey and Sussex Gearing up for patient safety. GEAR 3rd edition 2012.
Introduction / Background / Context

Co-amoxiclav has been independently associated with *Clostridium difficile* infection (CDI)\(^2\) and is often cited as a precipitant during root cause analysis of trust-apportioned CDI cases. The need for a lower CDI risk antibiotic was identified for the empirical treatment of urinary tract infection (UTI) in adults when trimethoprim and nitrofurantoin are unsuitable. Gentamicin has a low risk of precipitating CDI and many of the bacterial pathogens causing UTI are sensitive to this antibiotic. A revised empirical guideline for the treatment of UTI in non-pregnant adults was approved for use in clinical practice in August 2011 which recommends short courses (up to two doses) of gentamicin rather than co-amoxiclav for complex UTI. Gentamicin has a narrow therapeutic range with known potential for nephrotoxicity, especially in the elderly. Gentamicin has been identified through medication incident reporting & pharmacist intervention data as being a drug that is poorly managed in terms of correct prescribing, administration & monitoring. As a result a specific prescribing, administration & monitoring chart was designed and became an integral part of the standard adult drug-chart in early 2011

Objectives

- To determine the proportion of gentamicin prescriptions that are prescribed according to Trust guidelines with respect to use of gentamicin chart, first dose of 5mg/kg (not to exceed 480mg) and documentation of indication & duration / review date (standard = 100%).
- To determine the proportion of patients who had gentamicin trough levels monitored & acted upon according to Trust guidelines (standard = 100%).
- To determine how many gentamicin doses are administered within one hour of the prescribed time (standard = 100%).
- To compare renal function (as serum creatinine) pre, 48 hours and 5 days post 1\(^{st}\) dose of gentamicin and to assess if any patients suffered an acute kidney injury (as defined by the UK Renal Association\(^{1}\) as an increase in serum creatinine of 1.5 times baseline).

Method

The data collection form was piloted for five patients. Data were collected by a single auditor (pre-registration pharmacist) on a once weekly basis between October 2011 and February 2012 on elderly care, neurological rehab & acute medical admissions wards at the Royal Sussex County Hospital, Brighton & the Princess Royal Hospital, Haywards Heath. Inclusion criteria were that the patient was 65 years of age or older and prescribed gentamicin for the treatment of UTI.

Suitable patients were selected by the auditor from medical / nursing handover sheets or identified by ward pharmacists. Data were collected from patients’ medical notes and drug charts, and when necessary retrieved from an electronic results-reporting system. Data was collected into Microsoft Excel and analysed using SPSS. Ethics approval was deemed unnecessary.

Results

60 patients were identified. No patients suffered an acute kidney injury despite a mean baseline creatinine of 112\(\mu\)mol/L (standard deviation = 28). There was no statistical difference between baseline and post gentamicin creatinine values (mean reduction in creatinine of 11 +/- 28 \(\mu\)mol/L; p=0.02).

One patient had all standards met for prescribing, monitoring & administration of gentamicin.

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<td>Location (on specific gentamicin chart)</td>
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<tr>
<td>Sign-posted on regular section of drug-chart</td>
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<tr>
<td>Indication specified</td>
</tr>
<tr>
<td>Duration / review date stated</td>
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<tr>
<td>1(^{st}) dose = 5mg/kg</td>
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<tr>
<td>Dose not exceeding 480mg</td>
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Local guidelines state that a gentamicin trough level need only be measured if more than two doses are to be administered or if there is pre-existing renal impairment. 21 (35%) patients had an eGFR > 60mL/min at baseline, of whom 9 received more than two doses of gentamicin. Of these, 7 patients had a trough level taken as per guidelines. Of the 39 patients with pre-existing renal impairment, 23 (59%) had a gentamicin trough level taken 20 hours post the first dose. No patients with a gentamicin trough level >1mg/L received a further dose of gentamicin until the level was <1mg/L.

26 patients (44%) had the gentamicin dose given within one hour of the prescribed time. 17 (28%) patients did not have the time of gentamicin administration documented.

Discussion

Results provide reassurance to prescribers regarding the safety of short courses of gentamicin in elderly patients. Adherence to Trust guidelines for the prescribing, administration and monitoring of gentamicin is not ideal and measures to improve this need to be explored. F1 doctors already receive teaching on the local guidelines for safe gentamicin prescribing as part of their mandatory training programme as do nurses on their Trust induction. Access to prescribing guidelines is often cited as a barrier. The proposed role-out of an antimicrobial SmartPhone App may improve this.

This audit will be presented to the Antimicrobial Stewardship Group, Medications Safety Group and at the Elderly Medicine Clinical Governance meeting which all grades of prescriber attend alongside feedback of serious untoward incidents involving gentamicin.

Investigating reasons for not reaching the first dose administration within the one hour standard was outside this audit’s remit.

References

1. Pepin J & Saheb N et al. Emergence of Fluoroquinolones as the Predominant Risk Factor for *Clostridium difficile*–Associated Diarrhoea: A Cohort Study during an Epidemic in Quebec. CID 2005;41: 1254-1260
3. A Prospective Audit of Pharmacist Interventions to Improve the Accuracy of Medication Prescribed on Discharge from Hospital

Warren A, Tyson K, Heffernan A, Coughlan E and Chadwick R,
Brighton and Sussex University Hospitals (BSUH) NHS Trust Departments of Pharmacy and Cardiology

Introduction
It is widely accepted that when patients move between care providers the risk of miscommunication and unintended changes to medication is a significant problem. As a result of the safety alert on medication reconciliation in 2007 much has been written about the role of the pharmacy team when a patient is admitted to hospital. However, it is estimated that between 28-40% of medicines are discontinued during hospitalisation, 43% of medicines prescribed at hospital discharge are new and 60% of patients have three or more medicines changed during their hospital stay so it is equally important to ensure that there is timely and accurate transfer of information to the primary care provider when a patient is discharged from hospital.
Within our Trust medications from a paper based in-patient chart are transcribed by the medical team to an electronic system to populate the discharge letter. Pharmacists then play an important role ensuring the medication section is both accurate and clinically appropriate, where necessary contacting the prescriber for clarification, before releasing the discharge letter. Once the patient has been discharged the record is locked and transferred electronically to the patients’ GP. Although a standard of accuracy of 100% is expected previous studies of pharmacy interventions within our Trust had highlighted discrepancies on the discharge letter as a common intervention and within cardiology an area of particular concern related to safe use of anticoagulation (a known high risk area). This audit was undertaken to inform the multi-disciplinary team in more detail of any areas of concern and to develop strategies to improve patient safety on transfer of care from secondary to primary care settings.

Objectives
- To audit the interventions made by the cardiology pharmacy team relating to discharge medication for patients on the cardiac wards in Brighton.
- To evaluate the interventions to inform strategies to improve patient safety by identifying common themes from the interventions
- To highlight high risk areas where process change or education may facilitate risk reduction.

Method
Discharge letters from the cardiac wards could be included in the audit if pharmacy led admission medication reconciliation had been undertaken and the discharge letter was being screened by the pharmacist at ward level. A data collection form was designed and piloted for the audit which took place over two week period in December 2011. Using a risk assessment tool, previously used within our Trust, all interventions were then categorised as depending on the potential to cause harm if the intervention had not been made. This was undertaken by two members of the team - a pharmacist (AW) and a medical prescriber (RC). The results were collated and presented at a multi-disciplinary governance meeting within the cardiology centre to develop the action plan.
Interventions relating to the accuracy of information on medicines that had been discontinued or the dose changed during the hospital stay were not included as this was subject to a separate audit being undertaken in the Trust. Ethical approval was not sought as this work was an audit.

Results
During the two week audit period data was collected relating to 98 discharge prescriptions (81 cardiology, 14 cardiothoracic and 3 medical). Of these:
- 61 required a pharmacist intervention.
- There were 100 interventions in total (range per prescription 0-4).
- For 39 patients the pharmacist needed to contact the prescriber.
- The most common type of interventions related to:
  - Omission of a medication from the discharge prescription (n=26)
  - Prescriptions of an item that was not required (n=20)
  - Selection of the incorrect formulation from the computer listing (n=19)
- A further seven interventions related to duration of therapy and three to appropriate discharge arrangements for monitoring patients on warfarin therapy. Table one gives the breakdown of potential harm from the interventions following categorisation by the pharmacist and doctor.

Table 1: Categorisation of Potential Patient Harm If No Pharmacist Intervention

<table>
<thead>
<tr>
<th>Category</th>
<th>Definition</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minor</td>
<td>Small risk of causing harm, or which would cause very short lived problems not leading to extended hospital stay</td>
<td>56</td>
</tr>
<tr>
<td>Moderate</td>
<td>Preventing errors which cause significant but not severe discomfort of a non-permanent nature</td>
<td>39</td>
</tr>
<tr>
<td>Major</td>
<td>May lead to permanent patient injury</td>
<td>4</td>
</tr>
<tr>
<td>Catastrophic</td>
<td>May lead to severe patient injury e.g. death /organ failure</td>
<td>1</td>
</tr>
</tbody>
</table>

The intervention graded as catastrophic and three of the major interventions related to prescriptions for antiplatelet therapy and/or warfarin.

Discussion
This audit demonstrates the role of the clinical pharmacy team in reducing the risks associated with discharge medication and highlights the importance of the pharmacist checks as part of the discharge process. Importantly there were some common themes identified and as a result of this audit we have developed local ‘top tips’ for prescribers when completing the discharge medication with particular reference to cardiology patients. This is available both within the doctors’ handover guide - written by the doctors themselves - as part of the induction for junior doctors to the speciality and as a poster attached to the computers used at ward level. Although the patient numbers were smaller for cardio-thoracic patients there were also common themes identified and a similar package is under development. Sharing the audit results within a multidisciplinary governance forum was an important aspect and increased awareness and ownership of the issues raised at a higher level within the organisation. Limitations to this audit are that it only included those discharges dealt with by the pharmacy team on weekdays. Further work will involve audit of weekend and out-of-hours discharges.

References
3. Warren A, Fall C. Brighton and Sussex University Hospitals NHS Trust Pharmacy Intervention Report 2011 (internal report)
Introduction
Venous Thromboembolism (VTE) is a major cause of preventable death and chronic ill health\(^1\). Fatalities, resulting from VTE, affect about 20% of hospital inpatients in England and the treatment of VTE costs the NHS about £630m every year\(^2\). Subsequently, VTE prophylaxis became one of the main priorities on the NHS agenda\(^3\) and a monitored target of the Commissioning for Quality and Innovation (CQUIN) at Ealing Hospital NHS Trust (EHT). This audit was conducted as a recommendation of the National Institute for Health and Clinical Excellence (NICE) to identify whether optimum prescribing of thromboprophylaxis is achieved after total hip and knee replacement surgery (THR and TKR).

Aims
- Measure the current practice at EHT for prescribing pharmacological thromboprophylaxis after THR and TKR surgery against the local protocols and the recommendations of NICE.
- Recommend changes in order to improve the current practice.

Objectives
Audit the current practice against the following standards:
1. VTE risk assessment is appropriately completed on admission.
2. Patients are provided with written information regarding their treatment.
3. Patients are prescribed a thromboprophylactic agent post-surgery.
4. Patients are offered the choice of thromboprophylactic agent: Rivaroxaban or Tinzaparin.
5. Rivaroxaban 10mg tablets once daily is prescribed for 30 days post-THR and for 10 days post-TKR. The first dose is prescribed 6 - 10 hours post-surgery.
6. Or, Tinzaparin 4,500 units S/C injection is prescribed for four weeks post-THR and for 10 days post-TKR. The first dose is prescribed ≤ 2 hours before surgery.
7. Patients are counselled about their thromboprophylaxis.
8. Patients are provided with the pharmacy medicines information (MI) card.
9. Patients understand the information provided.

Method
A data collection tool was designed and circulated to the surgical ward pharmacist and technician. The audit pilot was made over four weeks. Then, the audit was conducted over six weeks. Ethics approval was obtained to interview surgical patients. Medical notes, patients’ reports, the electronic discharge system, drug charts and anaesthetic charts were used in data collection. Data regarding the completion of thromboprophylaxis course was obtained from drug charts and discharge summaries. All adult patients undergoing THR or TKR, admitted on the surgical ward post-surgery, were included in the audit. Patients on treatment doses of anticoagulants were excluded from the audit as they followed bridging protocols peri-operatively.

Results

<table>
<thead>
<tr>
<th>Audit Standards</th>
<th>Standard Requirement (%)</th>
<th>Standard Achieved (%)</th>
<th>Adherence (n = 36)</th>
</tr>
</thead>
<tbody>
<tr>
<td>VTE risk assessment completed</td>
<td>100</td>
<td>No</td>
<td>81% (29/36)</td>
</tr>
<tr>
<td>Provision of written information</td>
<td>100</td>
<td>No</td>
<td>83% (30/36)</td>
</tr>
<tr>
<td>Prescribing of thromboprophylaxis agent</td>
<td>100</td>
<td>Yes</td>
<td>100% (36/36)</td>
</tr>
<tr>
<td>Choice of thromboprophylaxis agent</td>
<td>100</td>
<td>No</td>
<td>0% (0/36)</td>
</tr>
<tr>
<td>Prescribing of Rivaroxaban</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Correct dose post-THR</td>
<td>Yes</td>
<td>100% (9/9)</td>
<td></td>
</tr>
<tr>
<td>Correct duration post-THR</td>
<td>No</td>
<td>89% (8/9)</td>
<td></td>
</tr>
<tr>
<td>Correct dose post-TKR</td>
<td>Yes</td>
<td>100% (16/16)</td>
<td></td>
</tr>
<tr>
<td>Correct duration post-TKR</td>
<td>No</td>
<td>56% (9/16)</td>
<td></td>
</tr>
<tr>
<td>Correct timing of initial dose</td>
<td>No</td>
<td>56% (14/25)</td>
<td></td>
</tr>
<tr>
<td>Prescribing of Tinzaparin</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Correct dose post-THR</td>
<td>Yes</td>
<td>100% (2/2)</td>
<td></td>
</tr>
<tr>
<td>Correct duration post-THR</td>
<td>Yes</td>
<td>100% (2/2)</td>
<td></td>
</tr>
<tr>
<td>Correct dose post-TKR</td>
<td>Yes</td>
<td>100% (9/9)</td>
<td></td>
</tr>
<tr>
<td>Correct duration post-TKR</td>
<td>No</td>
<td>44% (4/9)</td>
<td></td>
</tr>
<tr>
<td>Correct timing of initial dose before surgery</td>
<td>No</td>
<td>0% (0/11)</td>
<td></td>
</tr>
<tr>
<td>Platelet count on day 5 - 10 post-surgery</td>
<td>Yes</td>
<td>100% (11/11)</td>
<td></td>
</tr>
<tr>
<td>Patients counselled</td>
<td>No</td>
<td>89% (32/36)</td>
<td></td>
</tr>
<tr>
<td>Patients provided Pharmacy MI card</td>
<td>No</td>
<td>78% (28/36)</td>
<td></td>
</tr>
<tr>
<td>Patients understand information provided</td>
<td>No</td>
<td>67% (24/36)</td>
<td></td>
</tr>
</tbody>
</table>

Discussion/ Conclusion
The audit showed that there was poor adherence to local and national guidelines. Results revealed that 100% of patients assessed to be at risk of developing VTE have received pharmacological thromboprophylaxis; however, none of them was given the choice of treatment. This could be due to the lack of explicit guidance in local protocols. Only 29/36 of patients had an appropriate documentation of VTE risk assessment. Additionally, 6/36 of patients have not received written information regarding thromboprophylaxis and only 32/36 patients were counselled prior to discharge. Results showed that 25/25 patients received the correct dose of Rivaroxaban but only 8/9 and 9/16 completed the course of treatment post-THR and TKR, respectively. Only 14/25 of patients have had an initial dose of Rivaroxaban prescribed at 6 - 10 hours post-surgery due to delayed prescribing and reduced Rivaroxaban ward stock levels. Tinzaparin was never prescribed or administered before surgery. This may be due to anticipated increased risk of bleeding and/ or haematoma in patients scheduled for spinal anaesthesia. About one third of patients have not understood the information provided. The language barrier constituted one of the limitations of this audit, particularly in counselling non-English speaking patients and in assessing their understanding of the information provided. In conclusion, there was poor adherence to local and national guidelines regarding the prescribing of thromboprophylaxis post-THR and TKR.

Recommendations
It is recommended to present the results of this audit to the thrombosis group, orthopaedic surgeons and the Medicines Safety Committee to highlight the importance of adhering to thromboprophylaxis guidelines. Thromboprophylaxis prescribing could be optimised by adopting the pharmacy prescribing tool. Prescribers should be trained and educated on the importance of VTE risk assessment and documentation. Local guidelines should be updated to promote the involvement of patients in the choice of their treatment. Provision of patient information leaflets in different languages is highly recommended.

References
Introduction
A common patient safety problem is the lack of accurate and complete information about patients’ medicines when their care is transferred between healthcare settings. Estimates suggest that between 30 - 70% of patients have either an error or an unintentional change to their medicines when care is transferred. Hospitals are expected to comply with, and benchmark themselves against, various national requirements and guidance. Hence any barriers to improving the medicines reconciliation process should be addressed.

The general process for medicines reconciliation can be split into two stages – basic reconciliation (stage 1 – accurate drug history taking using two sources) and full reconciliation (stage 2 – comparison with drug chart and addressing any discrepancies). In our hospital, stage 1 is undertaken mainly by trained pharmacy technicians and the resulting drug history is compared to the patient’s drug chart by a pharmacist using their clinical knowledge to address discrepancies. Stage 1 often includes contacting the patient’s GP surgery. This assists with providing an up-to-date list of prescribed medicines, but has disadvantages in that medicine details are relayed by clinically untrained surgery staff and are not always available immediately (e.g. if the surgery phone line is busy or if faxes/print outs are not received quickly or at all). Stage 1 is generally the most time consuming part of the full reconciliation process, and waiting for information from the surgery can be one of the main contributory factors. We undertook a pilot project to allow direct remote access from the hospital to the patient’s medication records held at their surgery using Microtest GURU®. This is an interoperable, web based secure solution which delivers access to a detailed patient record in real time enabling healthcare professionals to identify the patient they are with, and following appropriate permissions, access demographics and vital patient information such as medication and allergies. It was expected that use of Microtest GURU® would reduce the time taken to obtain information held by the surgery, leading to an overall reduction in the time taken to complete full medicines reconciliation.

Objectives
To assess:
- whether the adoption of Microtest GURU® speeds up the drug history and medicines reconciliation process;
- the extent to which Microtest GURU® was used by the pharmacy team and if that use was appropriate.

Method
Baseline data on key parameters for the medicines reconciliation process were collected over 14 days across 12 wards in November 2012 prior to the introduction of Microtest GURU® using an agreed data collection tool. Pharmacists and technicians involved in medicines reconciliation were then trained on its use, issued with individual logins, and allowed a short time period to become familiar with the system. This included awareness of governance issues on appropriate access. A second period of data collection occurred over a 30 day period in January 2013 across the same number of wards. Data were analysed using Microsoft Excel. Feedback was sought from those pharmacy staff that had used or attempted to use Microtest GURU®. This was deemed service improvement performed to meet specific local needs and ethics approval was not sought.

Results
During the baseline period (the usual practice of medicines reconciliation) 335 drug histories were taken (though for 19 of these no timings were recorded) and 179 (53%) involved contact with the patient’s surgery. For the second data collection period, 394 drug histories were taken (23 of these had no timings recorded), and 231 (59%) involved contact with the surgery.

Table 1. Timings for drug history taking

<table>
<thead>
<tr>
<th></th>
<th>November 2012</th>
<th>November 2013</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N = 335</td>
<td>N = 394</td>
</tr>
<tr>
<td>20 minutes or less</td>
<td>212 (63%)</td>
<td>279 (71%)</td>
</tr>
<tr>
<td>&gt;20 minutes</td>
<td>104 (31%)</td>
<td>92 (23%)</td>
</tr>
<tr>
<td>Not recorded</td>
<td>19 (6%)</td>
<td>23 (6%)</td>
</tr>
</tbody>
</table>

The proportion of drug histories taken within 20 minutes increased from 63% to 71% overall following the introduction of Microtest GURU®. However access to Microtest GURU® was used for only 62 (16%) of the 394 drug histories during the second data collection period - notably 55 (89%) of these were completed in 20 minutes or less. As regards appropriateness of access, records for eight patients were accessed without consent (over a longer 12 week period) - three on the basis of clinical judgement (two were in isolation, one was described as being too ill to speak). Of the other five records that were ‘emergency’ accessed, one was accessed in error and was recorded in the internal error log as per staff guidance. The remaining records for four patients had been mistakenly accessed via the wrong route by the same technician as patient consent had actually been given.

Discussion
Proof of concept in this small scale pilot has been limited by the low number of admitted patients for whom Microtest GURU® access was feasible. Only 16% of the 394 drug histories during the second phase actually involved access to Microtest GURU®. This is in part due to the Micrọtest system being in use in only two-thirds of our 70 GP practices and approximately only two-thirds of these practices had given permission for the hospital pharmacy to access their records. In addition, feedback from the pharmacy team identified inability to obtain patient consent (patients with dementia, unconscious patients) at the time of drug histories as another barrier to access. However, where Microtest GURU® was actually used then this avoided workload for those surgeries with which these 62 patients were registered. We intend to present these results to practices in Cornwall and seek to persuade more surgeries to register with Microtest GURU®, accepting that at some future point local developments for the summary care record may offer an alternative means of accessing this vital medication information.

References

Acknowledgement – Microtest for their permission and support to use their GURU® system.
Introduction
Currently there is no systematic and robust method to assess the competency of Non-Medical Prescribers (NMPs) locally1 or nationally. All NMPs have the responsibility to remain up to date with their knowledge and skills that enable them to prescribe competently and safely within their field of expertise.

The National Prescribing Centre (NPC) has developed a single competency framework2 for all prescribers defining a set of 9 standards within 3 domains. This competency framework underpins the NMP’s personal responsibility for prescribing. Any assessment tool will have to take into account the 9 standards and ensure that prescribers provide evidence of competency covering all three domains.

Aim
To establish a robust and credible evidence-led system to evaluate and accredit on-going competency of NMPs.

Objectives
1. Identify a set of appropriate tools and modalities to provide an evidence of practice for NMPs.
2. Map the competency assessment tool against standards to the National Prescribing Centre (NPC) competency framework for all prescribers

Method
A multidisciplinary steering group was assembled consisting of current trust nurse and pharmacist NMPs and the deanery NMP lead. Through a literature search a number of evaluation tools were identified. Evidence of multiple validation and use in structured education and training programs was required. The selected multi-source evaluation tool was assessed for robustness, reliability, evidence base and comprehensiveness and certified by the steering group. This tool was mapped against the 3 domains and the 9 competencies set out in the NPC prescribing framework by consensus decisions of the steering group. The mandatory scope of practice was also evaluated to see which standards and domains it could support in addition to the selected tools.

Results
More than 10 different validated assessment tools were identified through the literature and considered for robustness, reliability, evidence base and comprehensiveness. The steering group evaluated the tools based on multiple validated evaluation methodologies and use in structured education and training programs such as used by the Competency Development and Evaluation Group (CoDEG) and the United Kingdom Clinical Pharmacist Association (UKCPA)3. The 4 tools selected and considered for inclusion in the annual NMP competency portfolio were Mini Clinical Evaluation Exercise (Mini-CEX), Case Based Discussion (CBD), 360° peer review, and a Prescribing Portfolio including a Continuous Professional Development (CPD) log, a prescribing log and the mandatory scope of practice4. Exclusion of tools was mainly due to unacceptable time and staffing requirements such lengthy observational methods or requirement of multiple staff. The selected tools were assembled into a generic multi-tool assessment portfolio and mapped by the steering group through consensus decisions against the NPC prescribing framework. They proved to cover all competencies and in the majority of standards through multiple sources.

<table>
<thead>
<tr>
<th>Multi source assessment tool</th>
<th>Mini-CEX</th>
<th>CBD</th>
<th>360°</th>
<th>Prescribing portfolio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>CPD log</td>
</tr>
<tr>
<td>Consultation</td>
<td></td>
<td></td>
<td></td>
<td>Prescribing Log</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Scope of practice</td>
</tr>
<tr>
<td>Domain A</td>
<td></td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Standard 1</td>
<td></td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Domain A</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standard 2</td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Domain A</td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standard 3</td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Domain B</td>
<td></td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Standard 4</td>
<td></td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Domain B</td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standard 5</td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Domain B</td>
<td></td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Standard 6</td>
<td></td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Domain C</td>
<td></td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Standard 7</td>
<td></td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Domain C</td>
<td></td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
</tbody>
</table>

Table 2 Mapping of selected tools against the NPC framework standards

Discussion/Conclusion
The literature search provided a wide range of assessment tools and the most suitable were selected according to criteria set by the steering group. The 4 tools selected are well established and widely used in the medical arena for evaluation and assessment. The mini-CEX and the peer review were newly introduced and some resistance was voiced by the NMPs. Some tools were unfamiliar particularly to the nursing staff which needs to be handled with sensitivity and support. Pharmacists are familiar with most tools which are traditionally used by foundation pharmacists and support the progression in their career. The developed multi-source assessment tool covers all 9 standards of the NPC framework and once established will prove to enhance practice. The portfolio will also support professional requirements for regular proof of fitness to practice. Due to this work the deanery is now establishing a web-based 360° assessment program for NMP.

Future work
The appropriateness of the assessment tool need to be tested in 5 pilot portfolios (10% of NMPs) assessed for suitability during the trust’s competencies assessment. This will be done by the means of a feedback questionnaire to the NMP and the assessor. Once implemented the quality of portfolios, impact on practice and research and the understanding and the acceptability of the new competency assessment tool needs to be investigated. The steering group decided that such a comprehensive assessment tool would only need to be done every three years. This needs to be evaluated as a suitable time frame.

References
1. Policy for Non Medical Prescribers employed by BSUH, BSUH NHS Trust
4. BSUH general and specialist level Scope of Practice for Pharmacists, UKCPA poster, Nov 2011
Introduction
Approximately 25,000 pacemakers are implanted every year in the UK. Pacemaker pocket infection can be a serious and life threatening complication potentially resulting in removal of the device. It can occur in up to 5% of cases. The most common causative microorganisms are of the Staphylococcus species, Staph. aureus and to a lesser extent Staph epidermidis.1 It is common practice in most hospitals to use prophylactic antibiotics although to date no official national guidance has been issued.

Following a previous audit2 that demonstrated poor compliance with the timing of pre-procedure antibiotics (particularly vancomycin) local guidance was updated and implemented. The new guideline recommends that antibiotics must be given within the 30 minutes prior to incision using either:

- a pre-procedure dose of flucloxacillin 1g IV followed by oral flucloxacillin for 48 hours post procedure or
- for penicillin allergic patients a pre-procedure dose of teicoplanin (400mg if <80kg and 600mg if > 80kg) with two further doses given 12 hourly post procedure.

In addition all patients receive a single dose of gentamicin 80mg directly into the pocket around the device3

Objectives
- To collect and analyse data for patients undergoing device implementation procedures at RSCH to establish if the BSUH antibiotic prophylaxis guidelines are being followed.
- To highlight deviations from the policy and possible reasons for this.
- To recommend changes to practice if required.

Standards
All patients undergoing implementation procedures should have appropriate antibiotic prophylaxis meeting all of the following criteria:

Correct:
- Choice of antibiotic
- Timing of administration
- Dose of antibiotic
- Route of administration
- Dose of gentamicin into pocket around the device
- Post procedure antibiotics

Method
As this was a re-audit the previous data collection form could be utilised once this had been amended to incorporate the policy changes resulting from that audit. The audit was publicised to staff in the cardiac catheter labs who completed a data collection form prospectively for each patient who underwent cardiac device implantation at the Royal Sussex County Hospital between 12th December 2011 to 18th January 2012. Ethical approval was not required as this work was an audit. The data was entered into a spreadsheet and analysed by Microsoft excel. The results of the audit were presented back to the cardiac team to produce the recommendations from the audit and to the Trust Antimicrobial Stewardship Group for approval.

Results
Data was collected for a total of 22 patients (13 men, 9 women, mean age of 77)

Table 1: Compliance with audit standards

<table>
<thead>
<tr>
<th>Abx choice</th>
<th>Timing</th>
<th>Dose</th>
<th>Route</th>
<th>Gent in pocket</th>
<th>Abx Post</th>
<th>All standards correct</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>95%</td>
<td>100%</td>
<td>100%</td>
<td>86%</td>
<td>73%</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>22</td>
<td>19</td>
<td>16</td>
<td>5</td>
<td>7</td>
</tr>
</tbody>
</table>

Discussion
Overall the audit standards were not achieved and only 23% of patients achieved all five standards. In line with Trust guidance 21 of the patients did
receive the correct choice and dose of pre-procedural antibiotic. However the most frequent error still related to timing of the antibiotics with only a third of patients receiving these within 30 minutes of incision. Gentamicin in the pocket was omitted in 3 cases (1 omission, 2 not documented) and only 16 of the 22 patients were given post procedure antibiotics.

The audit was discussed with the cardiac team to ascertain reasons for non-compliance. The main issue was around communication of procedure time between the ward staff and the procedure room to allow appropriate timing of antibiotics. Problems also arose due to the recommendation for two IV doses of teicoplanin post procedure for day case patients. Possible limitations of the audit were potential introduction of operator bias and timing. By completing the audit in the lab during the procedure it may have acted as a prompt to follow the guidelines. Also the timing of the data collection over Christmas may have affected patient numbers.

Recommendations
- Work flow changes to be implemented so that day case staff are informed when the previous case is completed so that antibiotics can be given in a more timely fashion to next waiting patient.
- Antibiotic guidelines to be changed so that flucloxacillin is only used for simple implants (which are a shorter procedure) and all more complex device work (and penicillin allergic patients) to receive a single dose of 600mg of teicoplanin. No post procedure antibiotics are to be used
- Ratify changes to antibiotic choices and doses with Antibiotic Stewardship Group and publicise new policy
- Further audit should be undertaken by cardiac team.

References
The General Medical Council (GMC) EQUIP study highlighted serious weaknesses in existing educational approaches surrounding prescribing. Poor prescribing amongst newly qualified doctors is widespread and results in the underuse of effective medicines; avoidable adverse drug reactions; and medication errors.

Better Training Better Care (BTBC), a Health Education England initiative, aims to improve the quality of training and learning for the benefit of patient care. In 2012, Dudley Group NHS Foundation Trust obtained funding from BTBC to introduce a Promoting Practical Prescribing course for Foundation year 1 and 2 (F1 & F2) trainees, an inter-professional learning (IPL) scheme for doctors and pharmacists to improve prescribing competence and confidence. The Promoting Practical Prescribing Course is focused on prescribing safety. It works alongside the well-established, and locally-mandated, SCRIPT eLearning programme, administered by the University of Birmingham for F1 and F2 trainees, to guide session titles and structure the teaching.

Learning sessions were jointly delivered by doctors and pharmacists and structured to facilitate junior doctors and pharmacists undertaking prescribing tasks together within the sessions. Our definition of IPL is “Learning arising from interaction between members (or students) of two or more professions. This may be a product of interprofessional education or happen spontaneously in the work place or in education settings.” We are currently evaluating the Promoting Practical Prescribing course. This abstract reports on F2 trainees’ perceptions of interprofessional learning within the BTBC programme.

Objective
Ascertain the F2 trainees’ perceptions of IPL within the learning sessions using focus groups.

Method
All F2 trainees were invited to a 90 minute focus group. Eight F2 trainees (male 4, female 4) responded. They were assigned P1 to P8 as identifiers. Written consent was obtained from all participants. A framework approach was adopted to run the focus group. The session was facilitated, transcribed, and analysed by CH and ST who had not been involved with the running of the sessions. Confirmatory thematic analysis was by AC. The Trust Research and Development committee confirmed that ethical approval was not required for this research.

Results
Definition and perception of IPL
IPL was perceived as medical and pharmacy staff delivering facilitated sessions. It was not considered necessary for pharmacists to be in the audience to make an IPL event: P7 “Why would you ask the pharmacist at the table if you had a pharmacist leading the session.” However, F2s had no objection to pharmacists in the audience of the session, although it was not clear that F2s had noticed a pharmacy presence in the sessions. Some participants were unclear about the professional status of other participants, including fellow F2s they did not work with. They also considered that IPL was met by having joint medical and pharmacy-facilitated sessions, and valued the different perspectives.

P1 “I do think it is important to have the pharmacy aspect and the clinical aspect there”

Setting and environment of IPL
F2s noted the IPL happened in an informal way with pharmacists in the working environment: P2 “We’re quite used to working with different professions and loads of different specialities on the ward, like more than used to that. I don’t think it’s, it’s kind of normal.” F2s expressed a willingness to learn on wards where there was time to discuss individual cases, rather than a classroom. Discussing a recent exchange with a pharmacist about setting up a syringe driver: P5 “That would be useful if you were actually trying to set-up a syringe driver, but not just like when you’re sat at a table.”

Prior experience of IPL
Some prior unsatisfactory experiences of IPL led to some F2s expressing concerns that their needs might not be met: P7 “Honestly, because it was so hard to target both [nurses and doctors] and to actually introduce content and deliver to both groups of professions.” Some perceived that pharmacists might require more pharmacology orientated material, rather than clinically orientated teaching sessions. A distinction between “clinical” content and “pharmacology” content was often made, with concern about a loss of clinical aspects if pharmacology content was increased due to pharmacist presence: P5 “I think if there were more pharmacists they would want it or have it more pharmacy orientated than clinically orientated […] I’d be afraid that they talk more about the actual medicines, more pharmacology than anything else.” Talking about a neurology session including myasthenia gravis, an F2 was concerned that material related to the presentation of the disease would go and that: P6 “a lot of medical chat would go and it would be all about the treatments you could use.” On questioning they re-enforced the fact pharmacist participation was fine, so long as the content remained clinically orientated.

Discussion/Conclusion
F2s noted the importance of the IPL interaction in both educational and workplace settings, aligning closely with the Freeth definition. Despite managerial concern that the sessions were not interprofessional because of a relative lack of pharmacist participation, this was not perceived to be the case. F2 valued the sessions and F2 concern about potential dilution of clinical content was not substantiated. There were positive statements about pharmacist involvement during formal IPL, as well as spontaneous interactions in clinical practice.

References

2. Script e-Learning programme, West Midlands Shadow LETB. Available online at http://www.safeprescriber.com


9. An audit of alfentanil prescribing at Sunderland Royal Hospital.
Healey R* and Andrew I*,
*City Hospitals Sunderland NHS Foundation Trust, Sunderland, *St Benedict’s Hospice, South Tyneside Foundation Trust, Sunderland

Background
The Liverpool Care Pathway (LCP) is used for the care of patients approaching the end of life (EoL). Medications are used to control the patient’s symptoms which may include pain.

Most opioids accumulate in renal impairment resulting in toxicity. The fentanyl type products do not accumulate because the metabolites are active. Alfentanil is a fentanyl type opioid which is a drug choice when patients’ estimated glomerular filtration rates (eGFR) are less than 30ml/min and is available in an injection form which is suitable for use in EoL care. The North of England Cancer Network (NECN) guidelines recommend alfentanil as a drug choice for EoL care in patients with renal impairment.

Objectives
To establish if alfentanil is chosen appropriately in relation to patients’ eGFR < 30ml/min when prescribed as part of the renal LCP.
To assess if the alfentanil breakthrough dose is one tenth of the total daily dose.
To ascertain if the full details of the alfentanil continuous subcutaneous infusions (CSCI) are documented.

The above standards should be achieved by 100%.

Method
This audit was commissioned by the Specialist Palliative Care Team at Sunderland Royal Hospital (SRH). A data collection sheet was produced to record demographic information (patient’s age, gender, ward and consultant), alfentanil prescription details and eGFR (using the laboratory calculation).

The audit method was retrospective using a sample size predetermined at 40 patient records. Patients that had been prescribed alfentanil in the previous 3 months were identified using an electronic data search on the electronic prescribing (EP) system used at SRH. The inclusion criteria of this audit included; patient was an adult (i.e. ≥18 years old); patient was an inpatient at SRH prescribed alfentanil. The exclusion criteria was any patient admitted to Intensive Care Unit (ITU), as alfentanil may be prescribed as an aid for compliance with mechanical ventilation on ITU. Ethics approval was not required because this was an audit.

Results
Of the 40 patients audited, 37 (93%) patients had been prescribed alfentanil as part of the renal LCP. From the 37 patients, 28 patients had an eGFR < 30 ml/min (See table 1). For the 9 patients who had an eGFR > 30ml/min, the eGFR range was from 30ml/min to 68ml/min. Of these 9 patients, 6 had an eGFR range from 30 ml/min to 35 ml/min. For the 3 patients prescribed alfentanil not part of the renal LCP, all were prescribed a prn dose and their eGFR was > 30ml/min.

Table 1: Number of patients prescribed alfentanil as part of the renal LCP with an eGFR < 30ml/min.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>eGFR (ml/min) &lt; 30</td>
<td>28  (76%)</td>
<td>9 (24%)</td>
</tr>
</tbody>
</table>

6 patients were prescribed both prn and CSCI alfentanil, and 0% of these prn doses were a tenth of the total daily dose. The prn dose ranged from a half to a sixteenth. In addition, the full CSCI details were entered for 2 CSCI prescriptions on EP. The missing details for the other 3 prescriptions included both the name and volume of diluent.

Discussion
Alfentanil was prescribed as part of the renal LCP for 92.5% of patients. This high percentage would be expected because alfentanil is the first-line opioid for the renal LCP at SRH and within the NECN. 24% of patients on the renal LCP had an eGFR ≥ 30ml/min, therefore the standard was not achieved. The choice for prescribing the renal LCP in these patients may have been a clinical decision if the patient had moderate renal impairment where there may have been concerns of further renal function deterioration or it may have been a selection error on EP when prescribing the LCP.

The NECN guidelines advise the breakthrough pain dose of alfentanil should be approximately a tenth of the total daily dose of alfentanil. This did not occur for any of the prescriptions and so the standard was not achieved. A reason for the variation in the breakthrough dose may be due to the measurable quantity of alfentanil. Alfentanil injections are available as 1mg/2ml strength at SRH. Therefore, alfentanil doses of less than 0.25mg (i.e. 0.5ml) may be considered more difficult to measure accurately. Another potential reason for this difference is that for the majority of opioids the general breakthrough dose rule is a sixth of the total daily dose which is different from alfentanil. The prescribers may not be aware of this difference.

All of the CSCI prescriptions had the drug and dose added to the prescription on EP. However, 60% of these prescriptions missed the additional information of the diluent and the diluent volume, therefore the standard was not achieved. This may have occurred as the information would have also been prescribed on the paper infusion charts and so the prescriber may have decided that this information was duplication. This is therefore an educational issue.

This audit had a number of limitations. Firstly, the sample size was small so statistical analysis was not performed. Secondly, the use of data collection through EP may have biased the results because it excluded paper infusion chart prescriptions.

From this audit it was highlighted the need to provide adequate prescribers education on the appropriate choice of prescribing the renal LCP, appropriate prn dosing, and the required prescribing CSCI information. In addition, it was shown the importance of standardising CSCI prescribing across the Trust to ensure full prescribing details were completed in a unified method.

References
Introduction
In recent years, the government has extended prescribing responsibilities to pharmacists and other healthcare professionals in order to make better use of skill mix and to deliver more flexible team working across the NHS. In July 2010 there were approximately 1100 qualified pharmacist independent prescribers, of which 71% were actively prescribing. Pharmacist prescribing has been put into practice on one elective orthopaedic surgery ward at WUTH, thereby allowing doctors to spend more of their training time in surgery rather than on the ward. The pharmacist is responsible for prescribing patients’ regular medicines during their stay in hospital. Medicines are continued or withheld in accordance with the Trust’s policy on peri-operative management of medicines. Advanced nurse practitioners (ANPs) work alongside pharmacists and prescribe new medicines that are required during the peri-operative period (such as analgesics, laxatives and anti-emetics).

Objective
The purpose of this study was to investigate nursing staff opinion of pharmacist prescribing on an elective orthopaedic ward.

Method
A questionnaire was designed that contained both open and closed questions. All nursing staff who regularly worked on the ward were approached to participate in the study. The questionnaires were distributed and collected by the researcher (an undergraduate pharmacy student) to avoid the introduction of bias by ward-based pharmacy staff and to increase response rate. The exclusion criterion for the study was those who did not want to participate. Ethics approval was granted and consent forms were signed by those who participated. The work was conducted over a four week period in January 2012, prior to the change in legislation that allows pharmacists to prescribe controlled drugs.

Results
Fourteen nurses were eligible to participate in the study of which 10 completed the questionnaire. Two nurses were on long-term leave and two other nurses were not available to participate due to annual leave and working night shifts. Of the 10 nurses who completed the questionnaires, eight were staff nurses and two were ANPs. All nurses felt that pharmacists were appropriately qualified to prescribe medicines with one nurse commenting that all non-medical prescribing should be closely monitored. Of the eight staff nurses 62.5%, felt that pharmacists should be able to prescribe controlled drugs but only within strict criteria. Nursing staff were asked what benefits pharmacist prescribers had for the NHS and results are shown in table 1:

Table 1: Benefits of pharmacist prescribing to the NHS:

<table>
<thead>
<tr>
<th>NHS Benefit</th>
<th>No. of nurses who chose this option</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient benefit</td>
<td>8</td>
</tr>
<tr>
<td>Utilising clinical skills of pharmacist</td>
<td>7</td>
</tr>
<tr>
<td>Helps NHS gain value for money on medicines expenditure</td>
<td>5</td>
</tr>
<tr>
<td>Other (helps other disciplines)</td>
<td>1</td>
</tr>
</tbody>
</table>

The open questions of the questionnaire resulted in the following comments about the benefits of pharmacist prescribing:
- “Having another prescriber on the ward in addition to a doctor was ideal on a busy ward”
- “It’s an extra safety net for patients which helps nurses”
- “Pharmacists have more in depth knowledge of drug interactions and contraindications”
- “Quicker discharge process (medicine-related problems are resolved prior to discharge)”

All nurses felt that the ward would benefit from pharmacist cover being extended to longer hours. Since the introduction of pharmacist prescribing on the ward, 87.5% of the nurses said they had made fewer referrals to doctors regarding inpatient medicines and discharge prescriptions. One ANP felt that although pharmacists have good pharmacological knowledge, they were possibly inferior to themselves or a doctor with respect to the clinical knowledge of the patient. Both ANPs felt that having pharmacist prescribers on the ward was of benefit to patients and the NHS due to better interdisciplinary communication and gaining better value for money on medicines. One ANP said that there was less chance of patient harm when pharmacist prescribers were involved in patient care and would like pharmacists to have the ability to prescribe controlled drugs as nurses can already do this. Both had experienced fewer referrals from ward nursing staff since the introduction of pharmacist prescribers on the ward and wanted pharmacist time on the ward to be extended.

Discussion
The results show that nursing staff found that the introduction of a pharmacist prescriber on the ward to be a positive move. This has resulted in better patient care with a quicker process of discharge now possible and a reduction in nursing staff workload, by having to make fewer referrals to the doctor. The ANPs felt that pharmacists don’t have as much experience with regard to examination of patients, but were appreciative of the fact that pharmacists had a positive contribution to make and supported their own prescribing practices. Nursing staff recognised the expert drug knowledge that pharmacists have and how this can reduce patient harm. All nursing staff felt that pharmacist prescribing should be extended to include controlled drugs. In the context of a surgical ward, this suggests that pharmacists could extend their role to support patients’ immediate post-operative pain management. With the recent change in legislation regarding prescribing of controlled drugs by pharmacists, this would be something to consider in the future particularly in combination with supporting the process of discharge. For example, being able to prescribe analgesia such as dihydrocodeine for discharge prescriptions would speed up the discharge process.

The main limitation of this study was the low number of staff able to participate and future studies should involve opinion from medical staff also. However, there was a high response rate for completing the questionnaire. All staff felt that pharmacist hours on the ward should be extended and so future work should look into the possibility of extending this pharmacy service to other areas of the Trust.

References
Introduction
In recent years, the government has extended prescribing responsibilities to pharmacists and other healthcare professionals to make better use of skill mix and to deliver more flexible working across the NHS. This has been put into practice on one elective orthopaedic surgery ward at WUTH with pharmacist and nurse prescribing being implemented, thereby allowing doctors to spend more of their training time in surgery rather than on the ward. The ward pharmacist is responsible for prescribing patients’ regular medicines during their stay in hospital. Medicines are continued or withheld in accordance with the Trust’s policy on peri-operative management of medicines.

Objective
The purpose of this study was to investigate patient opinion on pharmacist prescribing during their inpatient stay on an elective orthopaedic ward.

Method
A questionnaire was designed to include both open and closed questions. Over a five week period in January 2012, all patients admitted to the ward (except those who were unable to communicate and those who might become distressed or agitated by the process) were approached by the researcher (an undergraduate pharmacy student) and asked to participate in the study. Questionnaires were distributed and collected by the researcher to avoid bias being introduced by any pharmacy staff working on the ward and to improve response rate. Ethics approval was granted and consent forms were signed by patients who were willing and able to participate.

Results
A total of 58 patients completed the questionnaire of which 53.4% were female. 45% of patients were over 65 years old, 40% were aged 41-64 years, 12% were 26-40 years and 3% were 18-25 years old.

Most patients (65.5%) felt that pharmacists were appropriately qualified to prescribe their medicines during their inpatient stay. 58.6% of patients were not aware that pharmacists were able to prescribe, yet 93.1% of patients were happy for their medicines to be prescribed by a pharmacist whilst in hospital. Patients were asked if they would consider seeing a pharmacist rather than a doctor in the future. Of those patients who were happy for pharmacists to prescribe their medicines, 29.6% of patients were happy to have a pharmacist prescribe their medicines for them instead of a doctor, but 62.1% said it would depend on the problem as to whether they would prefer to see a doctor or pharmacist for their medication in the future. When given the choice of healthcare professional to discuss their discharge medicines with, 35% of patients would choose a doctor, 24% would choose a pharmacist and 12% of patients would choose a nurse. Other patients did not have a preference.

88% of patients believed pharmacist prescribing was of benefit to the NHS and cited the reasons shown in table 1:

Table 1: Patient opinion on the benefits of pharmacist prescribing for the NHS

<table>
<thead>
<tr>
<th>Benefits to the NHS</th>
<th>Number of patients who chose this option</th>
</tr>
</thead>
<tbody>
<tr>
<td>Easier access to medicines for patients</td>
<td>40</td>
</tr>
<tr>
<td>Better access to prescribers for patients with chronic diseases/conditions</td>
<td>27</td>
</tr>
<tr>
<td>Better use of pharmacists’ knowledge</td>
<td>35</td>
</tr>
<tr>
<td>Value for money for medicines expenditure</td>
<td>21</td>
</tr>
<tr>
<td>Reduce doctors’ hours</td>
<td>25</td>
</tr>
<tr>
<td>Enhanced job satisfaction for pharmacists</td>
<td>26</td>
</tr>
</tbody>
</table>

Discussion
The results show that most patients feel that pharmacists are suitably qualified to prescribe medicines and are happy for pharmacists to prescribe their medicines whilst in hospital. Some patients had reservations about pharmacists prescribing their medicines at discharge and most would prefer to discuss their medicines with a doctor rather than a pharmacist prior to discharge. However, the majority of the patients who participated did not know that pharmacists can prescribe. This might have influenced their decision as to who they would prefer to discuss their medicines with and how happy they were to have a pharmacist to prescribe their medicines, particularly if they have not had any previous experience of pharmacist prescribing prior to their hospital stay.

Patients’ lack of understanding of the role of a pharmacist prescriber might have influenced their opinions. This is supported by the significant number of patients who stated that it would depend on what their medical problem as to whether they would see a doctor of pharmacist for their prescription medicines. However, 69% of patients thought that pharmacist prescribing would give them easier access to their prescribed medicines. Patients believe that pharmacist prescribing is of benefit to both the NHS and to individual patient care. Patients are aware that pharmacist prescribing can improve their access to medicines (which was the Government’s fundamental aim when non-medical prescribing was introduced) and is of benefit to patients with chronic conditions who need regular access to healthcare professionals who are able to prescribe their long-term medicines.

Although patients were positive about the prescribing role of pharmacists, more work needs to be done to ensure that patients are aware of a pharmacist’s ability to improve access to their prescribed medicines. For example, raising awareness nationally and locally of when it might be more convenient to see a pharmacist rather than a doctor for management of their long-term conditions and publicising where and when to access pharmacist services. Patients recognised the knowledge that pharmacists have regarding their medicines and would readily discuss the use of their medicines with pharmacists should they have any concerns or queries. Patient acceptance of pharmacist prescribing would suggest implementation of such a service in other areas of the Trust could be a positive move and therefore allow for greater flexibility of multi-disciplinary working. A limitation of this study is that it was conducted on one ward only within one speciality. Further work should involve patient opinion across a range of specialities and different settings, as the patients’ reason for admission to hospital might influence their opinion on whether they are happy for pharmacists to prescribe their medicines.

References
Introduction
Rapid tranquillisation (RT) is used in urgent situations to control aggressive or disruptive behaviour of mentally ill patients after de-escalation procedures have been attempted but found to be ineffective. RT does not treat an underlying psychiatric condition, but is rather used short-term to quickly calm a severely agitated patient in order to reduce the risk of harm to themselves or others. Despite its profound effectiveness, RT is regarded as the last treatment option due to risks of extrapyramidal side effects, hypotension, respiratory and cardiac depression, over-sedation leading to loss of consciousness, seizures, and neuroleptic malignant syndrome. Pharmacists aim to avoid such risks associated with RT by ensuring appropriate use within inpatient settings. CNWL Trust guidelines state that RT should only be administered when the risk of harm to the patient or others as a consequence of disruptive behaviour is greater than the risk of pharmacological treatment, a decision made by experienced nursing and medical staff. Although RT can be administered intravenously (only by a doctor), CNWL Trust guidelines state only oral or intramuscular (IM) administration is permitted on acute inpatient mental health units. Subsequently, this study. In addition, comprehensive review against Trust guidelines was unachievable due to limited information on mentally ill patients since the risk of pharmacological treatment, a decision made by experienced nursing and medical staff. Although RT can be administered intravenously (only by a doctor), CNWL Trust guidelines state only oral or intramuscular (IM) administration is permitted on acute inpatient mental health units. Subsequently, all RT episodes are to be reported on the Trusts’ electronic incident reporting form, DATIX.

Aim
To audit the nature of rapid tranquillisation incidents within CNWL Trust.

Objectives
From 26th November to 30th November 2013 use DATIX to identify RT cases within CNWL inpatient mental health units to audit against the following standards:
1: 100% of RT should only occur to manage aggressive or disruptive behaviour where the risk of harm is greater than the risk from treatment, with no exceptions.
2: 100% of RT should only be administered via oral or IM injection, with no exceptions.

Method
Retrospective data collection consisted of DATIX electronic incident reports recorded at CNWL mental health inpatient units from 1st April 2011 to 30th November 2012, inclusive. Only RT reports that occurred within CNWL Trust during the above stated time frame were selected (primary data) and transferred onto Microsoft Excel. Using Microsoft Excel, the primary data was sorted by category of incident to determine the percent of each type of incident that resulted in RT. The primary data was also divided by route of administration (oral or IM) to determine the percent of each route used in RT, and the primary data was also sorted by type of injury.

Results
There were 2267 RT cases reported in 19 months within CNWL Trust.

Table 1: Rapid Tranquilisation Incidents

<table>
<thead>
<tr>
<th>Standard</th>
<th>Percent Rapid Tranquilisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disruptive Behaviour</td>
<td>34.6% (785)</td>
</tr>
<tr>
<td>Violence</td>
<td>31.4% (711)</td>
</tr>
<tr>
<td>Verbal Abuse</td>
<td>6.8% (155)</td>
</tr>
<tr>
<td>Miscellaneous Events</td>
<td>6.0% (136)</td>
</tr>
<tr>
<td>Self Harm</td>
<td>3.7% (85)</td>
</tr>
<tr>
<td>Intramuscular</td>
<td>52.4% (1189)</td>
</tr>
<tr>
<td>Oral</td>
<td>46.3% (1049)</td>
</tr>
<tr>
<td>Not Stated</td>
<td>1.3% (29)</td>
</tr>
</tbody>
</table>

Discussion
The Trust met standard one as 100% of RT incidents were given to control a form of violent or disruptive behaviour that had the potential to harm the patient or others, as judged by experienced ward staff. It was found that controlling aggressive patients via RT resulted in no harm or severe injury in 89% of cases, with 11% of cases resulting in only minor injuries. There were no reports of serious injury or death in any event requiring RT. As such, this audit outlines that RT is being used effectively and appropriately since major harm as a result of disruptive behaviour of mentally ill patients was successfully prevented. The second standard was not completely satisfied as 98.7% of the cases were reported as either oral or IM (46.3% and 52.4%, respectively), with 1.3% of the cases not stating the route of administration. This could be attributed to the misperception that route of administration is not important when reporting RT incidents, or incomplete reporting due to time restraints on the wards.

Results are valid and generalisable across CNWL Trust as data consisted of 19 months of RT incidents in all inpatient mental health units. Ethics approval was not required as this project was conducted as an audit. Due to time restraints, data collection did not include the written description of incidents that may have detailed the rationale for RT administration. Instead, the reason for RT administration was only investigated through the category of incident reported, thus contributing to a limitation of this study. In addition, comprehensive review against Trust guidelines was unachievable due to limited information on DATIX.

Conclusion
This audit has identified that RT was used appropriately within CNWL Trust to control aggressive or disruptive behaviour of mentally ill patients since the risk of harm was prevented, as there were no reports of major injury or death to patients or others. This audit has also identified several areas of improvement that will enhance compliance to Trust guidelines with the aim of keeping patient safety at the forefront.

Recommendations
- Mandatory de-escalation training to ensure all ward staff have the same skills to handle disruptive patients safely.
- A field for “De-escalation Attempted?” added to DATIX since stated in Trust guideline.
- The “Route of Administration” field on DATIX should be made mandatory to complete.
- A re-audit in 12 months to assess the effects of implementing the above stated recommendations in order to complete the audit cycle.

References
Introduction
Concerns about increasing resistance to antimicrobial agents have led to implementation of local ‘alert’ antimicrobial policies restricting the use of antimicrobials which are still active against resistant organisms. A significant proportion of current antimicrobial usage in hospitals is not ‘prudent’ because of excessive use or inappropriate choice. Alert antimicrobials should only be used in accordance with permitted indications or with approval of a microbiologist or infectious disease consultant. Pharmacy should be in receipt of an alert form completed by the prescriber before supply is authorised. The alert policy was implemented at an adult acute hospital in February 2012 and meropenem is the most frequently prescribed alert antimicrobial.

Objectives
To quantify completion rates of the alert form and determine the appropriateness of meropenem for non-permitted indications.

Method
An algorithm to determine the appropriateness of meropenem was informed by literature review and discussion with microbiologists. Following a pilot, data was retrospectively collected for all adults treated with meropenem for non-permitted indications from February to September 2012, using the alert form and patient records (case notes and electronic records). Alert forms completed out of hours were excluded from all analysis; forms must be completed during the out of hours period but they do not require microbiology approval at the point of completion. Duplicate forms (alert forms for the same patient on the same date and approved by the same microbiologist) and those without microbiology approval (completed within hours) were included in assessment of documentation completeness but excluded from analysis of appropriateness of use. The appropriateness of prescribing was tested using chi-square for a number of variables (table 1). Local governance procedures were followed and the study did not require research ethics approval.

Results
During the sampling period, 183 alert forms were completed for meropenem of which 8 (4.4%) were completed out of hours, 8 (4.4%) were duplicates and 16 (8.7%) did not have microbiology approval. The alert form was completed in full on 41/175 (23.4%) episodes. The fields with poorest completion rates were ‘sensitivities to alternative antibiotics’ (94/175, 53.7%) and ‘positive microbiology’ (95/175, 54.3%).

Meropenem use was considered appropriate on 39/151 (25.8%) episodes. Inappropriate use was most frequent in sepsis (19/20, 95.0%), pneumonia (34/38, 89.5%) and lower respiratory tract infection (6/8, 75.0%). Meropenem use was inappropriate in patients who were initially admitted to ICU/HDU for a medical condition other than infection, when alternative non-alert antibiotics were available, and when sensitivity to meropenem was not reported.

<table>
<thead>
<tr>
<th>Table 1. Appropriateness of meropenem use.</th>
<th>Appropriate, n (%)</th>
<th>Inappropriate, n (%)</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Evidence based indication, n=142</strong></td>
<td>Yes</td>
<td>30 (21.1)</td>
<td>95 (66.9)</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>6 (4.2)</td>
<td>11 (7.7)</td>
</tr>
<tr>
<td><strong>Licensed indication, n=148</strong></td>
<td>Yes</td>
<td>28 (18.9)</td>
<td>72 (48.6)</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>10 (6.8)</td>
<td>38 (25.7)</td>
</tr>
<tr>
<td><strong>Positive microbiology, n=151</strong></td>
<td>Yes</td>
<td>25 (16.6)</td>
<td>56 (37.1)</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>14 (9.3)</td>
<td>56 (37.1)</td>
</tr>
<tr>
<td><strong>Previous antibiotics, n=136</strong></td>
<td>Yes</td>
<td>31 (22.8)</td>
<td>95 (69.9)</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>1 (0.7)</td>
<td>9 (6.6)</td>
</tr>
<tr>
<td><em><em>ICU/HDU due to infection</em>, n=49</em>*</td>
<td>Yes</td>
<td>11 (22.4)</td>
<td>0 (0.0)</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>6 (11.2)</td>
<td>32 (65.3)</td>
</tr>
<tr>
<td><strong>Appropriate alternative antibiotics, n=149</strong></td>
<td>Yes</td>
<td>11 (7.4)</td>
<td>111 (74.5)</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>27 (18.1)</td>
<td>0 (0.0)</td>
</tr>
<tr>
<td><strong>Sensitivities to alternative antibiotics, n=149</strong></td>
<td>Yes</td>
<td>16 (10.7)</td>
<td>49 (32.9)</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>21 (14.1)</td>
<td>63 (42.3)</td>
</tr>
<tr>
<td><strong>Allergies or adverse reactions, n=136</strong></td>
<td>Yes</td>
<td>11 (8.1)</td>
<td>24 (17.6)</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>22 (16.2)</td>
<td>79 (58.1)</td>
</tr>
<tr>
<td><strong>Oral route available, n=125</strong></td>
<td>Yes</td>
<td>14 (11.2)</td>
<td>54 (43.2)</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>19 (15.2)</td>
<td>38 (30.4)</td>
</tr>
<tr>
<td><strong>Sensitivity to meropenem reported, n=151</strong></td>
<td>Yes</td>
<td>13 (8.6)</td>
<td>13 (8.6)</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>26 (17.2)</td>
<td>99 (65.6)</td>
</tr>
</tbody>
</table>

Discussion
Completion of the alert form was poor and the findings suggest implementation of the alert policy has been inadequate in restricting meropenem use to clinical situations where there is no, or very limited, choice of antimicrobial treatment. More effort should be made to engage healthcare professionals in success quality improvement strategies. Pharmacy needs to take greater ownership of ensuring meropenem is not supplied prior to receiving a fully completed alert form. Further training within the clinical team is required to improve completion of the alert form when initiating an alert antimicrobial. The areas of inappropriate use identified in the study will be used to inform case vignettes to support microbiology training in decision making around the approval of alert antimicrobials. While the algorithm ensured consistency between the investigators, it is acknowledged that microbiologists have access to additional clinical information which was not available for this study.

References
Introduction
Older people are at increased risk of medicine related adverse events. Advancing age, chronic diseases and frailty contribute to polypharmacy and complex medicines regimens, while pharmacokinetic and pharmacodynamic changes affect drug handling. Up to 50% of all medicines for long term conditions are not taken as prescribed and improving adherence could lead to better health outcomes and reduced waste. Case management involves named professionals, like Community Matrons (CMs), co-ordinating the care and actively managing vulnerable people most at risk of using emergency services. A Case Management Pharmacist (CMP) was employed to undertake comprehensive medication reviews and optimise medicines, and to case manage medicines issues by negotiating and coordinating solutions to Medicines Related Problems (MRP) and facilitating collaborative working between health and social care practitioners. This project aims to provide pharmaceutical support and expertise through the introduction of a clinical pharmacist as part of the case management model.

This abstract, reports on the initial phase of the project which focused on developing the role and associated processes within four localities in Southwark and Lambeth.

Objectives
The main objectives of the initial phase are to
- Develop a referral mechanism with appropriate criteria to prioritise patients for pharmacist review
- Optimise medicines, reduce polypharmacy and support adherence for a caseload of patients
- Test a medication assessment tool (MAT) used to identify MRPs
- Evaluate MRPs and medicines optimisation interventions

Method
Referral criteria were developed using drug, patient and disease factors known to increase the risk of medicines related hospital admissions as identified in published literature. The CMP liaised with CMs to identify and prioritise patients. Patients were visited for a comprehensive medication review. A MAT was trialled in order to determine whether it was effective at identifying clinical and adherence issues. MRPs identified were discussed with the patient, and solutions tailored to their individual needs were agreed. The CMP developed a pharmaceutical care plan (PCP) stating the key problems and desired interventions and outcomes. The CMP liaised with CMs, GPs, hospital consultants and other health and social care professionals to ensure that the PCP was completed. Follow up and monitoring by telephone conversation or visits were arranged as needed.

For each MRP a relative risk score was calculated using the NPSA risk matrix and a Red-Amber-Green value was assigned. CMP interventions were rated by the likelihood of an avoided hospital admission (unlikely (U), possible (P) and likely (L)). Ethics committee approval was not sought as data collection and analysis were done as part of routine clinical care.

Results
A total of 54 patients were referred via mechanism designed and were visited on 80 occasions. The CMP identified 226 MRPs using the MAT, classified as access, adherence or clinical problems. There were 221 interventions made to resolve the MRPs discovered. See Table 1.

<table>
<thead>
<tr>
<th></th>
<th>Green</th>
<th>Yellow</th>
<th>Orange</th>
<th>Red</th>
<th>Total MRPs</th>
<th>U</th>
<th>P</th>
<th>L</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access</td>
<td>0</td>
<td>7</td>
<td>5</td>
<td>0</td>
<td>12</td>
<td>7</td>
<td>5</td>
<td>0</td>
<td>12</td>
</tr>
<tr>
<td>Adherence</td>
<td>0</td>
<td>18</td>
<td>35</td>
<td>2</td>
<td>55</td>
<td>36</td>
<td>13</td>
<td>3</td>
<td>52</td>
</tr>
<tr>
<td>Clinical</td>
<td>0</td>
<td>25</td>
<td>123</td>
<td>11</td>
<td>159</td>
<td>70</td>
<td>69</td>
<td>18</td>
<td>157</td>
</tr>
<tr>
<td>Total</td>
<td>0</td>
<td>50</td>
<td>163</td>
<td>13</td>
<td>226</td>
<td>113</td>
<td>87</td>
<td>21</td>
<td>221</td>
</tr>
</tbody>
</table>

Clinical issues included under therapy, inappropriate long term prescribing, poor monitoring, adverse effects, renal impairment and polypharmacy. Adherence issues related to overly complex regimens, physical problems, compliance aids, inhalers, cognitive impairment, poor carer support, intentional non-adherence, unsuitable formulations and reading difficulties. Access issues related to repeat prescribing processes, pharmacy ordering, collection and delivery services, access to surgeries and synchronisation problems. Qualitative data showed positive patient outcomes beyond the number of MRPs and interventions. For example, MS with a T score of -3.5, had treatment with zolendronate suspended due to persistently high blood pressure (BP) (198/103mmHg). She was prescribed six antihypertensives but did not take them as she was unable to identify them in her Monitored Dose System (MDS). At her request the CMP arranged for medicines to be supplied in original packaging and provided a Medicine Reminder Chart. The CMP liaised with her Consultant to stop all antihypertensives except two. At follow up MS’s adherence had improved, BP reduced to 122/68mmHg and she was booked to have zolendronate.

Discussion
The CMP identified MRPs and optimised medicines using the MAT, and tools were used to rate MRPs and interventions. The CMP lead a range of practitioners to implement PCPs and provided appropriate monitoring and follow up. The referral mechanism trialled enabled identification of appropriate patients.

Phase two of the project will involve scoping innovative methods of involving local community pharmacists to ensure PCPs are maintained once the acute medicine needs are resolved. Community Pharmacists can identify any changes to prescriptions, therefore by utilising their skills and services, there are opportunities for further advances in patient care and safety.

Conclusion
The pilot phase of the CMP demonstrated benefits for patients. The CMP found and resolved a large number of MRPs and improved outcomes for complex older patients and potentially reducing hospital admissions. Referral mechanisms and tools for identifying and scoring MRPs were trialled. Further opportunities for collaborative working with Community Pharmacies will be explored in the next stage.

References

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Introduction
In England, half a million people die each year, with 58% of deaths occurring in NHS hospitals and 4% in hospices. Sedative drugs may be used in more than 50% of these patients at the end-of-life as comfort measures to relieve anxiety, agitation, and restlessness. A wide range of frequency of sedative drug use and variation in dosing has been previously identified in the published literature. These drugs are often used as part of the Liverpool Care Pathway for the dying (LCP), which is a clinical algorithm of care, providing high standard, quality end-of-life care across all healthcare settings. Despite growing evidence for its effectiveness and benefit, the LCP is constantly under scrutiny, sometimes being referred to as ‘euthanasia in disguise’. Recently, there has been a UK media uproar regarding its use, claiming that NHS patients might be wrongfully put onto the LCP to hasten their death to free bed spaces, and obtain additional tariff. This study is undertaken to determine if patients at the end-of-life are receiving sedative drugs in appropriate doses in line with national guidelines.

Aim
To undertake an audit, assessing current sedative drug use at the end-of-life at St. Benedict’s Hospice (StB). This will be compared to data from a previous audit at the Hospice and current guidelines.

Objectives
- Audit for: use of LCP and time from initiation to death, sedative drugs used, dose, route, duration, and indication; all documented in the patient’s Kardex.
- Compare audit results to previous StB audit & National Council for Palliative Care (NCPC) guidelines and the Palliative Care Formulary (PCF) guidelines
- Recommend changes as necessary

Method
A retrospective medicines chart audit was completed for consecutive patients who passed away at StB between June 2012 and December 2012. A tailored data collection form was used. Sedative drug usage was documented up to 7 days prior to death, as with previous literature. This was defined as prescription of traditional sedative medications (benzodiazepines and antipsychotics) to relieve refractory symptoms of anxiety and agitation. Charts were audited for sedative drugs used, dose, route, duration, indication, switch between sedative medications and if/when the LCP was initiated. Drug doses used the day before death were considered as the dose at death, as deaths occurred at various times from the early hours to late in the day making it difficult to measure equally. Results were compared to an unpublished, previously conducted audit at StB between September 2011 and January 2012, NCPC guidance, the PCF guidelines, and published literature. Ethics approval was not required for this study as it was a clinical re-audit.

Results
58 patients were included; 69% (40/58) were on the LCP, initiated a mean of 3.2 days prior to death. Almost all patients received PRN sedative drugs, with the exception of four patients who had no prescribed sedative drugs. 78% (41/54) had medication prescribed through a continuous subcutaneous infusion (CSI); however, only 59% (34/58) had sedative drugs prescribed through CSI. The three prescribed sedative drugs were: midazolam, levomepromazine and haloperidol, as per current guidelines. In the last 24 hours of life, 60% (35/58) of patients received a dose of midazolam, compared to 21% (12/58) for levomepromazine and 2% (1/58) for haloperidol. There was a downward trend in the number of patients on sedative drugs as the number of days before death increased. Two patients were on triple therapy, 29% (17/58) on midazolam/levomepromazine and one patient on midazolam/haloperidol. Generally, peak doses were prescribed 3-5 days prior to death, decreasing or plateauing as time approached day of death. See Table 1.

Table 1: Sedative Drug Doses at St. Benedict’s Hospice in the last 24 hours of life

<table>
<thead>
<tr>
<th>Drug</th>
<th>Current Audit</th>
<th>Previous Audit</th>
<th>NCPC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Midazolam</td>
<td>20.9 (2.5–2.5–90)</td>
<td>17.1 (10; 2.5–100)</td>
<td>10–60</td>
</tr>
<tr>
<td>Levomepromazine</td>
<td>18.2 (0; 0–300)</td>
<td>28.9 (62.5; 12.5–300)</td>
<td>25–100</td>
</tr>
<tr>
<td>Haloperidol</td>
<td>0.17 (0; 0–3)</td>
<td>Not reported</td>
<td>0.5–3</td>
</tr>
</tbody>
</table>

*Doses reported as Mean (Median; Range) in mg/24hours

Discussion
There is comparable sedative drug dosing between the two audit periods at St. Benedict’s Hospice. Haloperidol doses used are within the recommended NCPC dosing guidelines. 3/51 (6%) midazolam patients and 4/23 (17%) levomepromazine patients were above the NCPC dosing recommendation, all of whom had resistant agitation requiring concomitant therapy with both drugs. In comparison to an international systematic review, midazolam median 45mg (range 3–1200mg) & levomepromazine median 100mg (range 25–250mg), the dosing at StB is more conservative, while maintaining the desired outcome. Dosing at StB was also found to be conservative in comparison to other published literature.

This audit had several limitations. Its retrospective nature means clinical decisions relating to medication choice and dosage may have been missed due to lack of complete documentation. The audit’s sample size of 58 patients was small, however, as this is a palliative care audit, numbers were expected to be low over the 6-month audit span.

Action plan for practice: In light of recent media storm, reassure staff that current practice is generally within national guidelines, remind staff through education of the benefits of antipsychotic drug use earlier in treatment to avoid midazolam-induced delirium at higher doses. Sedative medications should be titrated to manage patients’ symptoms of anxiety, agitation and restlessness without the intention to completely sedate the patient.

References
1 Department of Health. End of Life Care Strategy - promoting high quality care for all adults at the end of life. 2008.
Introduction
The Crown Report (1999) is widely accepted as the turning point for non-medical prescribing in the UK. Dr Crown concluded ‘increasing the range of health professionals who are authorised to prescribe...will improve services, make better use of the skills of staff and make a significant contribution to the modernisation of the Health Service’. Legislative changes in 2006 granted full independent prescribing (IP) rights to pharmacists following completion of a PG certificate in IP. Interventional cardiology (IC) has developed as a subspecialty of cardiology that involves invasive procedures such as coronary angiography for the treatment of acute coronary syndromes. Although treatment is dictated by findings in the catheterisation laboratory (cath lab), patients must undergo an admission procedure which includes a medical history and documentation of currently prescribed medication. To date in Belfast City Hospital, this has almost exclusively been the role of a Foundation Year 1 doctor, potentially with a limited knowledge of complicated poly-pharmacy regimens often seen in cardiovascular specialties. Notably, a 2009 report by the General Medical Council specifically examined the issue of prescribing errors made by FY1 doctors. It reported that medication orders written by FY1 doctors had an error rate of 8.4%. Since the beginning of clinical pharmacy, pharmacists have specialised in cardiology pharmacotherapy. As such, pharmacists are ideally placed to promote safe and effective medicine use. To date, several studies have shown that clinical pharmacists are effective at improving outcomes for patients with disease states such as dyslipidaemia and hypertension.

Objective
To assess the potential role of a pharmacist independent prescriber (PIP) on an IC ward in a large modern university teaching hospital.

Method
The study undertaken was a retrospective single cohort study design, looking at the role of a PIP on an IC ward. All patients admitted to the IC ward were eligible for inclusion. The aim was to investigate and quantify the contribution of the PIP with respect to reviewing and prescribing drug chart medications, writing discharge prescriptions and counselling patients. All patients receiving pharmaceutical input from the PIP were incorporated into the study on a random basis. Data collection occurred over 14 weeks from August to November 2012. During this period all ward-based prescribing was undertaken by a team of 3 FY1 doctors and one 0.5 whole time equivalent (WTE) Band 7 PIP. Discharge prescriptions were typically written upon return of the patient from cath lab. PIP input was recorded directly on a daily data collection sheet. Detail included drug charts reviewed and prescribed, discharge prescriptions prescribed and patients counselled. In total 298 patients were seen by the PIP during the 14-week period. The data was subsequently collated and analysed over a two-week period from November to December 2012.

Results
During the study the PIP provided pharmaceutical input to 7.3 (SD ±2.31) patients per day. For the purposes of the study pharmaceutical input is defined as ‘reviewing and reconciling patient’s medication histories (e.g. with GP records), prescribing patient’s drug chart medication, prescribing patient discharge medication and counselling patients on changes to previous medication regimens’. As shown in Figure 1, 58% of all patients had PIP input. 54.4% of patients had their drug chart reviewed (prescribed or reconciled) while 37.2% of patients had their drug chart prescribed by the PIP.

![Figure 1: Percentage input of PIP over 14-week duration of study (n=298)](image-url)

The mean number of drug charts reviewed by the PIP daily was 6.8 (SD ±2.3). Of these, a daily mean of 2.7 (SD ±1.6) were prescribed by the PIP. The mean number of drug items reviewed per drug chart by the PIP daily was 7.8 (SD ±2.0). Of these, a mean of 5.6 (SD ±4.7) items were prescribed by the PIP. Overall the total number of items reviewed by the PIP per day was 52.7 (SD ±21.9) while the total number of drug chart items prescribed per day was 15.9 (SD ±14.1). In addition to inpatient medication the PIP prescribed a total of 56 discharge prescriptions with an average of 3.1 (SD ±2.96) items per script as well as surgical prophylactic antibiotics for 13 patients.

Discussion
The broad practice of hospital pharmacists lends itself well to pharmacist prescribing, with access to patient clinical records and experience in practising as part of a multidisciplinary clinical team. To the best of our knowledge this is the first study looking at quantitative potential of a PIP in secondary care. This study demonstrates that a PIP can make a significant input into patient care and emphasises Department of Health policy that pharmacists represent an underutilised healthcare group. Although this study demonstrates the evident benefit of a PIP in secondary care, further evidence and support is essential to define positive outcomes and fully realise the potential of pharmacist independent prescribing. It is hoped future work could investigate factors such as defining the added value of a PIP and establishing hard clinical outcomes relating to improvement in quality of patient care.

References
(2) GMC report. An in depth investigation into causes of prescribing errors by foundation trainees in relation to their medical education. EQUIP study. 2009
Introduction
The Emergency Care Unit (ECU) at a North East Hospital is a 27-bed unit which accommodates 750 patients per month, on average. Annual medicines management risk assessments for ECU have highlighted a number of inconsistencies with respect to medicines storage on the unit and as a result, ECU is often associated with increasing numbers of medications not being given due to nursing staff not being able to locate items because the traditional storage cupboards are often cluttered and disorganised.

In order to improve medicines storage and reduce the number of missed doses, particularly of critical medicines, in response to the NPSA alert on reducing harm from omitted and delayed medicines in hospitals, automated storage of medicines seemed to be an appropriate solution. Northumbria Healthcare made a decision to procure Omnicell storage cabinets, which are manufactured by Avantec.

Objective(s)
Implement an automated storage and dispensing system into ECU to;

- Improve stock control and medicines storage/accountability
- Reduce time spent by nursing staff searching for cupboard keys/medicines and ordering ad-hoc items
- Improve the safety of the medicines administration process
- Make the restocking process more efficient to release nursing staff efficiencies

Method
Baseline time and motion data was collected over a 3-week period by the pharmacy assistant responsible for ECU prior to implementation of automated storage for ordering, administration, and re-stocking of medicines. This involved observing a band 5 staff nurse during each morning drug round for three weeks to collect data on time spent searching for keys, medicines, ordering temporary stock items and picking medicines from the traditional storage cupboards. Three months after implementation of automated storage into ECU, data collection was repeated in a similar manner as described above.

The numbers of temporary stock orders (and items) received from ECU were monitored by a pharmacy assistant in pharmacy stores for four weeks prior to, and after implementation of automated storage. Data on pharmacy-related activities such as ordering of ward stock medicines (prior to automated storage), restocking the cabinet and expiry date checking was gathered from previously collected time and motion data. This is an audit project and hence ethics approval was not required.

Results
Nursing staff efficiencies are realised through the impact of automated medicines on restocking the medicine cupboard, ad-hoc ordering of temporary stock items, and searching for keys/medicines. Before automated storage was installed, the medicines process required 8 hours/week of a staff nurses time (Band 5, Agenda for Change). Following the installation of automated storage, all of these processes became automated except restocking the cabinet (see Table 1).

Pharmacy staff efficiencies are realised by a slight modification in role from visiting the ward to carry out ‘top-up’ ordering of medicines and expiry date checking (monthly), prior to automated storage, to restocking the cabinet following implementation of automated storage; the previous role of a band 5 staff nurse. Using the results in table 1, this has resulted in a saving of 1.75 hours/week of a pharmacy assistant (Band 3, Agenda for Change).

<table>
<thead>
<tr>
<th>Task</th>
<th>Before automation</th>
<th>After automation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ordering of stock medicines</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Who?</td>
<td>Pharmacy Assistant</td>
<td>Automated</td>
</tr>
<tr>
<td>Time</td>
<td>75 mins twice/week</td>
<td></td>
</tr>
<tr>
<td><strong>Checking order and restocking medicine cupboard</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Who?</td>
<td>Band 5 staff nurse</td>
<td>Pharmacy Assistant</td>
</tr>
<tr>
<td>Time</td>
<td>45 mins twice/week</td>
<td>Automated</td>
</tr>
<tr>
<td><strong>Ad-hoc ordering of temporary stock items</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Who?</td>
<td>Band 5 staff nurse</td>
<td>Pharmacy Assistant</td>
</tr>
<tr>
<td>Time</td>
<td>10 mins times/week</td>
<td>Automated</td>
</tr>
<tr>
<td><strong>Expiry date checking</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Who?</td>
<td>Pharmacy Assistant</td>
<td>Automated</td>
</tr>
<tr>
<td>Time</td>
<td>60 mins/month</td>
<td></td>
</tr>
<tr>
<td><strong>Searching for ward keys</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Who?</td>
<td>Band 5 staff nurse</td>
<td>Automated</td>
</tr>
<tr>
<td>Time</td>
<td>30 mins/day</td>
<td></td>
</tr>
<tr>
<td><strong>Searching for items</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Who?</td>
<td>Band 5 staff nurse</td>
<td>Automated</td>
</tr>
<tr>
<td>Time</td>
<td>40 mins/day</td>
<td></td>
</tr>
</tbody>
</table>

Conclusion
Medicines accountability and handling in ECU has been vastly improved following implementation of automated storage, due to the fingerprint access requirement. From a nursing point of view, no searching for keys or required items means medication is more readily available which assists in the timely administration of medicines to patients on ECU and reduces missed doses. As a result of optimising the stock list following installation of the automated system, nursing staff no longer need to process any orders for temporary stock items, helping to reduce waste.

Data collected so far has shown that the automated storage cabinet is saving 0.25 whole time equivalents (WTE) of a band 5 staff nurse and 0.05 WTE of a band 3 pharmacy assistant which approximately equates to a 4-year payback period. This calculation takes into account capital outlay, recurring revenue costs associated with annual maintenance of the cabinets and non-recurring revenue costs associated with enabling works. The current top-end of a band 5 salary (£27,625) was used to calculate this payback period. Time value of money and opportunity costs are not taken into account.

Potential areas for future work would be to look at data on missed doses, incident reports relating to medicines, access to emergency medicines out-of-hours and financial savings recovered through enhanced stock control.

References
18. Rivaroxaban Observational Safety Evaluation (ROSE) study:
Design and rationale of a safety study evaluating a novel anticoagulant in secondary care

Layton D,1,2 Davies M,1,2 Evans A1, Shakir AWS,1,2,3 Drug Safety Research Unit, Southampton; University of Portsmouth, Portsmouth

Background
Pharmacovigilance (PV) is concerned with detection, assessment and prevention of adverse effects or any other possible drug-related problems; it’s ultimate goal is to achieve rational and safe therapeutic decisions in clinical practice. [1] The principle approach that pharmacists are involved in is spontaneous adverse drug reaction (ADR) reporting. Another surveillance system is Modified Prescription-Event Monitoring (M-PEM). [2] It describes the incidence of adverse events and drug utilisation in primary care. M-PEM cohorts consist of new user patients initiated by General Practitioners and patients whose treatment was initiated by specialists and continue treatment post discharge. Thus survivor bias is possible as subjects are excluded from M-PEM studies if treatment is stopped in secondary care.

A systematic approach to monitoring drug safety in secondary care does not currently exist in the UK. To fulfill this need, M-PEM has been adapted to monitor the use and safety of a new drug prescribed to a patient population under specialist care (Table 1). The Specialist Care Event Monitoring (SCM) registry study design is a new methodology developed in parallel with the new legislative requirement for pharmaceutical companies to undertake a Risk Management Plan as part of post-authorisation safety monitoring.

Table 1. Characteristics of M-PEM and SCM studies

<table>
<thead>
<tr>
<th>Study Characteristic</th>
<th>M-PEM</th>
<th>SCM (Registry)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Setting</td>
<td>Primary care</td>
<td>Secondary care</td>
</tr>
<tr>
<td>Prescribers</td>
<td>General practitioners</td>
<td>Specialists</td>
</tr>
<tr>
<td>Design</td>
<td>Observational</td>
<td>Observational</td>
</tr>
<tr>
<td>Treatment</td>
<td>Naturalistic</td>
<td>Naturalistic</td>
</tr>
<tr>
<td>Period of observation</td>
<td>6-12 months</td>
<td>3 months</td>
</tr>
<tr>
<td>Ethics</td>
<td>Section 251 waiver</td>
<td>Patient consent required</td>
</tr>
<tr>
<td>Risk</td>
<td>Lower risk patients</td>
<td>Higher risk patients</td>
</tr>
<tr>
<td>Data source</td>
<td>Secondary use of data from existing medical records</td>
<td>Secondary use of data from existing medical records</td>
</tr>
</tbody>
</table>

Rivaroxaban (XARELTO®) is a highly selective direct factor Xa inhibitor which inhibits thrombin formation and the development of thrombi. [3] It is used to treat deep vein thrombosis (DVT) and pulmonary embolism (PE), and for prevention of recurrent DVT and PE in adults; prevention of stroke and systemic embolism in adult patients with non-valvular atrial fibrillation (SPAF) with one or more risk factors, such as congestive heart failure, hypertension, age ≥ 75 years, diabetes mellitus, prior stroke or transient ischaemic attack; and prevention of venous thromboembolism (VTE) in adult patients undergoing elective hip or knee replacement surgery. The ROSE study aims to monitor short-term (first 3 months) safety and drug utilisation of Rivaroxaban prescribed for medical conditions requiring anticoagulation by specialists in secondary care in England and Wales

Objectives
To present the design and rationale of the ROSE study and to discuss opportunities for pharmacists to expand their professional roles.

Methods
This study is an observational population based cohort study which aims to collect data on at least 1700 evaluable patients prescribed Rivaroxaban for specific indications within the secondary care setting. The primary focus is to quantify the risk of haemorrhage (within gastrointestinal and urogenital organ sites (which meets the criteria for major bleed) and all intracranial sites). Secondary foci include describing the patient population, off-label use and the incidence of other safety risks. Patients will be identified via specialist networks and data obtained from existing medical records on prognostic/risk factors, exposure and specific outcomes. Patients receiving alternative anticoagulant therapy for the same indications will be recruited concurrently. Analysis will explore the influence of measured explanatory factors on variability of treatment decisions and selected safety risks across institutions.

Results
The Comprehensive Clinical Research Network (CCRN): Non-malignant Haematology Specialty Group has adopted the study, supported by the Stroke Research Network and the CCRN: Cardiovascular Specialty Group. A positive ethics opinion was received Nov 2012. Identification of investigators is in progress.

Methodological considerations: The desire is to study Rivaroxaban use in a more heterogeneous population that those observed in clinical trials and for safety outcomes to be contextualised with existing treatments. However, a potential weakness of this (and any observational study) is selection bias where certain patient characteristics may influence the probability of being treated. The most suitable comparator would be those treated with current standards of care reflecting best medical practice. However, such choices are complicated by factors such as clinical setting, the physicians’ natural caution for adopting new medicines and external influences on prescribing (e.g. expert committee guidelines). Comparator choice is important not only for clinical interpretation of a study, but also potential impact on prescribing policy. For ROSE, new user patients receiving alternative anticoagulant therapy for the same indications will serve as an internal contextual cohort to characterise the adoption of Rivaroxaban into clinical practice. Possible differences in setting, prevalence of (non-clinical) prescribing reasons, physician prescribing preferences and known clinical risk factors for the primary outcomes of interest will be explored.

Pharmacists in Research: Pharmacists play important roles in influencing drug policy and drug use through collaboration with other health care professionals (HCPs). Pharmacists’ involvement in developing treatment guidelines, pharmaceutical care practices, health screening and monitoring (e.g. anticoagulant clinics) means they are well placed to provide a positive contribution in pharmacoepidemiological research. Pharmacists could improve the success of SCM studies by contributing to: methodological aspects at the design stage; implementation of signalling processes to alert study investigators of eligible patients (referral of patients to study investigators); and monitoring and reporting adverse events.

Conclusions
The position of the pharmacist within the healthcare system is continually changing, shifting toward a proactive approach in the prevention of ADRs, patient education as well as providing consultancy on drug therapy to other HCPs. The recent change in legislation governing PV offers pharmacists a new opportunity to expand on their professional roles and engage in research by participating in SCM intensive monitoring studies. It is anticipated that research through multidisciplinary collaboration will lead to a better understanding of the variability and influence on prescribing of novel treatments which appear to have some advantages but for which there are significant differences about recommended use.

Reference List


(3) Bayer Pharma AG. XARELTO (Rivaroxaban) 10mg tablets. SmPC. 2012. Available at URL: http://www.medicines.org.uk/emc/. Date accessed 22/02/2013.
Background

The medicines information (MI) service is provided by NHS pharmacists, technicians and support staff, and is aimed at healthcare professionals and members of the public, principally to answer enquiries with clinical interpretation. It also provides support in areas such as medicines management e.g. local guidelines/formulary, bulletins, processing drug alerts and updating resources. In the UK, there are 16 regional centres and about 250 local centres and together these centres make up the country wide network called UKMi. Nationally the UKMi Clinical Governance Working Group (CGWG) issues guidelines for ensuring quality in the enquiry answering process, against which local MI centres are audited. They have also developed an audit tool which comprises of a set of questions focused on the enquirer’s experience, to judge their satisfaction in the service provided. In 2009 an audit of this user satisfaction was carried out at CUH and provided evidence that the service was at an acceptable level (Table 1), but there were also some recommendations for improvements. A re-audit of the user satisfaction aspect of this service was now required.

Aim

To determine if the level of satisfaction of the MI service by its users is in accordance with UKMI and in-house standards.

Objectives

To audit the service against UKMI and ‘in house’ standards, identify areas for improvement and assess whether the recommendations from the previous audit have been implemented.

UKMi standards stipulates that the audit should be carried out at least once per annum and a minimum score of 3.5–4 (out of 5) is required in each of the 3 categories of user satisfaction.

‘In-house’ standards mirrors the annual re-audit schedule of UKMi and to achieve a score of >4 (out of 5) in all three categories of satisfaction.

Method

Inclusion/ exclusion criteria: all enquiries deemed to be a true enquiry, e.g. use of clinical judgement or MI resources, will be included in the survey. Those that have been documented, e.g. stock checks, will be excluded.

For all enquiries answered between 01/05/12 and 30/06/12, minus exclusions, a survey questionnaire was given to the enquirer via email, post, or in person. Based on the workload through this MI centre the time period was deemed sufficient to provide the number of enquiries required to determine the overall satisfaction of the service which falls into three main categories: answer satisfaction, general helpfulness/time satisfaction and ease of contact satisfaction. The enquirer was instructed to answer each question with a single judgement of either: strongly agree, agree, uncertain/not applicable, disagree or strongly disagree. Following the return of the survey forms the answers were evaluated using the UKMi user satisfaction survey calculator tool and a score out of 5 for each category was generated and interpreted as follows: 1-3 = unsatisfactory, 3.5-4 = just satisfied, 3.5-4 = satisfied, 4-4.5 = pleased, 4.5-5 = excellent service. Ethics approval was not required for this audit project.

Results

Response rate: From a total of 44 enquiries 32 questionnaires (72.73%) were completed.

Table 1. Scores generated for each category of satisfaction in both audits to date.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Answer satisfaction</td>
<td>4.2</td>
<td>4.7</td>
</tr>
<tr>
<td>General helpfulness/time satisfaction</td>
<td>4.3</td>
<td>4.4</td>
</tr>
<tr>
<td>Ease of contact satisfaction</td>
<td>4.7</td>
<td>4.4</td>
</tr>
</tbody>
</table>

Conclusion

Table 1 shows that in all three categories of user satisfaction, a score of over 4 is achieved as per both the in-house and UKMi standards. In particular the answer satisfaction aspect of the service was of most value as the users rated it as excellent (score 4.7). But it also indicates that despite the excellent advice given to the enquirer, the service is hampered by its ability to ensure advice is given in a timely manner and how easily the enquirer can contact the service (score 4.4). Although the score is still good, it highlights a scope for improvement. A possible reason for this is the high work load of the MI pharmacists at this busy hospital. The aim is to have a manned service throughout the working day but in instances of staff shortages, the priority towards the clinical service compromises this aim. As a result the enquirer is required to leave a message on the answer phone, and despite the answer machine being attended to following any period of absence; it may contribute to the reduction in satisfaction and prompt answer. Of more concern, is the possibility that enquirers may not leave a message and obtain the answer through other means e.g. calling the dispensary or asking other colleagues, creating the risk of not using evidence based resources and increasing work load for other members of the pharmacy team. This downfall is also reflected in the comparison to the results of the previous audit. Recommendations from the previous audit included an advertising campaign to promote the service and refining of the enquiry answering process. Despite the implementation of MiDatabank, to refine this process, the service is still under pressure to deal with an increase in demand, preventing the implementation of an advertising campaign and therefore the service cannot reach its full potential. A major limitation was the fact that not all the questionnaires were returned for analysis.

Recommendations – To highlight downfalls of the service additional data is required. There should be a log to document the total time the MI service is left unattended so that user satisfaction and number of enquiries received can then be compared against actual operational times. Other staff in pharmacy should also inform MI when they answer a query to determine the work load impact on the rest of the department. It was also noticed that some queries from pharmacist could be answered through online resources and highlights a training issue to be addressed. A practical solution to improve satisfaction could be through taking in enquiries via other means, such as a dedicated email address or a prompt on the answer phone to bleep the MI pharmacist. The service should also be audited annually.

References

1 Badani.A and Wills,S, UK Medicines Information Training Workbook, 2011, Southampton University Hospitals NHS Trust.
2 UKMi CGWG audit standards and toolkit: protocol for measuring the quality of NHS medicines information services. November 2010.
3 Patel B, UKMi User Satisfaction Survey 2009
Introduction
Parenteral nutrition (PN) is a potentially fatal therapy if inappropriately compounded or administered. Prescribing, compounding and administration of PN therefore demands meticulous planning, effective communication and a breadth of expertise from a multidisciplinary team (MDT). Derby Hospitals NHS Foundation Trust (DHFT) has a MDT to manage parenteral nutrition. The Dietician calculates calorie, fluid and protein requirements. Pharmacists then use that days biochemistry tests to determine electrolyte composition. Knowledge of formulation issues is used to confirm stability of the proposed regimen. Doctors are consulted to agree and sign the prescription. The prescription is then compounded in the Central Aseptic Unit (CASU) of the Pharmacy Department, from which it is sent to the ward for administration to the patient. Due to concerns over clinically insignificant changes to electrolyte composition it was decided to audit DHFT practice.

Objectives
To determine the appropriateness of changes to electrolyte composition at DHFT.
To determine the proportion of PN prescribed without appropriate information.
The following audit standards were chosen;
100% of patients had blood results available on the day of prescription
100% of electrolyte changes were required as determined by local policy
100% of electrolyte changes were changed by a clinically significant value as determined by local policy. (No literature data could be identified for this, so local standards were set.)
100% of electrolyte replacement outside of PN should be advised by a Pharmacist

Method
As this was a retrospective audit ethics approval was not required. All adult patients who had received PN within a five month period were identified by CASU. The original prescriptions were obtained along with blood biochemistry results from the Trust pathology system.

‘Inappropriate monitoring’ was documented if no blood results were available on the day of prescription. Additional information (e.g. acute kidney injury), noted on the day of the parental nutrition prescription, was documented. Any prescription that was for more than one day of PN was highlighted. Medical notes were then reviewed to determine any extra electrolyte supplementation the patient had received and identify if this was advised by the Pharmacist. The Specialist Pharmacist for Gastroenterology used these criteria to determine if the electrolyte requirements on the PN prescriptions were appropriate. The Advanced Pharmacist for Critical Care then validated the results.

Results
Results are summarised in Table 1. Fifty one patients received 555 PN bags (ordered on 337 prescriptions) during the audit period. No patient received more than one bag per day. The mean course length was 12 days (Range: 1 to 59 days). The mean age of patients receiving PN was 64 years. The youngest patient was 21 years old and the oldest 90 years old. 25 patients were started under Gastroenterology, 3 under Oncology and 24 under the surgeons.

<table>
<thead>
<tr>
<th>Measure</th>
<th>Met Standard (%)</th>
<th>Not Met Standard (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prescriptions with biochemistry tests available on day of prescription</td>
<td>312 (92.6%)</td>
<td>25 (7.4%)</td>
</tr>
<tr>
<td>Prescriptions where electrolytes changed by an appropriate amount &amp; at the correct time</td>
<td>247 (84.3%)</td>
<td>46 (15.7%)</td>
</tr>
<tr>
<td>Electrolyte supplementation outside PN advised by Pharmacist</td>
<td>6 (35%)</td>
<td>11 (65%)</td>
</tr>
</tbody>
</table>

Table 1. Main audit results.

Discussion
Significant changes to electrolyte composition are made appropriately in the majority of cases but not all. Pharmacists may be too quick to alter the composition of the bag before its effect on blood biochemistry is known. This occurs because the bag ordered at 11am is not administered until 6pm, meaning just over half the bag is given before bloods are next tested. An inexperienced Pharmacist may then alter the prescription unnecessarily or by an inappropriate amount. Further education of those involved in PN is required to address this.

The majority of patients requiring electrolyte supplementation outside of the PN bag were in Critical Care areas. The unstable nature of these patients means that the electrolyte requirements are underestimated and nurses are allowed to supplement with additional electrolytes according to defined protocols. This is standard practice at DHFT.

Prescriptions completed without up to date electrolyte results are concerning due to the potential for harm. There is not a trust-wide phlebotomy service and samples may take up to 4 hours to process in the laboratory. In order to meet CASU deadlines and ensure continued provision of nutrition, Pharmacists may guess electrolyte requirements. Some patients are also "difficult to bleed" therefore samples are not collected.

A limitation of this audit is that no data could be collected on the decision making process used by Pharmacists to identify a patients electrolyte requirement. The level of competence of the Pharmacist making changes was not assessed because there is no training program. Due to these results DHFT will implement a training program and reconfigure services.

References
Quality improvement initiative

Background/Introduction
The 'Adverse Drug Event Trigger Tool' (ADE-TT) uses a standardised approach to identify medication-related patient harm (ADEs), and can be used by an organisation to follow trends of events over time. The American based Institute for Healthcare Improvement (IHI) has drawn up a list of 'triggers' with the aim of rapidly identifying the possibility that an ADE happened e.g. use of an antidote such as Vitamin K, low platelet count (<50), or sudden discontinuation of a medication. The method involves rapid retrospective review of patient prescription, notes and laboratory results in search of these triggers and then their causes. The ADE-TT has been applied in New Zealand hospitals and has been found to be a useful way to identify ADE occurrence over time at individual hospitals; the method is usually applied to a random selection of patients every two weeks, with a time limit of 20 minutes per patient review.

In contrast, the World Health Organisation (WHO) co-ordinated International Classification of Diseases (ICD) is used routinely for all patient admissions to hospitals and is a standardised method of classifying diseases and other health problems, including ADEs, which are documented in the patient’s clinical record.

Objective
To compare clinical ICD coding with the ADE-TT as a method of identifying ADEs in the hospital setting

Ethics approval
Ethics approval was not required because this project is a quality improvement initiative.

Method
This observational study was conducted at a district teaching hospital in New Zealand. In conjunction with information technology (IT) services, a function was created to draw information from clinical ICD coding, with the following parameters:
- Medical speciality
- Ward
- Patient specific national number.
- Start and end dates of admission
- ADE-related clinical ICD codes:
  - Y40-59 Drugs...causing adverse effects in therapeutic use
  - X40-49 Accidental poisoning by...noxious substances
  - and A04.7 Enterocolitis due to Clos difficile.

These clinical ICD codes were chosen for the report because they are indicators that an ADE might have occurred. The report was run for a 40-bed 'health care for elderly' ward for patients discharged between 1 and 31 May 2012.

Clinical notes of all patients identified in the above report were then reviewed using the ADE-TT method to identify IHI triggers and their causes. The ADEs identified by each method of detection were then compared.

Results
The IT report produced a list of 23 patients who had been discharged from the health care for elderly ward during the study period.

For these 23 patients, the chosen clinical ICD codes were listed 31 times resulting in 31 ADEs; every ICD-coded event identified an ADE.

In comparison, the ADE-TT identified 102 triggers leading to 30 ADEs in the same 23 patients.

Combining ADEs identified by ICD coding with those identified by ADE-TT gave a total of 40 ADEs. Of these 40 ADEs, only 21 (52.5%) were identified by both methods. The remaining 19 ADEs were identified by one method only.

Discussion/Conclusion
We found some agreement between ADE-TT and clinical ICD coding, with about half the ADEs detected by both methods.

A limitation of the study is the potential variation between investigators in classification of ADE, both for ADE-TT and ICD coding. Frequent discussion and comparison of data by investigators helped to standardize ADE-TT result.

Clinical ICD coding data is readily available for hospital inpatients. Use of IT systems to locate those with appropriate ICD codes (e.g. Y40 to Y59 Drugs...causing adverse effects in therapeutic use) is a quick way of identifying many (but not all) ADEs. In contrast, the ADE-TT takes more time, with many ‘triggers’ leading to events that did not cause harm.

The combination of the methods used in this study increased the detection of ADEs and provided a higher yield of events. We recommend adding medication-related ICD clinical codes (Y40-59, X40-49) to the list of triggers in the ADE-TT.

References
Background
NHS Lanarkshire (NHSL) promotes a fosfomycin policy to manage uncomplicated urinary tract infection (UTI) caused by multi drug resistant (MDR) Escherichia coli and Klebsiella pneumoniae resistant to all available licensed or suitable oral antibiotics. Current licensed options available for treatment of multi drug resistant UTI include carbapenems, pivmecillinam, nitrofurantoin, temocillin and colistin. However these options may not be suitable in certain clinical situations e.g. penicillin allergy or in the presence of significant renal impairment. The unlicensed drug fosfomycin is particularly useful for the management of uncomplicated UTI as it does not share resistance mechanisms with other antibiotic classes, and can be used for patients with penicillin allergy or renal impairment. The strategy to promote fosfomycin as an alternative antibiotic is intended to minimise IV carbapenem antibiotic use, thus preserving their usefulness for complex UTI and serious infections.

Objective
Audit compliance against local policy and unlicensed drug use standards and assess fosfomycin effectiveness in treating MDR UTI.

Method
Permission to conduct a retrospective 12 month audit was obtained from NHSL Research Department and local Caldicott Guardian. The research department stated that ethics approval was not required due to audit nature of project. Standards were developed to assess compliance against local fosfomycin policy and unlicensed medicines policy and quantify patient treatment outcomes. Anonymised data collection forms were piloted to capture relevant data. Organisms causing UTI and Minimum Inhibitory Concentrations (MICs) were identified using a Vitek 2 Analyser (Biomerieux).

Results
50 patients were eligible for audit. Completed unlicensed medicine paperwork was observed in 45% of cases and patient consent forms were found in 90%. 26% of microbiology results indicated sensitivity to a potentially useable alternative oral antibiotic. Microbiological cure was documented for 77% of patients who had a post fosfomycin urine sample. Prescribing of meropenem was avoided in 40 patients. Fosfomycin resistance was documented in 9% of treated patients with a post treatment culture. From antibiogram results, alternative licensed oral antibiotics were identified as having in vitro activity in 23 cases cultures. Of these patients, 14 had no documented reason indicated in the medical notes to suggest a reason for not choosing an oral alternative.

Conclusion
Use of fosfomycin in NHSL is associated with a high percentage of successfully treated cases of UTI with a low incidence of post treatment resistance being generated. Utilisation of oral fosfomycin avoided 40 courses of IV carbapenem thus is associated with significant cost saving and therefore demonstrates huge benefits. Compliance with governance processes in relation to unlicensed drug use and ensuring fosfomycin is reserved for patients with no other available licensed oral alternative were identified as areas for improvement. Dissemination of results to clinicians and pharmacy staff with subsequent re-audit is merited. Positive microbiological cure and resistance rates with additional benefits such as minimisation of carbapenem selective pressure, confirm the NHSL strategy to use fosfomycin in the management of uncomplicated MDR UTI is providing benefit to existing and potential future patients.

References

Figure 1. Resistance to fosfomycin in patients who continued to have bacteriuria post treatment with fosfomycin.
Clinical Pharmacy Interventions to Patient Care in a Tertiary Hospital Setting

Campbell G1, Auyeung V2, McRobbie D1

1 King’s Health Partners, Guy’s and St Thomas’ NHS Foundation Trust, London, 2 Institute of Pharmaceutical Science, King’s College London

Introduction

Over the last 40 years the work of Pharmacists in hospitals has changed dramatically. It is now recognised that Pharmacists play an important role in medicines safety whilst patients are in secondary care. Pharmacists facilitate the safe and effective use of medication in patients1, 2 and these interventions which can lead to the reduction of adverse events are associated with cost savings3. Over the past 15 years the pharmacy department in a tertiary London teaching hospital has collected data on their operational activities and interventions to demonstrate the service that clinical pharmacists provide to the Trust. Over the past 4 years this has been collected in a robust and reliable fashion.

Objectives

To describe and compare the type and frequency of clinical pharmacy contributions to individual patients admitted to a large teaching hospital within a one week study period over four consecutive years 2009 -12.

Method

The study was a prospective one week descriptive clinical pharmacist interventional service evaluation, taking place in October, November or December over a 4 year period (2009-2012). The study was conducted at a tertiary London Trust with 1100 beds and all wards that received a regularly clinical pharmacy service at the trust were included. An intervention was defined as an action that leads to a change in the patient’s medication. Data collection sheets were used with pharmacists recording the data on interventions they had made. The definition of the interventions had been previously agreed by the clinical teams. Statistical analysis using the chi square test was used to determine the significance of the samples. Bed days were defined by data from the tertiary hospital as taken from Hospital Episode Statistic4. Ethical approval was not required as this was regarded as a service evaluation; the study was registered with Trust governance.

Results

In 2009, 2693 interventions were made by 50 pharmacists, 3645 interventions made in 2010 by 64 pharmacists, 3305 interventions made in 2011 by 51 pharmacists and in 2012, 2951 interventions were recorded by 64 pharmacists in one week of data collection (see Table 1).

Table 1. Total number of Interventions and Primary Reason for pharmacist intervention 
in patient care over a 4 year period

<table>
<thead>
<tr>
<th>Year</th>
<th>Reason for intervention</th>
<th>2009 n (%)</th>
<th>2010 n (%)</th>
<th>2011 n (%)</th>
<th>2012 n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Efficacy</td>
<td>To prevent ADR</td>
<td>1610 (44)</td>
<td>1136 (40)</td>
<td>1316 (40)</td>
<td>1077 (40)</td>
</tr>
<tr>
<td>Safety:</td>
<td>Compliance/Concordance</td>
<td>1030 (38)</td>
<td>1218 (33)</td>
<td>1318 (40)</td>
<td>1108 (38)</td>
</tr>
<tr>
<td>Safety:</td>
<td>Reduced Length of Stay</td>
<td>198 (7)</td>
<td>283 (8)</td>
<td>179 (5)</td>
<td>229 (8)</td>
</tr>
<tr>
<td>Cost</td>
<td>Effectiveness</td>
<td>136 (5)</td>
<td>275 (8)</td>
<td>236 (7)</td>
<td>140 (5)</td>
</tr>
<tr>
<td>Safety:</td>
<td>In reaction to ADR</td>
<td>97 (4)</td>
<td>164 (4)</td>
<td>117 (4)</td>
<td>138 (5)</td>
</tr>
<tr>
<td>FCE Bed days</td>
<td>Total</td>
<td>6614</td>
<td>6652</td>
<td>6688</td>
<td>6651*</td>
</tr>
</tbody>
</table>

*Average data used

Throughout the four years, the most frequent reasons for intervention (see Table 1) have consistently been efficacy and safety to prevent an adverse drug reaction ($\chi^2= 123 p<0.01$). The results showed that the percentage of accepted interventions by the medical team was similar ranging from 85-92% (see Figure 1) and the percentage of interventions not accepted was consistent at 2-3% ($\chi^2 =28, p <0.01$).

Discussion

These data demonstrate that pharmacists were consistently making interventions to patient’s medications whilst in secondary care. Although the number of interventions documented per week varies from year to year, and this can be attributed to the varying number of patients in the hospital on the weeks chosen, the percentage for the reasons and actions behind the intervention are consistent. The high level of acceptance of pharmacist interventions suggests the medical team value pharmacist’s contribution to patient care. NHS Trusts in the United Kingdom have a responsibility to ensure that patients are protected against the risks of taking medicines. The pharmacy department contribute to this requirement as over the four years safety to prevent adverse drug events and the efficacy of the medication have consistently been the most frequent reasons for pharmacists intervening in patient care. A limitation to the study is that the interventions documented were not peer reviewed and the impact of individual interventions not assessed as there is not currently a validated intervention rating scale. Future evaluation of the service could involve peer reviewed interventions.

Conclusion

This study has demonstrated that the clinical pharmacy service provided by a London Hospital have remained consistent over the past 4 years with pharmacists consistently carry out interventions to patient care. The clinical pharmacy team are providing the Trust with a service that focuses on ensuring safety and efficacy of the medications administered to patients.

References

Introduction
Despite the presence of effective therapies such as warfarin, a review of general practices in England highlighted the underutilisation of anticoagulation, whereby 34% of suitable atrial fibrillation (AF) patients were without anticoagulation. The limitations of warfarin therapy with its diet and drug interactions, frequent need for monitoring and the variability of response (mean time within therapeutic INR is around 72%), has provided a need for other therapeutic agents in our armories to reduce these preventable strokes. Novel oral anticoagulant agents (NOACs) dabigatran and rivaroxaban have both been approved recently by NICE as an option for stroke prevention in AF. However as anticoagulants, NOACs have important risks as well as associated costs for the NHS. Local guidance has been developed to facilitate the improvement of anticoagulation and enable agents to be prescribed safely and cost effectively. Until experience is gained, these agents are initiated by specialists in secondary care, and this audit aimed to review the prescribing of NOACs to identify trends and appropriateness since their introduction.

Objectives
- To review prescribing of these agents against the following standards:
  - 100 % of NOACs prescribed in accordance to product license in patients at risk of stroke (assessed via stroke risk stratification tool CHA2DS2-VASC score ≥2)
  - 100% of NOACs should be as a second line agent, reserved for when warfarin is not suitable.
  - 100% prescriptions should have the appropriate dosage alterations in accordance with license recommendations.
- To examine reasoning behind NOAC selection depending on patients or drug factors.

Methods
Patients prescribed NOACs between March 2012 and February 2013 were identified retrospectively from electronic records, in house pharmacy systems and patient notes. All patients on NOACs for AF were included; we excluded those on these agents for other indications. Patients who were initiated on NOACs externally to the organisation were analysed separately. As an audit of prescribing, ethics approval was not required.

Results
All patients initiated within the trust had a CHA2DS2-VASC score of ≥2 in accordance with the guidance, similarly with patients initiated externally, with the exception of one patient who was being anticoagulated for catheter ablation with a CHA2DS2-VASC 0. All patients initiated on NOACs within the trust were done so only when warfarin therapy was considered inappropriate as per local guidance. The prescribers reasoning is highlighted in table 1.

Guidance is provided for indications whereby reduced dosages of NOACs may be appropriate. All patients who required dose reductions (e.g. impaired renal function, interacting medication, high risk of bleeding as assessed by bleeding risk predictor HAS-BLED score or history of gastro-oesophageal reflux disease (GORD)) were appropriately prescribed a reduced dose (table 1). However of the 27 patients prescribed a reduced dose, 8 had no clear indication highlighted. Dabigatran was more frequently prescribed, with rivaroxaban preferred for patients with a cardiac history, GORD, impaired renal function or those where adherence to a twice daily regimen was thought to be problematic.

Table1: Patient demographics and reasons for drug and dose selection of NOACs prescribed

<table>
<thead>
<tr>
<th>Number of patients captured</th>
<th>Dabigatran</th>
<th>Rivaroxaban</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of patients in whom therapy stopped due to side effects</td>
<td>27(24 within the trust)</td>
<td>6 (all within the trust)</td>
</tr>
<tr>
<td>Mean CHA2DS2-VASC score (internally initiated)</td>
<td>3.3 (range 2-6)</td>
<td>4 (range 2-7)</td>
</tr>
<tr>
<td>Mean CHA2DS2-VASC score (externally initiated)</td>
<td>3.3 (range 0-8)</td>
<td>N/A</td>
</tr>
<tr>
<td>Mean HAS-BLED score (internally initiated)</td>
<td>1.25 (range 1-3)</td>
<td>1.5 (range 0-3)</td>
</tr>
<tr>
<td>Mean HAS-BLED score (externally initiated)</td>
<td>1.6 (range 1-3)</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Reasons for initiation of NOACs over Warfarin
- Labile INR
- Unable to comply with warfarin monitoring
- Allergy/Intolerance to warfarin
- Other

<table>
<thead>
<tr>
<th>Patients receiving reduced doses</th>
<th>Dabigatran</th>
<th>Rivaroxaban</th>
</tr>
</thead>
<tbody>
<tr>
<td>Due to impaired Renal Function</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Due to age</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>Due to high bleeding risk</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Due to interacting drugs according to licence</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Due to GORD</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>No clear indication</td>
<td>8</td>
<td>0</td>
</tr>
</tbody>
</table>

Discussion
From the results, it is clear that NOAC prescribing within the trust is being reserved for those for whom warfarin therapy is inappropriate due to intolerance, labile INRs or inability to comply with monitoring requirements, as per agreed guidance. Agents were prescribed according to product license which is likely due to the current pathway of initiation via haematology within secondary care. Dabigatran was the most commonly prescribed NOAC however, this maybe due to earlier licensing approval and thus experience. With the introduction of other agents, it is likely guidance enabling appropriate selection of agents will be required in the future.

Thirty percent of patients receiving reduced doses had no clear indication for this. This may suggest inadvertent clinically under-dosing or most likely practitioner caution noting their lack of experience in prescribing these agents.

All patients examined, continued to take their medication, with the exception of one patient receiving rivaroxaban and two receiving dabigatran who experienced gastrointestinal side effects. Due to the limited numbers and duration of therapy (less than 1 year), ongoing work is required to improve the validity and generalisability of the audit.

Our audit suggests initiation of NOACs is appropriate, with the majority initiated due to labile INR’s and inability to comply with monitoring requirements of warfarin. Dosing of NOACs was at the lower dose available predominantly due to compounding patient factors such as age and renal function.

References
1 Cowan C. The use of anticoagulants in the management of atrial fibrillation among general practices in England. Heart (online first) Feb 2013 doi:10.1136/heartjnl-2012-303472
2 Pink J. Dabigatran etexilate versus warfarin in management of non-valvular atrial fibrillation in UK context: quantitative benefit-harm and economic analyses. BMJ 2011;343:d6333
Background
Medication adherence can be defined as ‘the extent to which the patient’s behaviour matches agreed recommendations from the prescriber.’ It is estimated that between one-third and half of all medicines for long-term conditions are not taken as recommended. Non-adherence may limit the benefits of the medicine, or pre-dispose the patient to side effects, which may have detrimental effects on the patient’s health. There are also economic considerations – cost of medicines wastage (estimated at £300 million per year), and increased healthcare costs if health deteriorates.

Addressing non-adherence requires exploration of patients’ perspectives of medicines and the reasons why they may not want or are unable to use them. The patient should have the opportunity to make informed decisions about their treatment; good communication is vital.

Objectives
To gather detailed information about the prescriber-patient relationship at Southport and Ormskirk NHS Trust in order to find out if recommendations from NICE to involve patients in decisions about their medicines are being followed. Information was also collected about patients’ perceptions of medication reviews they had received in the past, in order to assess how these reviews may affect adherence.

Method
A questionnaire was produced, using questions adapted from NICE guideline 76 audit materials. Patients were interviewed by two clinical pharmacists, using the questionnaire as a guide. Patients were selected from every long stay ward by the ward pharmacist. As this was an audit, ethical approval was not required.

Results
Data was collected data over two days in autumn 2012. Thirty patients were interviewed.

When asked: “Were you happy with the way the HCP explained your condition and possible treatments?” 24 patients (80%) said yes and six (20%) said no.

Eighteen (60%) of patients felt that they received a clear explanation of their condition, 16 (53%) felt encouraged to ask questions and 17 (56%) had received a clear explanation of how the medicine would help them. Ten (33%) said that the HCP had discussed pros and cons of the new medicine and six (20%) received suggestions of where they could find more information. Thirteen (43%) patients said the prescriber had checked that they had understood the information given to them. Five (16%) had been asked directly if they had any worries about the new treatment, although nine (30%) felt they had been given the chance to talk about any concerns they did have. Ten (33%) felt they had been given as much chance as they wanted to make their own decisions about their medicines. Only two patients (7%) had decided not to take the medication offered. When asked “Did the pharmacist check if you had any questions about the new medicine?” 12 (40%) of patients answered yes.

Sixteen (62%) of the patients who were previously taking regular medication reported having a medication review in the last 12 months. All of these said their review was done in the community; one (6.25%) by the practice nurse, 3 (18.75%) by a community pharmacist and 12 (75%) by their GP. When asked about the content of the review, all 16 patients had been asked if they knew what their medicines were for, 10 (63%) had been asked if they had any worries and seven (44%) had been asked about practical problems such as opening containers. Seven (44%) said the HCP had checked if they had changed their regimen of their own accord, and six (38%) had been encouraged to keep a list of all the medication they were taking.

Discussion/Conclusions
Results of this audit suggest that prescribers (usually doctors) clearly explain to a patient what is medically wrong with them, and about half explain how a new medicine will help. There does not seem to be much discussion about the benefits and risks of the medicine or where the patient can find more information. Patients also felt they did not have much opportunity to discuss their concerns regarding treatment. However the lack of discussion did not seem to have deterred patients from adhering to the prescribers’ recommendations. Many patients indicated an opinion that ‘the doctor knows best’ so may not have expected to be involved in the decision making process. However this may affect adherence after discharge. Doctors need encouragement to include patients in prescribing decisions; ideas for addressing this include a ‘prescribing newsletter’ and junior doctor teaching sessions highlighting the importance of communication with patients regarding medication decisions.

Lack of interaction between patients and ward pharmacists could be due to several reasons, including conflicting demands on pharmacist time, patients being unavailable to talk when the pharmacist is on the ward or inconsistency of pharmacist cover on the ward. Attendance of pharmacists at medical ward rounds, when possible, could help to improve this situation.

All patients who had had a medication review within the last 12 months said it was completed in the community. The majority of the time the GP was the HCP undertaking their review. Although patients’ understanding of the role of each medicine was checked at this review, and most had been asked regarding concerns about their medication, a much smaller number had been asked about practical problems that might limit adherence. Encouraging such patients to attend their community pharmacy for a Medicines Use Review (MUR) would save GP time and might result in a more thorough review of factors affecting adherence.

References
3. Evaluation of the Scale, Causes and Costs of Waste Medicines (November 2010), York Health Economics Consortium/The School of Pharmacy, University of London
Introduction

In 2007, Leodis now NHS Leeds South and East Clinical Commissioning Group (LSE CCG) began a pharmacist/independent prescriber medication review (MR) service to care home patients in 4 practices. This delivered a 12% reduction in non-elective admissions, a 28% reduction in activity and 53% reduction in cost rise of A&E attendances. With an increasing elderly population at great risk from polypharmacy thorough high quality MR and medicine reconciliation (MRC) are essential to ensure safe and effective treatments are used to maximise health benefits and minimise medicines waste. Over 2011/2012 the MR/MRC service has been developed to support the NHS medicines optimisation strategy. The 3 focus areas for MRs are care homes, risk stratification (RS) patients with long term conditions and post-hospital discharge. This is underpinned by the CHUMs (Care Home Use of Medicines) study\(^1\), the NHS outcomes framework 2013/2014 and a 2009 CQC report\(^2\).

Objectives

To improve the health of LSE CCG patients by providing a cost effective MR service incorporating the principles outlined in Polypharmacy guidance\(^3\) and the STOPP\(^4\) and START\(^5\) tools, to:

- Optimise medicines efficacy and minimise side effects
- Stop inappropriate medicines to minimise adverse events
- Carry out appropriate medication and disease monitoring
- Reduce medicines waste.

Method

There was no requirement for ethics approval, as this was an extension of MR services offered by LSE CCG. From practice records, those identified in the following patient groups had a level 2 (minimum) MR completed. The groups were:

1. Living in a care home in LSE CCG
2. Discharged from hospital and prescribed one or more repeat medications
3. Projected to be at high risk of a hospital admission within the next 12 months using the RS tool and to be discussed at Integrated Health and Social Care (IHSC) MDT meeting

Results

Care Home Reviews

- 843 patients reviewed, net cost saving of £85k (£100 per patient)
- 2600 recommendations made, 87% accepted by GPs
- Large numbers of blood tests and other monitoring interventions undertaken (Table 1).
- Clinical interventions included medicines started (7%), stopped (25%); changed dose/frequency (12%), formulation (19%); quantities aligned to reduce waste (17%), referrals to other health professionals (20%)

<table>
<thead>
<tr>
<th>Monitoring Type</th>
<th>Category inclusion</th>
<th>Number</th>
<th>% of all monitoring</th>
</tr>
</thead>
<tbody>
<tr>
<td>For Efficacy</td>
<td>Blood pressure, kidney function, Blood sugar measurement for long and short term high levels, Thyroid Function Tests, Cholesterol, Blood count, folate and ferritin, inhaler Technique checked</td>
<td>597</td>
<td>65%</td>
</tr>
<tr>
<td>For Side Effects</td>
<td>Liver Function Tests, Monitoring for shared care drugs</td>
<td>53</td>
<td>6%</td>
</tr>
<tr>
<td>Other</td>
<td>Therapeutic Drug Monitoring – e.g. theophylline, digoxin, lithium; Patient weight (for Nutrition Supplement) and Creatinine Clearance calculations</td>
<td>273</td>
<td>30%</td>
</tr>
</tbody>
</table>

Risk Stratification - IHSC Patients – 5 practices over last year

- 80 patients reviewed, much smaller cost savings due to range of patient needs
- 135 recommendations including stopping or decreasing medicines doses (35%), ordering tests (23%), starting/increasing the dose (12%) and identifying compliance issues (3%)
- 1 critical incident was highlighted
- All COPD patients referred from 1 practice to respiratory nurse specialist reviewed by MR pharmacist. All had inadequate theophylline monitoring and dose optimisation.

Post Discharge Reviews – 1 practice over 3 months

- 63 reviews completed, net cost savings of £4150 (£66 per patient)
- Clinical important interventions included reconciliation errors rectified (16%), dose changes (8%), items removed/stopped (33%), referrals back to GP (10%)

Discussion /Conclusion

The service has been very well received by health professionals and patients and has produced significant savings. These have come from medication interventions, improved efficiency of care home medicine ordering, storage and administration systems as well as indirect savings from improved disease management, reduced patient harm and non elective hospital admissions.

Currently the service is developing a risk scoring system to quantify the benefit of qualitative interventions and is exploring the use of published numbers needed to treat and harm to measure the impact of the interventions. The service is exploring other ways of influencing medicines optimisation and patient safety including creating and implementing existing best practice guidance for MRC, MR and repeat prescription systems.

A member of the team is participating in the development of national best practice guidance and quality standards for medicines in care homes and is considering methods of delivering regular, good quality medicines training to care home staff to minimise errors with medicines.

In 2013/2014 we will explore the outcomes of patient reviews when the RS tool search is disease specific. Used across the whole CCG, it may prove more beneficial to target MRs to patients with long term conditions such as COPD, diabetes, cardiovascular or stroke disease.

MR requires a much higher level of clinical expertise than traditional practice support. Based on the identified time profile for MRs and the numbers of patients in LSE CCG, we have identified the resource required to continue and extend the service. In view of the CCG prescriber good quality medicines training to care home staff to minimise errors with medicines.

References

2. Care Quality Commission. Managing patients’ medicines after discharge from hospital. October 2009

41
27. Evaluation of warfarin management by pharmacist prescribers in primary care settings


Background
Stroke is the third largest cause of death in England costing the NHS £2.8 billion per annum.1 Atrial Fibrillation (AF) is a known risk factor for stroke, conferring a five-fold increased risk. Anticoagulant therapy is integral to stroke prevention in AF. In the UK, approximately 1.2 million patients are prescribed oral anticoagulants, with warfarin being the most frequently prescribed. Due to risks of major bleeding with excessive anticoagulation and thrombotic events with sub-therapeutic dosing, anticoagulants are recognised as high risk drugs. Trial data indicates that well controlled oral anticoagulation therapy reduces stroke risk by at least two thirds compared to placebo.2 Effective commissioning of anticoagulation services should ensure high quality services are delivered; resulting in reduced prevalence of stroke; saving lives and reducing the cost of care. However, anticoagulation services vary in the quality of anticoagulation control they achieve for their patient population.

Although a recent evaluation indicates that pharmacist prescribing is safe and clinically appropriate3, there is currently no published UK evidence to demonstrate the value of pharmacist prescribers in the management of anticoagulation in primary care. This project was established to enable pharmacist independent prescribers (PIPs) working in anticoagulant clinics in primary care, to collaboratively evaluate their practice.

Objectives
- To collaboratively develop and pilot a clinical dataset using agreed best practice
- To retrospectively evaluate patient management using data from selected warfarin clinics

Method
PIPs managing warfarin therapy in adult patients in primary care settings in Southeast England were identified and invited to participate. Participating PIPs worked collaboratively to agree a dataset utilising available national recommendations4 and agreed best practice. Minor amendments were made to the dataset following a two week pilot. Subsequently, data were collected retrospectively over a 12 month period (October 2010 to September 2011). To reduce selection bias, all patients who were seen in October 2010 clinics were included if they were over 18 years with a confirmed diagnosis of AF and on established warfarin therapy. Patients were followed up for 12 months or until the patient was no longer on the prescriber’s caseload, whichever occurred sooner. PIPs met as a group with the project facilitators to review their individual and collective data. Ethical approval was not required as the information was to be used for service evaluation and not as part of a research project.

Results
Thirteen PIPs were identified and five agreed to participate. They had a varying caseload (range 4-20). The final version of the dataset is available on request. Data were collected for 61 patients with an average age of 77 years (range 43-97). Thirty six (59%) were men and 25 (41%) women. The majority (92%) were classified as high risk for thromboembolism according to their calculated CHA2DS2-Vasc score. 727 appointments were evaluated; patients failed to attend 30 (4.1%) appointments and 697 were attended. An INR result was obtained for each one. All DNAs were followed up so that no patients were lost. The number of appointments made per month ranged from 0.25 to 3.2 (mean 1.2/mth). The number of appointments given to patients was varied according to need. Patients were reviewed and therapy stopped in five cases. The evaluation results against eight national standards are shown in Table 1.

| Table 1 |
|------------------|-----|-----|
| Measurement against published standards | No. | % |
| 1. INRs in range | 494 | 71 |
| 2. INR results > 5.0 | 3 | 0.4 |
| 3. INR results > 8.0 | 1 | 0.1 |
| 4. INR results > 1 unit below the target range | 13 | 1.9 |
| 5. Patients suffering serious adverse outcomes, categorised by type | 0 | 0 |
| 6. Patients with unknown diagnosis, target INR or stop date. | 0 | 0 |
| 7. Patients lost to follow up | 0 | 0 |
| 8. Patients with appropriate target INR for diagnosis | 61 | 100 |

Discussion
PIPs in this evaluation demonstrated effective management of warfarin therapy against published national standards in patients with a high risk of thromboembolism, as indicated by the proportion of INR tests in range (71%). Access to the Rosendaal method of calculating time in therapeutic range (TTR) was not available to any of the participants however TTR calculated using this method would have exceeded 71% as it allows for linear changes to INR between measurements. It is now considered desirable that patients have a TTR of at least 70%, whereas patients with a TTR of less than 40% are not receiving benefit from taking warfarin in terms of stroke reduction.5

Generalisability of the results is limited by the small study size and self-selection of participants. The availability of the Rosendaal method of TTR estimation is considered a gold standard and would have been preferable.

This small evaluation suggests that PIPs are well placed to ensure patients with AF on warfarin therapy are managed to a high standard. Such data may support future commissioning of anticoagulation services, particularly in the changing landscape of the therapy area. Future work should be expanded to include a larger number of PIPs, the patient perspective and the prescribing of novel oral anticoagulants.

References
http://eprints.soton.ac.uk/184777/2/ENPIPexecsummary.pdf
Introduction
The need for prudent antibiotic prescribing within hospitals is of paramount importance as the emergence of resistant organisms, such as methicillin-resistant *Staphylococcus aureus* (MRSA), is fast becoming an uncontrollable phenomenon. The Scottish Intercollegiate Guidelines Network (SIGN) has published evidence based guidelines\(^1\) on antibiotic prophylaxis in surgery in an attempt to reduce inappropriate prophylactic antibiotic prescribing. In addition, the department of health (DoH) has also published evidence-based guidance on antimicrobial stewardship within the secondary healthcare setting\(^2\), which sets out components of best practice for antibiotic prescribing that can be employed to assess compliance to local antibiotic guidelines. Newham University Hospital produced in-house guidelines\(^3\) for surgical antibiotic prophylaxis based on the SIGN guidelines in 2011. The aim of this audit was to utilise the strategies set out in the antimicrobial stewardship document by the DoH to demonstrate compliance to trust guidelines.

Objectives and Standards
The following standards were used to assess compliance to the Trust surgical antibiotic prophylaxis guidelines and were set at 100%:
- Surgical patients should be prescribed antibiotic prophylaxis where indicated.
- Antibiotic(s) prescribed should be the choice of agent(s) recommended by Trust guidelines.
- Antibiotic(s) prescribed should be administered within 30 minutes of surgical incision.
- Antibiotic(s) should be prescribed for the correct duration as per Trust guidance.
- Patients should have their MRSA colonisation status documented prior to surgery.

Method
The audit tool was formulated using the minimum criterion for audit of surgical antibiotic prophylaxis set out by SIGN\(^2\). This was validated by the microbiology registrar and piloted on one of the surgical wards, after which no modifications were made. Data was collected using the hospital’s electronic patient record (EPR) system, patients’ medical notes, drug chart(s) and anesthetic chart. Data collection took place on the three main hospital surgical wards over a period of 5 selected days from 11\(^{th}\) - 18\(^{th}\) December 2012. Patients who had had surgery were identified using the EPR system and compliance of prescribing against surgical prophylaxis antibiotic guidelines was assessed. Data was compiled and analysed using Microsoft Excel.

Results
A total of 54 patients were included in this audit, of whom 100% were prescribed antibiotics where indicated. This was determined by classifying their surgery as clean, clean-contaminated, contaminated or dirty and using SIGN guidelines to decide if prophylactic antibiotic cover was required. Of the antibiotics prescribed, 67% were the agent of choice recommended by Trust guidelines, 25% were not recommended by Trust guidelines and there were no guidelines for the remaining 8% of antibiotics prescribed. The percentage of antibiotics prescribed within 30 minutes of surgical incision was 72%, 25% were administered 30 to 60 minutes prior to incision and the remaining 3% were administered more than 60 minutes prior to incision. Of the 11 (20%) surgical patients that did not have their MRSA colonisation status documented, 9 patients had emergency surgery and 2 patients were elective. The results are summarised in table 1 below.

Table 1 shows % of audit standards achieved.

<table>
<thead>
<tr>
<th>Audit Standards</th>
<th>Result (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Surgical patients prescribed antibiotic prophylaxis where indicated.</td>
<td>100 (n=54)</td>
</tr>
<tr>
<td>2. Antibiotic(s) prescribed is/are choice of agent(s) recommended by Trust guidelines.</td>
<td>67 (n=76)</td>
</tr>
<tr>
<td>3. Antibiotic(s) are administered within 30mins of surgical incision.</td>
<td>72 (n=67)</td>
</tr>
<tr>
<td>4. Antibiotic(s) are prescribed for the correct duration as per Trust guidance.</td>
<td>62 (n=76)</td>
</tr>
<tr>
<td>5. Patients have their MRSA colonisation status documented.</td>
<td>80 (n=54)</td>
</tr>
</tbody>
</table>

Discussion
Only standard 1 was met with 100% compliance, as seen in table 1. The results for standards 2 to 5 ranged from 62% to 80%. Standard 4 showed that 62% of antibiotics were prescribed for the correct duration. The majority of the remaining 38% exceeded the recommended duration as per trust guidelines, in certain cases by up to 5 days post-operatively. For standards 2 and 4, 8% and 13% of antimicrobials respectively could not be assessed against the Trust guidelines as no specific agent is recommended for the indication in question, for example ectopic pregnancy and oophorectomy. As a result, limitations in the current Trust surgical antibiotic prophylaxis guidelines contributed to some of the standards not being met. The 80% achieved in standard 5 was largely due to the emergency surgeries where time limitations prevented patients from being screened for MRSA prior to surgery.

The recommendations from this audit are:
- There needs to be greater awareness of Trust surgical antibiotic prophylaxis guidelines by ensuring they are routinely publicised at the Trust’s surgical induction for doctors and surgical meetings.
- To encourage doctors to contact microbiology for a procedure where there is no recommendation available in the guidelines.
- The audit results should be presented to consultants with poor compliance to the guidelines in a constructive manner in order to improve their compliance.
- All surgical patients should be swabbed for MRSA upon admission to accident and emergency.
- There should be a re-audit using the same audit standards as above in one year’s time, as per DoH recommendations.

References

Ethics approval was not required for this audit. The audit has been previously submitted to The London School of Pharmacy, University College London as part of the JPB Diploma in Pharmacy Practice.
Introduction
Safety huddles, defined as a simple tool to share information about potential safety problems and concerns, have been used successfully in industry for many years and have recently been introduced to the healthcare setting. Typically supervisor lead and delivered to a small team, their aim is to improve safety through communicating causes and lessons learnt from near misses. They can also be used to review risks relating to the introduction of new tasks or highlight problems which may affect the work area on that day, for example absent staff members or products which are nearing their expiry date.

Following a peak in near misses in the aseptic unit in April 2012, where it was identified that 8.25% of all dispensed items had an error associated with them, possible remedial actions were discussed. It was agreed that a daily safety huddle would be introduced and its impact on reducing incidents and near misses assessed.

Objectives
To introduce daily safety huddles to the aseptic unit and assess their impact on reducing incidents and near misses and improving communication

Method
The format of the daily safety huddle was agreed by the Lead Pharmacist for Patient Safety and the Aseptic Services Manager. The standards were defined as: all staff expected to attend; start time fixed at 9am and limited to ten minutes with a standard agenda; and a whiteboard allocated to record the information discussed. Aseptic staff were involved in the plans and invited to complete a survey to investigate their perception of safety huddles before they commenced. Questions were based on the Institute for Healthcare Improvement Safety Briefings Tool, with scores on a scale of one to ten. After four weeks a second survey was completed which investigated staff experiences of the safety huddles. Survey results and numbers of incidents and near misses were collected before and during the trial. Ethical approval was not required as no confidential information was collected.

Results
The daily safety huddle was introduced in July 2012. Examples of topics discussed included stock shortages; prescriptions requiring follow up; preparations needed at short notice; and recent incidents and near misses. During the four week trial there were 26 near misses, compared to 45 near misses recorded in the four weeks before the trial started (42% reduction). The number of reported incidents remained the same, with one incident recorded in each four week period (a cytotoxic spillage and an incorrectly managed needle stick injury). 75% and 45% of aseptic unit staff members completed the before and after surveys respectively. The reduced response rate to the survey completed after the safety huddles had been introduced limited the study analysis. Survey results showed staff believed the daily safety huddles improved communication and their personal awareness of errors made in the unit, the causes of errors and how to reduce errors, however staff felt the safety huddles did not have an impact on teamwork or the error rate (see figure 1). The sample size was insufficient to allow statistical analysis of these results. Concerns raised through the survey before the introduction of the safety huddles included “safety huddles will not improve teamwork” and “staff who have already changed into clean room clothing should not have to come out of the classified rooms for meetings”. Comments made after the four week trial were that the safety huddles “were useful, especially for communicating what has happened the day before when a member of staff was not there”; “a good way to pass on messages, however if a product is needed it is made later due to the 9am timing of the huddle”.

Figure 1: Staff survey results

<table>
<thead>
<tr>
<th>Staff perception before &amp; after introduction of safety huddles:</th>
<th>Median (1\textsuperscript{st} quartile, 3\textsuperscript{rd} quartile)</th>
<th>How useful will the safety huddles be (before) &amp; how useful were they (after) at:</th>
<th>Median (1\textsuperscript{st} quartile, 3\textsuperscript{rd} quartile)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Before</td>
<td>6 (5-7)</td>
<td>Improving communication</td>
<td>7.5 (6-8)</td>
</tr>
<tr>
<td>After</td>
<td>8 (6-8)</td>
<td>Before</td>
<td>8 (7-9)</td>
</tr>
<tr>
<td>Teamwork</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Before</td>
<td>6 (5.5-7)</td>
<td>Improving teamwork</td>
<td>6.5 (4-8)</td>
</tr>
<tr>
<td>After</td>
<td>6 (6-8)</td>
<td>Before</td>
<td>6 (6-8)</td>
</tr>
<tr>
<td>My awareness of errors</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Before</td>
<td>7 (6.5-8)</td>
<td>Raising awareness of errors made</td>
<td>8 (7.25-9)</td>
</tr>
<tr>
<td>After</td>
<td>9 (8-9)</td>
<td>Before</td>
<td>8 (8-9)</td>
</tr>
<tr>
<td>My awareness of causes of errors</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Before</td>
<td>7 (7-8.5)</td>
<td>Raising awareness of causes of errors</td>
<td>8 (7.25-9)</td>
</tr>
<tr>
<td>After</td>
<td>8 (7-9)</td>
<td>Before</td>
<td>7 (6-9)</td>
</tr>
<tr>
<td>My awareness of how to reduce error</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Before</td>
<td>7 (6.5-8)</td>
<td>Reducing errors</td>
<td>8 (6-8.75)</td>
</tr>
<tr>
<td>After</td>
<td>8 (7-8)</td>
<td>Before</td>
<td>6 (6-8)</td>
</tr>
</tbody>
</table>

Conclusion
Although staff did not feel that the daily safety huddles led to a decline in the error rate there was a 42% reduction in near misses during the four week trial. Staff felt that the safety huddles improved communication and raised their awareness of errors, the causes of errors and how to reduce them. Daily safety huddles were successfully introduced and delivered the agreed outcomes of reducing near misses and improving communication. Whilst the overall number of incidents did not decline during the trial, these incidents occurred due to staff members not following policy and have been addressed through further training. Safety huddles continue in the aseptic unit with consideration given to the timing of the huddle and the content. The average near miss error rate for the last quarter of 2012 maintained the reduction seen during the trial. Following the success in reducing near misses and improving communication, safety huddles will be trialled in other areas of the department with consideration given to the numbers of staff involved, as increased safety huddle size may limit effective communication.

References
Introduction

HIV is a virus that attacks the immune system and makes it difficult for the body to fight infections and some cancers. The virus can be transmitted through body fluids such as blood, semen, vaginal fluids, breast milk, and fluids from the lining of the rectum and urethra in men. Patients should be educated about the importance of attending all appointments. Lastly, the doctors often mentioned in the notes that adherence was discussed with the patient, however, although standard 2 was met, very few patients were referred to adherence clinic. Therefore, it is recommended that the doctors make more use of the expertise of the pharmacist by referring patients who ‘blip’ or fail therapy for a more comprehensive consultation regarding any issues that may be affecting the adherence to therapy. The main limitation of this audit was the sample size of those patients failing therapy as this was very small and the results may not be representative of the way in which all patients are being managed. A re-audit should be undertaken, and should include treatment naive patients who fail to suppress within 6 months of starting therapy and also those who are on long term therapy who fail to reach undetectable viral load levels, in order to gain an accurate number of all patients failing therapy.

References
Introduction
The Princess Anne Hospital, UHSFT, delivers specialist services to women and neonates for over 6000 births per year. In April 2011, a new pharmacist post was funded to develop a clinical pharmacy service to obstetrics. Initially, this comprised a ward pharmacy service to the ante and post-natal wards with support to labour ward. In December 2011, this expanded to ward round attendance on labour ward.

In 1991, Prevost et al described a service developed at a large US hospital where the role of the pharmacist was extended in obstetrics & gynaecology, including the introduction of pharmacists on ward rounds. They concluded that pharmacy services were well received and heavily utilised. Fertleman et al showed that pharmacists on ward rounds in other specialties in the UK can reduce cost, improve medicines reconciliation and decrease risks.

Objectives
1. Quantify the labour ward staff's views on the pharmacist’s role
2. Provide a method of feedback to inform any improvements to the service
3. Quantify the pharmacist's activity and interventions on the labour ward

Method
The first two objectives were achieved using an electronic survey that gathered quantitative data and encouraged qualitative feedback. This was emailed to the medical and midwifery staff. Additionally 60 copies were printed and distributed to key areas. Activity and interventions were recorded as part of our annual benchmarking audit. For two weeks, all pharmacist-initiated interventions were recorded; for one week all clinical activity was benchmarked. This data provides a quantification of this service’s impact in terms of activity and interventions against an index of zero. The work was approved as a service evaluation by pharmacy and obstetrics governance therefore ethical approval was not required.

Results
Activity and Intervention Data
Over five days, the pharmacist saw 38 patients on labour ward. They made 27 changes to the drug prescription, based on medicines reconciliation, and discussed 25 prescriptions with the medics to confirm their clinical screen. On average, they spent 95 minutes per day on the ward, including visits subsequent to the round. Over ten days, the pharmacist initiated 22 interventions: 4 related to antimicrobial prescribing, 4 related to VTE risk reduction and 4 related to medicines reconciliation. 15 were graded as minor or moderate and 7 were graded as major. (Graded with the aid of NPSA risk matrix)

Themes from qualitative responses
Midwives were generally supportive of the service, particularly the logistical support and advice around unfamiliar drugs. Some raised concerns at the increased size of the team seeing women in such emotionally and physically vulnerable states.

Obstetric and anaesthetic consultants were the most supportive group. They valued the pharmacist’s presence on the round and wanted an even more proactive and visible input from them, including specific training sessions for medical staff.

Trainees from both specialties were less positive; some valued advice in specific cases however they did not see the extended service as a good use of the pharmacist’s time. They seemed to prefer a more reactive service, to be contacted if needed.

Table 1 “Please tick the box that best describes your response to the following statements about the pharmacist on labour ward”

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly agree</th>
<th>Agree</th>
<th>Neither agree nor disagree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>Unable to comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has a positive impact on patient care</td>
<td>9</td>
<td>23</td>
<td>8</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Is a useful educational tool</td>
<td>13</td>
<td>24</td>
<td>5</td>
<td>1</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Resolves supply issues</td>
<td>16</td>
<td>17</td>
<td>4</td>
<td>2</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>Resolves other pharmacy queries</td>
<td>20</td>
<td>14</td>
<td>7</td>
<td>0</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>The pharmacist on the ward round is of added value</td>
<td>12</td>
<td>19</td>
<td>6</td>
<td>4</td>
<td>0</td>
<td>4</td>
</tr>
</tbody>
</table>

Discussion
The most marked trend within the quantitative results was seen when medics of both specialties (anaesthesia and obstetrics) were grouped by grade. The consultants seemed to have a more positive view of the pharmacist service than the trainees. The reasons behind the disparity are unclear but may be due to lack of promotion of the service to the junior members of the team. Prior to initiation of the service, we approached the obstetric consultants as we considered them our key stakeholders; this early engagement seems to have led to their positive view of the service.

Additionally, the results suggest that consultants are more inclined than trainees to view the pharmacist as a governance tool in the unit.

Some junior midwives and one senior midwife raised concerns and questioned the necessity of pharmacists attending the ward round, these comments came primarily from junior midwives but one senior midwife also commented on this. We did not record where interventions were made, however both pharmacists involved in the service felt that this forum generated the most interventions. Both pharmacists selected the patients that they saw from preliminary discussions and would only attend this part of the round if they felt that they could offer advice to the team. These comments suggest that the pharmacists’ patient selection must be shrewd so our presence on the round is accompanied with input of value. Should this evaluation be repeated, the environment that the interventions were made should be recorded to inform this point.

The limitations of this study are the small sample size, and the absence of a response rate due to the wide distribution of the survey. Interventions may have been under reported as more changes to prescriptions were documented within the activity data than individual pharmacist initiated interventions documented.

The pharmacist on labour ward is making a positive contribution to the care of patients, both in terms of interventions and other activity markers. Generally the survey responses showed that the service was well received. The pharmacists feel the service is beneficial as they believe it enables better pharmaceutical care on the downstream wards owing to continuity and having been involved proactively at the point of prescribing, it is a two way educational tool, and it promotes a good working relationship with the team.

Thanks to the staff of the Princess Anne Hospital maternity unit, Louise Thurlow as the incoming pharmacist in obstetrics & gynaecology and Andy Fox for support with this abstract.

References
Assessing the impact of the introduction of an electronic medicines management solution on improving the dispensary efficiency at a University hospital.

Snape J, Lewis R, Rushton A, University Hospital of North Staffordshire.

Introduction
At this large teaching hospital the traditional means of obtaining in-patient medicines from the central dispensary involved paper-based requisitions being completed at ward level by clinical pharmacists and being left for pick-up by Trust porters. As part of a significant transformation programme, the Pharmacy department invested in paperless electronic medicines management software (eMM) using mobile CARTs with wireless laptops and, over 2 years, rolled out the software across 33 inpatient wards. The perceived benefits of the system included the potential reduction in turnaround time for the dispensing of routine in-patient items in the dispensary.

In order to demonstrate this benefit the authors undertook an assessment to determine any increased efficiency due to the eMM software compared to the traditional method described above. (Note - Ethics approval was not required for this service evaluation).

Objectives
To assess the impact of the introduction of the eMM software in reducing the time taken for orders for in-patient medicines to be available for dispensing hence improving the quality of the service provided by the department.

Method
A small project group comprising three members of the clinical Pharmacy team working on the Care of Older Adult wards agreed the study protocol. This group comprised the Directorate Pharmacist (JS), a rotational Pharmacist (RL) and a medicines management technician (AR).

The wards included in the evaluation were: the Frail Elderly Admissions ward (FEAU), the Acute Stroke Unit (ASU) and two longer stay Care of the Older Adult wards (wards 78 & 79).

Over two consecutive days in March 2013 all supplies of in-patient medicines were requested using either the paperless eMM software (FEAU, Acute Stroke Unit and ward 78) or the traditional, paper-based, One Stop Dispensing (OSD) card (ward 79). Ward 79 had not adopted the eMM software and so no changes to their existing order method (OSD cards) were made. The data recorded for each supply comprised the ward number, a patient identifier, and the time that the order was made available to the dispensary (i.e. by electronic transfer or put out for the next porter on the ward). The project lead (JS) retrospectively analysed the dispensary computer software to determine the actual time of dispensing for each item ordered.

Results
49 individual in-patient medication orders were recorded over two consecutive days by the ward based Pharmacy team. The results are summarised in Table 1 below:

**Table 1: Analysis of time taken for eMM and OSD orders to appear in the dispensary** (N=48 - Note one item excluded as medicine required ordering from wholesaler)

<table>
<thead>
<tr>
<th>Ward</th>
<th>Number of items ordered</th>
<th>Cumulative time taken between order complete and dispensing complete for all items (mins)</th>
<th>Mean time per item (mins)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FEAU (eMM)</td>
<td>10</td>
<td>377</td>
<td>37.7</td>
</tr>
<tr>
<td>78 (eMM)</td>
<td>16</td>
<td>372</td>
<td>23.3</td>
</tr>
<tr>
<td>ASU (eMM)</td>
<td>7</td>
<td>98</td>
<td>14.0</td>
</tr>
<tr>
<td>Combined eMM wards</td>
<td>33</td>
<td>847</td>
<td>25.7</td>
</tr>
<tr>
<td>79 (OSD)</td>
<td>15</td>
<td>1296</td>
<td>86.4</td>
</tr>
</tbody>
</table>

Discussion
Introducing the eMM software has significantly reduced the time taken for in-patient items to appear in the dispensary (mean = 25.7 minutes vs. 86.4 minutes). Other authors have described operational and patient safety improvements demonstrated by introducing eMM. Our study confirms the findings that the efficiency of the dispensary service can be improved by the earlier availability of medicine requests. The obvious outcome of faster dispensing is that medicines are sent to the wards more promptly and this in turn helps to minimise the risks from missed doses as described elsewhere.

Other authors have described the potential for ward based pharmacy teams to work more efficiently by embracing mobile technology. Our study further demonstrates this aspect of improved pharmaceutical care and quantifies an aspect of this potential efficiency.

Future work should be undertaken to assess the impact of the eMM system on reducing patient harm from missed doses by measuring the turnaround from time medication ordered to delivery and availability on the ward.

References
Introduction
The antibiotic formulary for Wirral University Teaching Hospital has been available from the formulary section of the intranet since 2009, originally as a single document in portable document format (PDF). It was organised by infections but lacked a searching facility other that the one used by the viewer for navigation. Anecdotal feedback from users was that the electronic version was useful but it was often difficult to find the right information quickly.

An interactive web version – which included indications, treatment options, infective organisms, links to intravenous administration information (Medusa Injectable Medicines Guide) and some local and national protocols and guidance - was launched in April 2012 to try to improve formulary adherence and user navigation. This approach had been well received in another large hospital and was reported to increase the use of antimicrobial guidelines.¹

Objective(s)
- Determine the usability of the new antibiotic formulary website.
- Identify strengths and weaknesses of the new site from user feedback
- Evaluate which version is easier to use and navigate
- Determine areas for further work and improvements.

Method
A 10 question on-line survey (using SurveyMonkey*) was used which was accessible from the antibiotic formulary home page. Questions were constructed to determine usability and user preferences of the website. Questions were identical for both time frames apart from an additional question in the second survey to get users to indicate which system they preferred. The survey was conducted two weeks before and two months after the website launch for a period of two weeks in both cases. The survey was open to all members of staff using the Trust intranet. E-mails were circulated to promote the survey completion among clinicians.

Results
In total, 33 people completed the survey before the website launch and 25 people completed the survey after. The survey was mainly answered by pharmacists (50%) and doctors (20%). Nurses, advanced nurse practitioners (ANPs), microbiologists accounted for the remaining responses. Our web statistics show that for a period of 2 weeks normally the formulary section of the intranet was accessed 3820 times by 1650 different users.

The main results from the questionnaire are summarised in Table 1. In both surveys users considered the empirical antimicrobial therapy section most useful and the surgical prophylaxis and antifungal sections least useful. Most users (80%) agreed that a website is the most useful format, but paper versions were also still considered useful. Some users suggested the use of posters, laminated cards or Smartphone apps. Suggestions for ways to improve content were centred on drug monographs, therapeutic drug monitoring section and microbiology contact numbers.

Table 1: Key results from the Questionnaires

<table>
<thead>
<tr>
<th>Response</th>
<th>Pre-launch</th>
<th>Post-launch</th>
</tr>
</thead>
<tbody>
<tr>
<td>Used antimicrobial formulary 2-3 times a week</td>
<td>35%</td>
<td>37%</td>
</tr>
<tr>
<td>Find information quickly every time</td>
<td>12.5%</td>
<td>29.6%</td>
</tr>
<tr>
<td>Consider content of empirical section “just right”</td>
<td>77%</td>
<td>86%</td>
</tr>
<tr>
<td>Preference for web-based format currently in use</td>
<td>N/A</td>
<td>72%</td>
</tr>
</tbody>
</table>

Discussion
Overall the website version of the antibiotic formulary presents some advantages over the PDF and paper version (easy to update, old copies can’t be used, updated information, easy to deal with supply problems or shortages) but presents some other inconveniences such as computer / network availability and user navigability.

The resources for the design of the website were intensive in their development (Web developer, graphic designer, IT pharmacist and microbiology pharmacist), but maintenance time is equivalent to the PDF version. Version control is also an issue, making regular copies to keep old versions of the formulary essential.

One of the strengths of the website formulary is the interactivity, being able to check information in how to administer intravenous antibiotics directly and linking some national guidance from external website is helpful. One of the weaknesses is the fact that is not linked to our electronic prescribing system, one of the future enhancements could be linking it directly from there.

After going live, some users expressed concerns about sections missing (TDM, drug monographs, vancomycin table). These issues were fixed using hyperlink shortcuts. The paediatric formulary is still in PDF format, although paediatricians have showed interest in developing the children’s version into a similar web-based format.

More users in the hospital are now able to “find information quickly every time”. Several users have requested mobile phone apps or mobile devices applications that will help with the frequency of use of the formulary.

One of the main limitations of this evaluation was the profile of the users taking part as it was answered mainly by pharmacists and after engagement only a few clinicians took part in the survey. Only 2% of the people accessing the formulary answered the survey, but is difficult to identify how many users were the same user accessing it from different computers in the Trust. Also one of the limitations is to consider if the same people answered both surveys or were different members of staff.

Another area of further research is to evaluate if the website has improved formulary adherence. In our Trust antibiotic formulary adherence is monitored on a monthly basis via an Antibiotic Safe Prescribing Indicators Report (ASPIRE). The antibiotic formulary adherence fluctuates between 90-95%. There was no significant difference in results after the launch of the website, which is maybe due to compliance being already good.

References
Background
The Government’s White Paper, Equity and Excellence: Liberating the NHS set out the vision of an NHS where patients are involved with decisions about their care; ‘No decision about me, without me’. Shared decision-making (SDM) is not simply more choice for patients; done correctly, it recognises and utilises the expertise of both the practitioner and the patient. The format and language of a SDM consultation provide the support needed by an individual to make the choice that is right for them. SDM should be used only where preference-sensitive decisions exist (e.g. where there is clinical equipoise between two treatments and the right decision for an individual depends on that individual’s values, attitude to risk, lifestyle and/or preferences). That said, the main principle underpinning SDM (giving more opportunities for patients to be involved in decisions about their care) can be more generically applied to policies and pathways in healthcare.

Our Trust was one of two who worked with the Health Foundation on Phase 1 of the Making Good Decisions in Collaboration (MAGIC) project. That project looked at specific pathways in urology and breast care; further information is available on the Health Foundation website. The Pharmacy department engaged with our Trust’s SDM implementation team towards the end of MAGIC Phase 1 in 2011.

Objectives
To describe our experiences as an early implementer of Shared Decision Making, the barriers we have experienced and our successes.

Methods
The author collated feedback from Pharmacists and Pharmacy technicians working on SDM projects and SDM trainers who had worked with Pharmacy staff. The content of semi-structured and unstructured 1:1 interviews and discussions in reflective practice groups were examined for trends.

Results
Getting started
At the time that reducing non-adherence and medicines wastage was on the QIPP agenda and the value of the New Medicines Service had been proven, our Trust appointed a lead for Shared Decision Making. This was a person with expertise in SDM looking to embed it in Trust culture; it was evident that joining up on projects could be mutually beneficial and this was supported at a high level within the Trust. Education, workshops and discussions at Clinical Pharmacy team meetings and reflective practice meetings helped us to build momentum with SDM.

Identifying areas to work on
Until SDM was more firmly embedded in Trust culture, discrete projects and pharmacy-only work-streams proved the easiest to engage with SDM. They also gave us some ‘quick wins’ which helped to build the department’s confidence with SDM. Examples include Pharmacist led anticoagulant and bisphosphonate clinics, patient information leaflets on medication.

Successes in practice changes and projects
It is our belief that Pharmacists can adopt SDM relatively easily. The covenant that exists between a pharmacist and patient for the purposes of providing Pharmaceutical care requires building a holistic picture of the patient, their lifestyle and what outcomes are important to them; all important factors in SDM. Individuals who underwent SDM skills training demonstrated the following changes in their practice; adoption of SDM language and phrases, helping patients unpick treatment decisions that were made without correct engagement with a prescriber and improved ability to acknowledge uncertainty with patients. We have produced a patient information leaflet on the pros and cons of monitored dosage systems so that patients can be helped to make an informed choice if they are considering one. Our new policy for monitored dosage systems will also talk about offering the patient a choice between the systems that they are able to use.

We have an ongoing work-stream on supporting patients with visual impairment, enabling them to access information they may need to make decisions about their treatment – using a range of formats for information about medicines e.g. X-PIL website, telephone line, our Medicines Information department patient helpline, large print and talking medicine labels.

Barriers experienced
Individual practitioners’ internal barriers ranged from ‘This isn’t relevant to me’ to ‘I already do it’ and Pharmacists were no different to other healthcare professionals on this point. Reading about and watching videos of SDM consultations was insufficient for most Pharmacists to feel confident to practice SDM. Skills training, in the form of 2 hour workshops, were sufficient to surmount this. It was sometimes difficult to persuade some specialties that there was a role for SDM in particular pathways and this is to be expected with any culture change. For some preference-sensitive decisions, no patient decision aid existed and these are often difficult and time consuming to develop.

Ideas for future work
Practitioners inside and outside the Pharmacy department continue to identify areas where there is a need for SDM with medicines. Work-streams that are in their infancy or yet to start include

- Advocating for and supporting inpatients who want to be involved with treatment decisions.
- Brief decision aids for conditions and medicines known to be associated with readmission to hospital.
- HIV therapy and Cystic Fibrosis adherence clinics where SDM language will be incorporated with motivational interviewing.

Conclusions
Our experiences as an early implementer of Shared Decision-Making are that it can be a powerful tool for engaging patients in decisions about their medication and in their ongoing decisions to take or not take their medicines.

References
2. Coulter A, Collins A. Making shared decision-making a reality: No decision about me, without me. The Kings Fund 2011.
35. Qualitative evaluation of the impact of an electronic patient record system on Pharmaceutical care in a U.K. teaching hospital

Blagburn J, Foster JJ, Pharmacy department, Newcastle upon Tyne Hospitals NHS Foundation Trust, Newcastle upon Tyne.

Background
Newcastle Hospitals has clinical Pharmacy staffing of approximately 2.0 WTE per 100 beds, slightly leaner than the national average. We offer clinical Pharmacy services to most specialties Monday to Friday and 7 day/week discharge support to all as well as an extended hours clinical Pharmacy service to Medical admissions areas. We have previously described examples of changes in Pharmacy practice resulting from implementation of CERNER eRecord three years ago. In this work, we systematically explore the practice changes and the reasons behind them and describe what that means for the pharmaceutical care of our inpatients.

Objectives
To determine the impact that introduction of electronic patient record has had on the pharmaceutical care of inpatients, as perceived by clinical Pharmacy staff.

To explore, by focus group, the reasons for any perceived positive or negative impact.

Method(s)
Our evaluation comprised two parts. Firstly, an electronic survey was developed from the United Kingdom Clinical Pharmacy Association’s (UKCPA) Statement on Pharmaceutical care. The questions explored practitioners’ opinions about the impact of electronic patient record on each individual element of pharmaceutical care described in the UKCPA statement. All members of the clinical pharmacy team were asked to complete the survey at the beginning of 2013. The survey responses were analysed by the authors for themes and trends.

Secondly, a focus group representing clinical pharmacy staff of all types and grades was convened in Spring 2013 for semi-structured interview. The group was provided with a summary of trends in survey responses and anonymised quotations representative of each trend. The group was moderated by the authors; participants were encouraged to debate and reach consensus on the reasons for and the meanings of each trend observed in responses to the survey.

Results
Of the 58 members of the clinical Pharmacy team to participate in the survey, 42 (72%) submitted responses. Of the 42 respondents, 21 (50%) had been qualified for 5 years or more and 38 (90%) had practice experience with both paper and electronic prescribing systems.

The greatest perceived benefits of electronic patient record were
- increased opportunities for practice research and medicines-related research
- potential for systematic screening and prioritisation according to risk
- maintenance of and improvements in standards of care/performance indicators
- monitoring the safety and clinical outcomes of drug therapies
- enhanced legibility and accuracy of documentation
- improved communication and safer handovers in the inpatient setting, particularly where team situation awareness had previously been poor.

Interestingly, significant improvements in communication and risk management were not perceived at transfer of care between settings, particularly at hospital discharge. Clinical Pharmacists were, in general, more positive about the changes resulting from electronic patient record than were clinical Pharmacy Technicians. Both staff groups described weaknesses in IT infrastructure as being the largest barrier to performing their clinical Pharmacy and medicines management duties. It was suggested that many of our Pharmacy practice processes could be redesigned to free time for patients. The focus group agreed readily that, in the three years since electronic patient record was implemented, significant improvements to the system had already been made. Close working between the clinical Pharmacy team and Pharmacy Informatics was felt to have been key to those successes.

The greatest perceived disadvantages of electronic patient record were
- less time spent by the clinical Pharmacy team in direct patient contact
- more difficulty building relationships with patients

For some elements of the survey, responses were polarised; an obvious division between practitioners who believed electronic patient record facilitated care and those who believed it detracted. These included
- implementing public health policy (e.g. smoking cessation)
- efficiency of medicines usage
- impact on individual patients quality of life
- sharing of desired patient outcomes among the multidisciplinary team

The focus group explored the possibilities that the polarisation of opinion reflected utilisation of the system in different patient populations or by practitioners of different personality types. It was also suggested that some practitioners may have further developed their skills with the software to the advantage of their patients and that sharing of these skills should be encouraged.

Discussion
Electronic patient record facilitates systematic working and documentation but clinical Pharmacy staff did not feel this had been translated into enhanced provision of Pharmaceutical care. The main reason that care had not been improved was widely believed to be inadequate IT infrastructure; time saved by the electronic system is reportedly largely spent finding a free computer or resolving software problems. Many clinical Pharmacy practitioners felt the system improves team situation awareness, an important part of reducing clinical risk. Reduction in the amount of direct patient contact time is the greatest disadvantage of the system; it has reduced opportunities to engage patients in valued discussions about preference-sensitive decisions, treatment outcomes, adverse effects and adherence. More can be done remotely and it appears therefore that more has been done remotely, whether or not there was need. It is likely that ongoing engagement between the clinical and informatics teams to continue to develop system solutions for risk management will be important to freeing clinical Pharmacy time to concentrate on quality actions.

References
Introduction
A drug allergy is defined as a state in which the body becomes hypersensitive to a particular allergen. The symptoms of an allergy can range from a mild rash to anaphylactic shock(1). It has been reported that approximately 4.2 per 1,000 hospital inpatients have drug allergies(2). The department of health’s report “Building a safer NHS for patients: improving medication safety” recommended that patient’s allergy status should be documented on all hospital charts used for prescribing(3). This audit stems from a recent serious untoward incident where a patient allergic to penicillin was administered the drug with fatal consequences.

Aim
To assess the current level of adherence to full completion of the allergy box and appropriate use of red allergy wrist bands.

Objectives
Perform an audit on the two standards below over a set time period, interpret and feedback the data to heads of departments so change can be implemented if need be.

Standard 1: 100% of allergy boxes on inpatient drug charts should:
   a. Be completed and not left blank
   b. Signed
   c. Dated
   d. The nature of the allergic reaction documented.

Standard 2: 100% of patients with a documented allergy should be given a red wrist band.

Method
A data collection form was designed and piloted by a small cohort of pharmacists; following which, any appropriate changes were made. Pharmacists then collected data on five random inpatient drug charts on each ward included in the audit on Tuesday 22nd January 2013. In total, 160 drug charts were audited. Pharmacists were briefed to exclude rewritten drug charts and to randomly select five drug charts on their ward in no particular order. For the purposes of this audit, intensive care unit (ITU) was excluded.

Results
Table 1: Results of standards audited:

<table>
<thead>
<tr>
<th>Standard Audited</th>
<th>Results of compliance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard 1: 100% of allergy boxes should:</td>
<td></td>
</tr>
<tr>
<td>a. Be completed</td>
<td>145/160 = 90%</td>
</tr>
<tr>
<td>b. Signed</td>
<td>127/160 = 79%</td>
</tr>
<tr>
<td>c. Dated</td>
<td>117/160 = 73%</td>
</tr>
<tr>
<td>d. The nature recorded where an allergy is documented (58 patients with a documented allergy)</td>
<td>35/58 = 60%</td>
</tr>
<tr>
<td>Standard 2: 100% of patients with a documented drug allergy should be wearing a red wrist band (58 patients with documented allergy)</td>
<td>45/58 = 78%</td>
</tr>
</tbody>
</table>

Discussion
Table 1 illustrates that 90% of all allergy boxes were completed. This suggests 10% of drug charts seen did not have a completed allergy box and were left blank. It is essential that an allergy status is documented to prevent patients from receiving drugs which they may be allergic to. The audit also highlighted the need for a pharmacist to double check the allergy status. In one instance, a drug chart was endorsed with no known drug allergies; however the pharmacist found that the patient was allergic to tescoplain. This was subsequently endorsed in the allergy box by the pharmacist.

The audit demonstrated that 79% of allergy boxes were signed. Although signing the allergy box is good practise, it is often more important to make sure that the actual allergy status is completed. However, the person who fills the allergy box should sign so that they may be identifiable if need be. The hospital does not currently have a register of doctor’s signatures so it is often difficult to identify the prescribing doctor. When looking at the level of compliance to dating the allergy box, this was found to be 73%. The figure is less than that for signing and completing the drug allergy box and this may illustrate that prescribers do not see this as a necessity.

Results also showed that of those patients who had an allergy recorded (58 patients) only 35 (60%) had the nature recorded. It is vital that the nature is completed as this helps healthcare professionals differentiate between side effects or allergic reactions. Moreover, this helps pharmacovigilence and monitoring the types of reactions caused by which drugs.

For standard 2, only 78% of patients were wearing the appropriate red wrist band. It is essential that all patients who have a documented drug allergy are given a red wrist band to reduce the risk of administering a drug to which they are allergic too. Results obtained showed that where applicable, those patients who were not wearing a red wrist band were highlighted to nursing staff by pharmacists to ensure one was given.

A possible limitation to the audit could be only five drug charts were sampled on each ward. Due to the random selection of these drug charts, the results portrayed here cannot be extrapolated to be true for all drug charts seen on the ward.

Recommendations
1) Pharmacy department to continue to monitor above standards by performing rolling audits on a monthly basis and feedback the results to patient safety committee and medication safety committee in March 2013.
2) Principal pharmacist clinical services to feedback serious incidents to ward manager and senior nurses at monthly intervals to highlight the importance of completing the allergy box and appropriate use of red wrist bands.
3) Pharmacists to complete a datix report for a patient where necessary.
4) To create a screensaver which will be visible on all computers in the hospital reminding doctors and nurses the importance of completing the allergy box and using red wrist bands.
5) Each clinical directorate to obtain a signature and keep in a register for each doctor working under their division so that prescribers can be identified.
6) For the next monthly audit, pharmacists should collect data on wards not covered by them-selves to avoid any chance of bias.

References
(1) Cantril JA, Cottrell WN. Accuracy of drug allergy documentation. Am J Health-Sys Pharm. 1997;1627-1629
Introduction
Constipation is described by National Institute of Clinical Excellence (NICE) as “the subjective complaint of passage of abnormally delayed or infrequent passage of dry, hardened faeces often accompanied by straining and/or pain”. First line treatment for constipation is dietary and lifestyle modifications. Biofeedback is also now recommended prior to initiating laxatives.

Prucalopride is recommended by NICE for use in females who have inadequate relief from other laxatives. NICE stated that prucalopride should only be implemented if clinicians experienced at treating chronic constipation and only after six months, where at least two laxatives and lifestyle modification had not provided relief. Prucalopride is a highly selective, high affinity serotonin-4 receptor agonist, found to be effective in 30% of patients in clinical trials. The licensed dose of prucalopride in adults is 2mg daily, whilst in the elderly, prucalopride is initiated at 1mg daily and titrated up. Prucalopride was approved at this Trust in December 2011. To ensure prucalopride was monitored in an appropriate way, a limited introduction, with the design of a specialised prucalopride prescription clarifying the algorithm to be followed prior to prescribing prucalopride occurred. This protocol specifies the patient should have had a course of biofeedback and requires the prescriber to complete the patient’s Wexner score, which measures constipation severity, in order to measure the effectiveness of prucalopride over time.

Objectives

The aim of this audit is to measure compliance on the use of prucalopride against hospital protocol. Objectives of this audit are to analyse the specialised prescriptions and patient medical records. This audit was undertaken on data when prucalopride was dispensed from 28th December 2011 to 27th September 2012.

The standards for this audit are:
1. 100% of the patients followed the protocol prior to being prescribed prucalopride.
2. 100% of the patients prescribed prucalopride according to licensed doses.
3. 100% of the specialised prucalopride prescriptions were completed correctly.
4. 30% of patients found prucalopride effective, reflected in a decrease in the Wexner score.
5. 100% of patients were referred back to their GP, if effective, at the end of treatment.

Method

To identify patients who had been prescribed prucalopride, a pharmacy transaction report using JAC was printed, containing the dates of when prucalopride was dispensed, allowing the retrieval of the original prescriptions from archives. The original prescriptions were used to see if the prescribers completed the prescriptions fully and correctly and whether it was prescribed according to hospital guidelines. The report also made it easier to identify patients who were prescribed prucalopride so their patient medical records (PMR) could be obtained. The PMRs were used as a secondary source to see if the prucalopride was initiated correctly if the original prucalopride prescription could not be situated or had not been completed fully. They were also used to see if any benefit was achieved from prucalopride, and to see if the patients were referred back to the GP at the end of the course. Further information was obtained from the hospital’s clinical information system which contained correspondence to GPs from the hospital that may not be in the PMRs.

Using the aims and standards, a data collection form was designed and piloted on the first five outpatient prescriptions found. It was then modified to be simpler to fill in and for it to be easier to conduct analysis on the data.

Once the data had been collected onto the data collection sheets, it was transferred onto Excel and analysed.

As this is an audit, ethical approval was not required.

Results

There were 47 patients who had been initiated on prucalopride after December 2011 and 58 of the 68 prucalopride prescriptions were available to be assessed.

Table 1 – Audit results

<table>
<thead>
<tr>
<th>Standard</th>
<th>Result (N = number assessed that met the standard)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>N= 30/ 47 patients (63.8%)</td>
</tr>
<tr>
<td>2</td>
<td>N= 46/ 47 patients (97.9%)</td>
</tr>
<tr>
<td>3</td>
<td>N= 49/ 58 prescriptions (84.5%)</td>
</tr>
<tr>
<td>4</td>
<td>N= 19/ 47 patients (40.4%)</td>
</tr>
<tr>
<td>5</td>
<td>N= 17/19 patients (89.5%)</td>
</tr>
</tbody>
</table>

The results from Table 1 show that standard 1, 2, 3 and 5 were not fully met but standard 4 was.

Discussion/ Conclusion

Reasons why the standards were not met appeared to be due to a lack of knowledge of what was required before prucalopride could be initiated and prescribers not taking the time to fully complete all the sections on the prucalopride prescription. There were some limitations to this audit such as missing information on the specialised prescriptions for prucalopride and the PMRs. This meant analysis could not be fully completed and there were a large percentage of unknown data.

The original study used by NICE used a different method to measure effectiveness of prucalopride, rather than using the Wexner score, and therefore it is debatable whether those results and the results produced in this audit are comparable.

Recommendations from this audit are to edit the specialised prescription so that it is simpler to complete and easier for pharmacists to screen. The current specialised prescription is on the intranet and printed out by the prescriber and therefore it would be a matter of replacing this with a revised copy. This could be implemented by the next rotational band 7 pharmacist in May.

Another recommendation is that GPs could implement prucalopride for patients unresponsive to typical laxatives instead of hospitals due to the ease of using the Wexner score sheet which would monitor for improvement of symptoms. This would save time and money on hospital consultations and follow up sessions. This idea could be discussed in the next drugs and therapeutics meeting.

References
Background

Nearly half a million older people in England live in care homes. People living in care homes are high users of medication and are at high risk of adverse drug reactions and inappropriate drug use. Furthermore, polypharmacy is associated with medication errors. A report by the Chief Pharmaceutical Officer included in detail the particular types of errors which can occur in the care home setting, including lack of review of therapy. The Care Homes’ Use of Medicines Study found that patients were on an average of 7.2 medicines demonstrating considerable polypharmacy. In addition, 69.5% of patients had at least one medication error. The authors concluded that this required urgent attention, and included medication review to rationalise regimes as one of their recommendations. Despite this, there are limited published studies investigating the impact of mediation review in a care home setting. None of these studies relate to pharmacist-led medication review carried out on a GP-led review round. The Improving Prescribing for the Elderly (ImPE) Project based at the Imperial College Healthcare NHS Trust and funded by the Collaboration for Leadership in Applied Health Research and Care (CLAHRC) for North West London (NWL) developed a medication review tool (ImPE tool) based on the Screening Tool for Older Persons Potentially Inappropriate Prescriptions (STOPP). This paper describes use and impact of this tool within a care home setting in the context of a GP-led review round.

Aim and Objective(s)

The aim of this pilot study was to evaluate the impact of an ImPE medication review on a GP-led review round within a care home setting. Objectives:

- To ascertain the average number of medicines this cohort of patients are on
- To explore the number and types of potentially inappropriate medicines (PIMs)
- To explore the number and types of adverse drug reactions (ADRs)
- To determine the proportion of PIMs that were successfully reduced

Method

The study was carried out in a 92-bedded West London care home between 15th November 2011 and 19th January 2012. The Christmas period was excluded from the study due to logistic reasons. During this evaluation, 3-4 different GPs conducted the ward round twice weekly. One pharmacist attended the ward round with the GP is pharmacist with a specialist interest in elderly medicine. In addition, a nurse also participated on the ward round. All patients within the care home (who were on one of more medicine(s)) were eligible for inclusion in the study. The medication review was completed collaboratively by the GP and pharmacist. Ethics approval was not required for this study as it was deemed to be a service improvement and evaluation. Quality Improvement methodology including process mapping and Plan-Do-Study-Act cycles were used to determine the best way of introducing the intervention. The ImPE tool was completed for each patient seen on the ward round and data was collected on the impact of medication review. During the ward round, the pharmacist was able to use the Medication Administration Record Sheet (MARS) to ascertain details about the medications. The team also had access to the patient’s medical record on the Egton Medical Information System (EMIS) computer based system if required.

Results

At the end of the study period, medication review using the ImPE tool was initiated for 89 patients. A total of 75 reviews were fully completed (84%). The remaining 14 were left incomplete as a result of death of the patient, the patient moving residence, or the study period ending before the patient was seen. Only the fully completed reviews were included in further analysis. The average age of the patient was found to be 83 (59 – 100) and each patient was on an average of 8.4 medicines (2 – 15).

A total of 125 ADRs were seen with an average of 1.7 ADRs per patients (n=75). The types of ADRs that were seen were confusion (42%; n=53), falls (37%; n=48), constipation (7%; n=9), metabolic disturbances (7%; n=9), bleeding (6%; n=7) and ‘other’ (1%; n=1).

A total of 183 PIMs were seen with an average of 2.4 PIMs per patients (n=75). The types of PIMs that were seen were antihypertensives (19%; n=34), warfarin/NSAIDs/platelets (19%; n=35), opiates (11%; n=21), diuretics (9%; n=17), benzodiazepines/hypnotics (7%; n=12) and ‘other’ (35%; n=64). The ‘other’ category included predominantly antidepressants, antipsychotics, proton pump inhibitors and statins.

Of the 75 completed medication reviews, 69.3% (n=52) lead to at least one change being made. The type of change and the drug category is summarised in Table 1 below. A total of 81 PIMs were accounted for. There were no changes made in the remaining 30% of reviews; the reason documented was that the benefit outweighed the risk.

<table>
<thead>
<tr>
<th>Drug Category</th>
<th>No. Permanently Stopped</th>
<th>No. Temporarily Stopped</th>
<th>No. Dose Reduced</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other</td>
<td>25</td>
<td>9</td>
<td>8</td>
</tr>
<tr>
<td>Warfarin, NSAIDs, Antiplatelet</td>
<td>11</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Antihypertensives</td>
<td>9</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Opiates</td>
<td>7</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Benzodiazepines/hypnotics</td>
<td>3</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Diuretics</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total No. Meds</strong></td>
<td><strong>57</strong></td>
<td><strong>13</strong></td>
<td><strong>11</strong></td>
</tr>
</tbody>
</table>

Table 1: No. of Medications Stopped Permanently/Temporarily Stopped/Dose Reduced

Conclusion

The pilot work carried out at the care home shows that by using the ImPE tool, medication load can be decreased with a potential decrease in ADRs and a positive effect on patient experience. This has potential for large impact across the care home sector as well as primary and secondary care in general. Furthermore, it encouraged good multidisciplinary working and a positive reaction from the nursing staff. A comprehensive study is now warranted and should include a focus on outcomes such as a decrease in hospital attendances due to medicines.

References

5. Gallaighar P and O’Mahoney D. STOPP (Screening Tool of Older Persons’ potentially inappropriate Prescriptions): application to acutely ill elderly patients and comparison with Beers’ criteria. Age and Ageing, 2008: 37(6): 673-679
Introduction
Patient satisfaction is widely used within healthcare research for the purposes of service evaluation. In 2009, University Hospital Llandough (UHL), one hospital within Cardiff and Vale University Health Board, developed its’ out-patient pharmacy services using LEAN methodology. At that time there was no data on what areas of the out-patient pharmacy services patients valued most and what areas caused them concern and therefore a patient satisfaction study was completed in 2010 to inform some of the LEAN developments. The results of the study demonstrated that the overall satisfaction with the service was rated good or excellent. However there were several areas for concern including the waiting area, accessibility of the department itself, lack of some medicines and a seemingly lack of standard approach to taking in out-patient prescriptions and information provision to patients on their medicines. Action was taken by the pharmacy department in addressing these issues. In June 2012 it was decided to re-evaluate the patient satisfaction with the out-patient service at UHL to see if the changes had made an improvement in patient satisfaction.

Objectives
To evaluate patient satisfaction with the out-patient pharmacy service;
To identify what users of the service valued when visiting the out-patient pharmacy with a prescription;
To identify any concerns the patients had and to identify ways in which patients and/or carers believed these concerns could be addressed.

To compare the results of this study with the previous study from 2010.

Method
The NHS Research Ethics Committee deemed the project to be service evaluation. The questionnaire from the 2010 study was used. It contained a mixture of open and closed questions. The different sections of the questionnaire included:
- Ease of finding the pharmacy department and dispensing times;
- Advice given to the patient and the time with pharmacy staff;
- Availability of medicines and stock;
- The waiting area and the pharmacy itself;
- Overall satisfaction with the pharmacy department (using a five point Likert scale);
- Demographic data on the patients.

All patients who were dispensed an out-patient pharmacy prescription, except those who attended the memory clinic, were under 18 years and where the name, address or age was unclear on the prescription were included in the study. A piloted questionnaire, covering letter and freepost return envelope were sent to 500 eligible patients, no more than 3 days after they had attended the hospital, during a two week period. All participants were given 14 days in which to respond, after which time the data was inputted and analysed using Statistical Package for Social Sciences (SPSS) version 18.

Results
Of the 500 questionnaires distributed, 190 were returned, attaining a response rate of 38% (vs. 34% in 2010). The majority of respondents were female (68%, n=126/186), and aged over 50 years (77%). The demographics illustrated that the main user of the pharmacy was a retired female aged 60-69 years. The majority of respondents collected their own prescription (89%). This demographic data had not changed significantly from the 2010 survey except the main user in 2010 was a retired female aged 70-79 years. In 2010 approximately 20% of respondents reported difficulty in finding the pharmacy department whereas in 2012 survey this had decreased to 12%. The comfort of the waiting room had improved (from 67% to 82%) and the number of patients who thought there was enough privacy increased from 30% to 46%. Whilst the majority of prescriptions were taken in by staff in a timely manner, only 54% were informed how long they would be required to wait for their prescription. This compares to 48% in 2010. In both 2010 and 2012 surveys, the majority of respondents (>90%) indicated they would like to receive their medicines within 15 minutes. The number of respondents who were provided with advice on their medicines fell from approximately 60% in 2010 to 50% in 2012. Sixty percent of the prescriptions mentioned were for a new medicine that the patient had not previously used. Five percent of respondents indicated that their medicine was unavailable at the time of dispensing (compared to 13% in 2010). Whilst for most of these cases, arrangements were in place to come back another day to collect the supply, the majority of respondents would prefer to collect it from their local pharmacy. Approximately 80% of respondents rated the pharmacy service as excellent or good, compared with 70% in 2010. Only 3% rated the service as poor, compared to 5% in the previous survey. The main suggestions for further improvement included improving the waiting area and ensuring that the patient is acknowledged as quickly as possible when they arrive in the pharmacy department.

Discussion
Whilst the response rate of 38% was similar to the previous study in 2010, a low response rate does limit the representativeness of the results to the whole population. Improvements in many areas were identified though, namely the overall satisfaction of the pharmacy service, the signage to the pharmacy, the comfort of the waiting area and stock control. This was encouraging as much effort had been made to improve these areas after the last survey. However whilst a private room had been added to the waiting room in response of the results of the last survey, it seems that the room may not be used optimally as approximately 50% of respondents mentioned privacy as an issue that still needs to be addressed. Another area that needs to be actioned is the proportion of patients receiving advice on their medication. This had decreased from 60% in 2010 to 45% in 2012 and therefore warrants further investigation.

The results of the survey have again been shared with pharmacy staff who, as before, have been motivated to further improve the service. A notice has been placed in the waiting room inviting patients to request a private consultation with staff and staff are actively seeking opportunities to provide information to patients. It is planned to repeat the survey next year, as this type of feedback from patients is a powerful force for change.

References
2. National Health Service Institute for Innovation and Improvement. Lean Thinking. 2010
Introduction
A recent NPSA (National Patient Safety Agency) Alert stated that ‘Medicine doses are often omitted or delayed in hospital for a variety of reasons. (Whilst these events may not seem serious, for some critical medicines or conditions, such as patients with sepsis or those with pulmonary embolisms, delays or omissions can cause serious harm or death)’. Results from local audits conducted Feb 2010 to Feb 2012 showed a range of 10% -21% of regularly prescribed medication not being given to patients, the most common reason cited was ‘medicine not available’. For the period Jul-Sep 2010 16% of medication incidents reported on the trust incident system, datix, were related to omitted medications.
As a result of the high proportion of incidents and feedback from local audits related to the omitted medications, a feedback tool was developed. The aim of the feedback tool is to reduce to zero the number of patients on the wards who have regularly prescribed medications omitted by introducing regular monthly feedback, from pharmacists to nursing staff. This audit did not require ethics committee approval.

Objective(s)
The aim of this audit is to measure the impact of the feedback tool on reducing the number of patients who have regularly prescribed medications omitted and reduce the number of wards where greater than 25% of patients had omitted medicine on the previous day.
The second aim is to identify any themes associated with the omissions of regularly prescribed medications on the wards using data gathered from the feedback tool. This can be determined by reviewing all the details of the monthly ward feedbacks to identify times of day and medication categories involved.

Method
The feedback tool involves the ward pharmacist reviewing all prescription charts on the ward on a monthly basis and feeding back to the senior nurse the number of patients who have had medication omitted on the day before. The details of the medication omission i.e. time of day, name of medication are also documented on the feedback sheet for discussion with the senior nurse. The senior nursing staff member discusses the medication omissions with the members of nursing staff involved in the omitted medications to facilitate a change in practice.
The feedback tool is used by clinical pharmacists on all twenty-nine wards which receive clinical pharmacy services across the trust. (Wards not receiving clinical pharmacy services have been excluded) and was introduced in May 2012. The results of the monthly ward feedbacks are also fed back Trustwise, they are RAG (Red, Amber and Green) rated and are fed back by the Medication Safety Pharmacist to the Senior sisters and Modern Matrons and the Director of Nursing for discussion at senior meetings on a monthly basis enabling the feedback tool to be used to drive improvement on the individual wards. Clinical areas where over 25% of patients had a medication omitted are highlighted in red on the Matrons database to encourage improvement and reduce the number of clinical areas where more than 25% of patients have omitted medications to zero.
Wards that are improving and reducing their rates of medication omissions are then able to share ideas for improvement with other wards. In December the Matrons requested that the feedback tool also collected data related to quality of medication omission documentation.

Results

<table>
<thead>
<tr>
<th></th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of wards with &gt;25% of patients with omitted medication</td>
<td>8</td>
<td>7</td>
<td>6</td>
<td>7</td>
<td>7</td>
<td>9</td>
<td>8</td>
<td>5</td>
<td>1</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Total Patients with omitted medicine</td>
<td>101</td>
<td>101</td>
<td>98</td>
<td>102</td>
<td>109</td>
<td>114</td>
<td>99</td>
<td>96</td>
<td>90</td>
<td>101</td>
<td>87</td>
</tr>
<tr>
<td>Total Patients reviewed</td>
<td>539</td>
<td>541</td>
<td>638</td>
<td>638</td>
<td>608</td>
<td>656</td>
<td>656</td>
<td>614</td>
<td>673</td>
<td>673</td>
<td>673</td>
</tr>
<tr>
<td>%age of Patients with omitted medication</td>
<td>19%</td>
<td>19%</td>
<td>15%</td>
<td>16%</td>
<td>18%</td>
<td>17%</td>
<td>15%</td>
<td>16%</td>
<td>13%</td>
<td>15%</td>
<td>13%</td>
</tr>
</tbody>
</table>

A total of 874 omitted medications during July – November 2012 were reviewed to assess type of medication omitted and time of day. The top three categories were Analgesia (19%), Food supplements (18%) and Laxatives (13%). The most common time of day was evening (35%) followed by night (27%). During January to February 2013, 80% of omitted medications were not documented on the medication chart i.e. administration was not documented. Twenty-nine wards were reviewed over eleven months and a total of 6909 patients were seen.

Discussion/Conclusion
In May 2012, 101 patients (19%) did not receive all their regularly prescribed medication on the day before. Of the twenty-nine wards, eight had more than 25% of the patients who did not receive a regularly prescribed medication.
In March 2013 a total of 87 out of 673 patients (13%) had not received a regularly prescribed medication on the day before. This is a reduction from 19% to 13%. The number of wards with more than 25% of patients having omitted medication was reduced to six. During the period from September to March 2013 there has been a decrease in the total number of patients who have regularly prescribed medications omitted and there has been a reduction in the number of wards where greater than 25% of patients had omitted medicine on the previous day.
Note that the feedback tool was communicated Trustwise in September 2012. The feedback tool data identified that the most common medication missed was analgesia and the most common time of omission was the evening. A large proportion of medication administrations were not documented. As a result of this nursing staff have increased education on the importance of:
- documenting administration of medication on the prescription chart
- documenting reasons for omission of analgesia
- night staff are aware of importance of administering/documenting medications

The design of the audit is limited by the assumption that all patients’ charts on the ward will have been seen by a pharmacist.

References
Background
Anticoagulation with warfarin is recommended for primary stroke prevention in patients with atrial fibrillation (AF). LTHT Anticoagulant Service has observed an increased number of referrals to initiate warfarin for the prevention of stroke in patients with AF. The reasons for this are due to the new Quality and Outcomes Framework (QOF) for AF in 2012/13 and increased uptake of the Guidance on Risk Assessment and Stroke Prevention for AF (GRASP-AF) audit tool. One study has shown that use of a slow loading regimen requiring only weekly INR tests has proved safe and effective for the outpatient initiation of warfarin. LTHT use a local discretionary slow loading regimen which has resulted in variable responses, and prolonged times to achieve a therapeutic INR.

Aims and Objectives
To demonstrate that use of a slow loading protocol reduces the time to achieve therapeutic INR and stable warfarin dose compared with the existing discretionary protocol, without resulting in a higher incidence of supra-therapeutic INRs or bleeding episodes. This pilot involved local validation of a published protocol and did not require ethics approval.

Method
The slow loading protocol was validated in an outpatient anticoagulant clinic by three specialist anticoagulant pharmacists. Patients met the inclusion and exclusion criteria listed in the original paper. All patients initiated on this regimen were annotated on the DAWN anticoagulant package; any deviations from the protocol were recorded with an explanation. Results were compared to a group of patients in whom the local discretionary slow loading regimen was adopted. Given the small scale of this validation, no statistical analysis was appropriate. Between October and December 2012, 26 patients (14 men and 12 women; age range 55-87 years, mean age 74 years) were initiated on the slow loading protocol. These were compared to 26 patients (18 men and 8 women; age range 65-87 years; mean age 78 years) who were initiated on the local discretionary protocol between July and September 2012.

Results
The protocol was followed correctly in 22 (85%) patients; reasons for deviation from protocol were documented as compliance issues in two patients and interacting medicines in two patients. Data for all patients have been analysed.

Figure 1a shows the time taken for patients to achieve an INR >1.9 using the local (LTH) protocol and the new slow loading regimen (SLR) protocol. Only two (8%) patients in the SLR group compared with 12 (46%) patients in the LTH group took more than three weeks to achieve an INR >1.9. Patients with an INR in the range 2.0-3.5 were reviewed at day 15 to consider transfer to a community clinic. Thirteen (50%) patients in the SLR group compared with six (23%) patients in the LTH group were suitable for transfer at day 15. In the SLR group, all except one patient (compliance issues) were transferred to community by week five, whereas the longest transfer time in the LTH group was seven weeks.

Figure 1b shows the time taken for patients to achieve a stable dose; for the purposes of this validation, a stable dose was defined as when the patient was within the therapeutic range (INR 2.0-3.0) for two consecutive weeks on the same dose of warfarin. Seven (27%) patients in the SLR group compared with two (8%) patients in the LTH group achieved a stable dose by week three. In the SLR group, six (23%) patients took longer than five weeks to achieve a stable dose, four of these patients were due to compliance concerns, one patient due to interacting medicines and one patient the cause was unknown. These figures are slightly lower than those quoted in the original paper, and may reflect the small nature of this study. In the LTH group, 17 (65%) patients took longer than five weeks to achieve a stable dose; the longest duration was 12 weeks.

Conclusion
The validation of the slow loading protocol concurs with the original study results. Use of the slow loading protocol was shown to reduce the time to therapeutic INR and reduce the time to stable warfarin dose. The benefits for patients will be fewer hospital anticoagulant appointments and quicker transfer to a community clinic in a location more convenient to them. For many patients this will be a favourable option as travelling to and from hospital based clinics is both timely and costly. The same protocol could be adopted for referrals received for the initiation of warfarin in AF awaiting cardioversion; the same benefits would hope to be seen with a reduction in the waiting time to undergo cardioversion. The higher incidence of supra-therapeutic INRs using the protocol causes some concern; further analysis of a larger data set is required to analyse the significance of this and whether any amendments to the protocol are required.

References

No patients suffered any haemorrhagic or thrombotic episodes during the first month of warfarin therapy. During the first three weeks of treatment, there was a slightly higher incidence of supra-therapeutic INRs in the SLR group (16% INR≥3.1, 5% INR ≥5.0) compared with the LTH group (1% INR ≥3.1, 0% INR ≥5.0); however none of these resulted in any bleeding. The reasons for the high INRs in the SLR group were unknown in the majority of cases (61%), antibiotics/other interacting medicines (23%), confusion/compliance issues (8%) and alcohol (8%). Supra-therapeutic INRs were more common at day 15; however these were successfully managed with omitting doses and dose reduction, such that no supra-therapeutic INRs were observed at day 22.
Background
Cardiovascular disease can manifest as coronary heart disease (CHD) or stroke and is a significant cause of morbidity and mortality in Scotland. The long-term secondary preventative management of CHD is evidence based and despite a wide range of guidelines available evidence suggests there is a lack of adherence to lifestyle recommendations and the use of prophylactic medication in patients with CHD. Improvements in management of acute coronary syndrome (ACS) have led to short hospital admissions and limited time to titrate new medicines to evidence based doses during hospital stay. There is a need for good communication between secondary and primary care to ensure evidence based practice in secondary prevention of ACS. This study investigated one method of communication with the aim to improve pharmaceutical care between primary and secondary care for secondary prevention of ACS.

Objectives
To design and test use of a pharmaceutical care document to transfer individual patient information on discharge from secondary to primary care. To optimise prescribing in accordance with national standards for secondary prevention of coronary heart disease in a cohort of patients discharged from hospital with acute coronary syndrome.

Method
A pharmaceutical care plan (PCP) for acute coronary syndrome was designed and piloted. The PCP, tailored to the individual patient, included information and recommendations for prescribing and monitoring secondary prevention medicines and recommended pharmaceutical care actions for the GP and community pharmacist. Approval was obtained from the South East Scotland Research Ethics Committee 01 on 25 November 2011 and NHS Research Management approval obtained on 8th September 2011. Local Medical Committee and Community Pharmacy approval was granted May 2012. Patients were approached by nurses and recruited by the clinical pharmacist from the cardiology unit in a large teaching hospital comprising ten-bedded coronary care unit and 46-bedded cardiology ward between May and August 2012. First acute hospital presentation acute coronary syndrome patients (n=25) living within one city centre Community Health Partnership, their general practitioners (n=14) and community pharmacist (n=23) were recruited. The PCP was completed for individual patients and securely faxed to GPs and community pharmacists when patients were discharged from the hospital cardiology unit. Telephone follow up to patients and GP practices confirmed management at 3 months following discharge. Adherence (%) to nationally agreed standards for coronary heart disease was reviewed (Table 1) . Questionnaires were designed and sent to the primary care doctors and pharmacists to obtain feedback on the use of the document.

Results
Of 25 patients recruited, 20 (80%) were male and mean (SD) age was 59(±13) years. Sixteen (64%) patients had one or more risk factors for coronary heart disease. All 23 community pharmacies and 14 GP practices consented to participate in the study. Care issues recommended to the GP were completed in 12 (100%) patients for therapy duration of clopidogrel and 12 (92%) patients for monitoring requirements after initiation of ACE inhibitor. Dose titration was not completed in any patient for beta-blocker therapy and in 3 (25%) patients on ACE inhibitor. Dose titration was not undertaken for 8 (67%) patients due to low or normal blood pressure. Only 7 (70%) patients received liver function testing after starting statin therapy. Some patients were followed up before the recommended monitoring time period had elapsed. Compliance with national standards for coronary heart disease was 100% for all medication with the exception of beta-blocker therapy in 1 patient (Table 1).

<table>
<thead>
<tr>
<th>Standard No.</th>
<th>Clinical Standard</th>
<th>Compliance of study population</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.3</td>
<td>Patients with confirmed ACS receive the following treatment except where contraindicated. The reason for contraindication is documented:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- aspirin</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>- clopidogrel or equivalent</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>- beta blocker</td>
<td>96%</td>
</tr>
<tr>
<td></td>
<td>- statin therapy,</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>- angiotensin converting enzyme inhibitor.</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 1 Compliance with NHS QIS Clinical Standards for Heart Disease

Nine of the 13 GP respondents found the information useful, 1 considered there to be too much information and 7 reported that it added to the information received on the discharge letter. Of the 4 questionnaires returned from the 23 community pharmacists, 2 reported the transfer document to be useful and 1 considered there to be too much information. None reported discussion of care issues with the GP. Follow up with patients suggested they were positive about the sharing of information and were disappointed at the lack of discussion with their primary care providers.

Conclusion
Prescribing for secondary prevention complied with minimum national standards but there is a need for dose titration of medicines in primary care. The pharmaceutical care transfer document was designed to facilitate optimisation of secondary prevention through provision of specific prescribing recommendations and monitoring actions but the study suggests that there is a need for further engagement of healthcare professionals in facilitating its use. Although community pharmacists consented to participate in the study there was little evidence that they had used the document to facilitate engagement with patients or GPs. A multidisciplinary working group are using the results of the study to define a minimum dataset for cardiology specific discharge prescriptions. Future development and evaluation of the intervention should secure engagement from the primary care team and explore communication systems to facilitate improvement in secondary prevention treatment in coronary heart disease.

References
43. An audit on the adherence to local prescribing guidelines at a London NHS Trust hospital
Patel M, Ealing Hospital NHS Trust Integrated Care Organisation, Southall

Introduction
Improving patient safety and the quality of care is driven under clinical governance in the National Health Service (NHS). The most frequent treatment provided for patients in the NHS is a prescribed medicine; with an estimated 200 million prescriptions issued in hospital each year. Despite high standards of prescribing in the UK, errors in the legibility and completeness of prescriptions can compromise patient safety and potentiate the risk of serious patient harm. These prescribing errors are often preventable. The current Medicines Policy at Ealing Hospital provides guidance on the prescribing of inpatient medication. This audit will focus on the legibility and completeness of inpatient prescribing to determine conformation of prescribing to the trust Medicines Policy standards.

Aim
To assess the level of compliance to the prescribing standards of the Medicines Policy within Ealing Hospital NHS Trust-Integrated Care Organisation (EHT-ICO).

Objectives
1. To quantify the correct and complete prescribing of medicines on inpatient drug charts; including documentation of patient specific information e.g. allergy status.
2. To identify poorly completed areas on the drug chart to highlight where further training is required for prescribers.

Method
Since the audit entailed analysis against a set of pre-existing standards, ethical approval was not warranted. The audit tool was piloted on 3 medical wards and the intensive care unit. Data was collected by members of the pharmacy team from the 19th to 30th November 2012 across wards at Ealing Hospital and Claypools Hospital. 10-20 charts were chosen at random from each ward. Analysis of the data collection forms was carried out using SNAP, a text recognition analysis software. Both pharmacy staff and hospital wards were appointed an arbitrary code to ensure compliance with the Trust’s audit regulations, and recognition by SNAP. All questionnaires were scanned using SNAP software. The data was then downloaded onto Excel and subsequently analysed.

Limitations: Outpatient prescriptions lie beyond the scope of this audit, and were not included in data collection. Data collection excluded the maternity wards, special care baby unit, and clinical decision unit. Meadow House Hospice was not audited due to differences in the inpatient drug chart.

Results
See table 1. Only one criterion showed 100% compliance: documentation of the patient’s name. 23 criteria showed a compliance of between 75% and 99%. 4 criteria showed a compliance of between 50% to 74%. Finally, 3 criteria exhibited a less than 50% compliance with the outlined standard. Therefore, documentation of patient weight, and signing and dating for the cancellation of drugs showed the poorest prescribing standard.

Table 1 Percentage compliance of drug charts to the prescribing standards

<table>
<thead>
<tr>
<th>Patient specific information</th>
<th>Compliance (%)</th>
<th>n= no. of drug charts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient’s name</td>
<td>100% (n=179)</td>
<td></td>
</tr>
<tr>
<td>Patient’s weight age/date of birth</td>
<td>39% (n=179), 99% (n=179)</td>
<td></td>
</tr>
<tr>
<td>Patient’s allergy status</td>
<td>99% (n=179)</td>
<td></td>
</tr>
<tr>
<td>Hospital number, ward identity, consultant</td>
<td>99% (n=179), 94% (n=179), 79% (n=179)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Drug specific information</th>
<th>Compliance (%)</th>
<th>n= no. of drugs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital letters, blue/black ink, generic name</td>
<td>61% (n=3021), 81% (n=3021), 95% (n=2434)</td>
<td></td>
</tr>
<tr>
<td>Date prescribed, time of administration,</td>
<td>86% (n=2480), 94% (n=2051)</td>
<td></td>
</tr>
<tr>
<td>Drug dose, route specified</td>
<td>99% (n=2430), 96% (n=2949)</td>
<td></td>
</tr>
<tr>
<td>Microgram annotation, acceptable units</td>
<td>73% (n=81), 93% (n=400)</td>
<td></td>
</tr>
<tr>
<td>Prescriber’s signature, bleep number</td>
<td>98% (n=3086), 60% (n=1774)</td>
<td></td>
</tr>
<tr>
<td>Cancelled drugs-definite line</td>
<td>95% (n=880)</td>
<td></td>
</tr>
<tr>
<td>Cancelled drugs-dated, initialled</td>
<td>5% (n=380), 26% (n=380)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Drug chart sections</th>
<th>Compliance (%)</th>
<th>n= no. of drug charts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Once only drugs</td>
<td>88% (n=95)</td>
<td></td>
</tr>
<tr>
<td>Nebulised drugs</td>
<td>76% (n=16)</td>
<td></td>
</tr>
<tr>
<td>Oxygen</td>
<td>74% (n=46)</td>
<td></td>
</tr>
<tr>
<td>Antimicrobials</td>
<td>75% (n=104)</td>
<td></td>
</tr>
<tr>
<td>Oral anticoagulants</td>
<td>77% (n=19)</td>
<td></td>
</tr>
<tr>
<td>Regular, when required medication</td>
<td>77% (n=170), 78% (n=149)</td>
<td></td>
</tr>
<tr>
<td>Sliding scale, regular insulin</td>
<td>75% (n=4), 92% (n=15)</td>
<td></td>
</tr>
<tr>
<td>IV/SC/Blood products</td>
<td>79% (n=97)</td>
<td></td>
</tr>
</tbody>
</table>

Discussion
As the majority of prescribing areas fall into the upper quartile of conformity (>75%), the audit results indicate there is awareness of the Trust prescribing guidelines. The results also suggest there is room for improvement in nearly all prescribing areas. Compliant prescribing of insulin, documentation of allergy status and patient details (name, date of birth and hospital numbers) suggests that prescribers are aware of the risks associated with poor compliance in these areas. As 21% of drug charts lacked consultant details, risks associated with co-ordination of patient care between the multidisciplinary team should be highlighted; since liaison of information becomes difficult. This has a direct impact on patient safety.
In particular, prescribing standards need to be improved for those standards where less than 50% compliance was found. Poor patient weight documentation could result in erroneous dosing for weight based treatments; non-compliance for prescribing in this area could be attributable to difficulties in attaining this information. Appropriate documentation for drug cancellation reflected the poorest adherence (5% date documentation, 26% prescriber initials). Unclear cancellation of therapy gives rise to ambiguity and could lead to errors in administration of discontinued drug therapy. Improvements should also be made in the prescribing of oxygen (74% compliance); increasing input from the Trust respiratory nurse.
As the Trust did not achieve 100% conformity relative to the legibility and completeness of inpatient prescribing, education and training for newly qualified doctors could help drive adherence to trust guidelines. Circulation of audit results with a focus on areas of poor prescribing will help healthcare professionals to identify areas of high risk. Working closely with the antimicrobial pharmacist, respiratory nurse, and diabetes nurse will help improve compliance within core specialist areas.

References
**Introduction**

An adverse drug reaction (ADR) is an undesirable effect of a drug beyond its anticipated therapeutic effects occurring during clinical use, and ADRs cause considerable morbidity and mortality. It is acknowledged that studies on medication-related hospitalizations differ in study setting, studied population, outcome, and method of data collection. Hence, ADR-related hospitalisations have been estimated as causing 0.9% of total hospital admissions, or 1.8% of acute admissions. The majority of hospital admissions caused by ADRs are viewed as preventable. Suggested simple improvements in prescribing to prevent ADRs include increased awareness of warning prompts of possible drug interactions and high-risk patient groups, and prescribing a drug at the lowest dose necessary to achieve the therapeutic target. However, effective strategies to assist prescribers in preventing ‘common’ ADRs causing admission remain poorly implemented, and there is no clear strategy to encouraging prescribers to learn from these opportunities for prevention.

Donald Rumsfeld is quoted as saying “[T]here are known knowns; there are things we know that we know. There are known unknowns; that is to say there are things that we now know we don’t know. But there are also unknown unknowns; there are things we do not know we don’t know.” We use this categorisation to help GPs understand those common causes of ADR-related hospital admission as a means of providing awareness and education to primary care.

**Objectives**

To collect data on ADR-related admissions deemed as arising from primary care prescribing and to advise GPs on those categorised as “known knowns” and “known unknowns” to ascertain if this feedback information is valuable.

**Method**

The study was conducted in a 700 bed teaching hospital over a 5 month period in 2012 during which all patient records containing the ICD-10 diagnostic code Y40-Y59 (Drugs, medicaments and biological substances causing adverse effects in therapeutic use) were scrutinised. The suspected ADR, suspected causative drug, and patient demographics were noted. The ADR was categorised by agreement amongst the authors as commonly known (“known knowns”) e.g. ACEI and angioedema; an ADR that a GP should have some knowledge of if prompted (“known unknowns”) e.g. hyponatraemia and SSRI; or one that the average GP would be unlikely to know (“unknown unknowns” e.g. mirtazapine and neutropenic sepsis). This was deemed service improvement performed to meet specific local needs and ethics approval was not sought.

**Results**

Data were obtained for 70 patients. Fourteen were excluded as the associated drug had been given in hospital but caused admission once the patient was home e.g. chemotherapy-induced neutropenia. Of the 56 patients, 20 were male, 36 female and average age was 74 (range 28 to 99). Overall 86 drugs were implicated (for some patients more than one drug was deemed the possible cause). The types of drug implicated and the ADR ‘Rumsfeld’ categorisation are shown below. Overall 35 (63%) of 56 instances of ADR causing a hospital admission were thought to be possibly preventable.

**BNF section and number of drugs**

| Diuretics | 17 |
| Drugs affecting the renin-angiotensin system | 12 |
| Opioid analgesics | 8 |
| Antidepressants | 7 |

| Diuretics | Anticoagulants | 5 |
| Drugs affecting the renin-angiotensin system | 3 |
| Opioid analgesics | Other | 35 |

**Conclusion**

In this small study, most of the ADRs thought to be causing hospital admission were well recognised and considered theoretically preventable though some common ADRs were not preventable (e.g. 5 cases of rennin-induced angioedema). A number of scenarios require reinforcement back to primary care eg acute kidney injury with ACE-I and diuretic, GI bleed in an elderly patient on aspirin but no covering PPI, opioid-induced constipation. However, for some common scenarios it is expected that GPs may require further clarification on what action is possible and practical. For example, there were five cases of drug-induced hyponatraemia resulting in hospital admission. These were all in older females (a recognised at risk group) and were associated with commonly known causative drugs (diuretics, antidepressants, alone or in combination).

Measuring sodium levels prior to commencing these drugs in this patient population, and repeat sodium measurements at periodic intervals may seem intuitively sensible precautionary steps but general practice may feel it is not able to deliver these routinely. In addition, GPs may ask what is the absolute risk of this type of admission? That is, how many elderly females need to be monitored to prevent one admission? Limitations of this pilot include no strict definition of ADR causality other than the hospital doctor’s judgement, and (as of yet) no attempt to gain wider GP consensus on whether our categorisation of ADRs as preventable or their Rumsfeld classification are correct.

We intend to discuss some of these instances with approximately 60 GPs over a series of three meetings to ascertain if there are general key principles to be learnt; if they wish to receive this type of general feedback on an ongoing manner; or wish to receive specific individual patient level feedback for their own patients for reflective purposes. Alternatively use of web-based systems that interrogate GP records in real time such as Eclipse live may be a future development.

**References**

introduction
Guidelines published by the National Institute for Health and Clinical Excellence (NICE) suggests revascularisation can be considered as an option for people with stable angina whose symptoms are not satisfactorily controlled with optimal medical management. Optimal medical management is defined as one or two anti-anginal drugs as necessary and medication for secondary prevention of cardiovascular disease (CVD)1. Pharmacist review all patients as part of pre-admission clinic and suggest changes following the angioplasty in line with National guidance to optimise secondary prevention medication.

Objectives
The aim of this audit was to review medication in elective angioplasty patients’ pre and post procedure and determine if their medication is in line with current NICE guidelines. The following standards were set at 95% and audited against:
- Patients admitted for elective angioplasty to be prescribed an antithrombotic and statin for secondary prevention of cardiovascular disease
- Patients to be prescribed at least one anti-anginal medication prior to procedure.
- Assess medical optimisation after the procedure.

Method
Data was collected from a large cardiac centre from March to August 2011. All patients referred for an elective angioplasty or angiogram query proceed were included. Patient demographics and medication pre and post angioplasty were compared and assessed against standards set above.

Results
Following a planned angiogram, a total of 332 patients were included in the analysis. There were 73% (241) male, mean age 65 ±11 years, 40% (134) had diabetes mellitus, 15% (49) had previous stent(s), previous myocardial infarct 21% (71) and 9% (31) had previous bypass grafts. The final treatment strategy following the intended angioplasty was stent insertion in 57% (189), 9% (30) had an angiogram and were deemed for multi disciplinary team (MDT) review (with the intention of either surgery or repeat angioplasty) and 34% (113) continued with medical management. Of patients treated with medical management, 23% (26/113) had either smooth or mild unobstructed coronary arteries.

Medication taken pre and post procedure is shown in table1. Antithrombotic therapy prescribed on discharge for 98% (330) of patients, the remaining 2 were deemed not to have coronary artery disease and therefore not indicated. Statin therapy at discharge was also maximised with an increase of 6% (22) to 97% in total. For those not on a statin, 3 were the patients with normal coronary arteries and 2 had deranged liver function tests (LFTs).

The use of anti-anginals prior to going for an angioplasty was relatively low with 8% (27) of patients being on no antianginals and just under half being on two or more. Following the angiogram, anti-anginal therapy was optimised with only 6% (20) on no antianginals.

Discussion
Prescribing of secondary prevention medication prior to an elective angioplasty meets the standard requirement and was increased further following the procedure. Medical optimisation was often undertaken following advice from a pharmacist at discharge, ensuring appropriate formulations and medications prescribed. For example 7% (23) of patients had their aspirin formulation switched from enteric coated to dispersible for maximum bioavailability and 3% (11) of patients swapped from agents such as ezetimibe and fibrates to statins where appropriate.

The number of patients on at least one antianginal medication prior to the procedure was just below the standard requirement, suggesting a small number of patients had not been managed by medical therapy prior to referral for angioplasty as per NICE guidelines. There was just over one third of patients who despite being planned for angioplasty were deemed for medical management following the procedure and continued on medical therapy. One limitation with data collection was the lack of a risk of coronary artery disease score to assess whether angiogram was a consideration as an option for people with stable angina whose symptoms are not satisfactorily controlled with optimal medical management.

Conclusion
This audit suggests pharmacists involve in the pre-admission clinic by identifying sub optimal medication and recommendations for optimisation post angiogram is of great value and further audits are required to review the referral process.

References
Introduction

Insulin is cited as one of the medicines most commonly associated with incidents leading to severe harm or death. It is frequently included in the list of top ten high alert medicines worldwide. At our acute hospital, insulin prescribing and administration incidents are often in the top five of reported medication errors putting patients at risk. With the introduction in June 2012 of an insulin drug chart with units pre printed, insulin ‘quick guide’ pocket cards issued to all medical staff, the Trust wide Medicine Matters Bulletin issued on use of insulin, F1 and F2 junior doctor and Pharmacy dept diabetes teaching, Nurse teaching via Medication Safety Days, promotion of NPSA’s diabetes e learning module, insulin substitution list compiled and available on hospital intranet, medical notes bookmarks created for doctors stating an ‘insulin prescribing checklist’ and magnets on ward fridges it was found that the magnets did not adhere well to the fridge.

Objectives:
To improve the prescribing of the non abbreviated term UNITS
To implement training sessions on insulin for healthcare staff
To improve the storage of insulin
To implement recommendations within the NPSA alert PSA003 ‘The Adult Patient’s Passport to Safer use of Insulin’ and RRR013 ‘Safe Administration of Insulin’.

Method:
A collaborative approach was taken with the Pharmacy department and the Diabetes team working with medical, pharmacy and nursing staff. A multi-system strategy was taken during 2010-2012 including the following interventions:

Education & Training
- Insulin quick guide pocket cards issued to all medical staff
- Trust wide Medicine Matters Bulletin issued on use of insulin
- F1 and F2 junior doctor and Pharmacy dept diabetes teaching
- Nurse teaching via Medication Safety Days
- Promotion of NPSA Diabetes e learning module
- Insulin substitution list compiled and available on hospital intranet
- Medical notes bookmarks created for doctors stating an ‘insulin prescribing checklist’
- Magnets on ward fridges
- Wards putting patients at risk

Audit
- Insulin storage in ward fridges audited annually
- Prescribing of units/use of abbreviations audited quarterly for Trust board
- Review of reported Datix insulin incidents (table 1) for themes and actions

Policy, Paperwork and Processes
- Compilation and introduction of trust wide insulin prescription chart with units pre printed
- Revised colour coded blood glucose monitoring chart introduced
- Insulin availability out of hours reviewed
- Electronic identification of diabetic inpatients initiated
- Standardisation of short acting insulins across hospital sites implemented
- 50% glucose for hypoglycaemia removed and replaced with 10% Glucose
- Introduction of insulin passports and patient information leaflets

Physical barriers
- Ward diabetes drawers created
- Insulin and iv syringes separated

Results:
In March 2010 the prescribing of UNITS in full, was audited on all insulin prescriptions by pharmacists over a week as part of the Patient Safety First campaign. This was found to be 65% increasing to 92% (22/24) when repeated one day in February 2011 by F1 doctors. Additional results that day showed that in the preceding 30 hours, 6 hypoglycaemic episodes occurred. In 2012, 5 such episodes were seen in 47 diabetic patients, 12 of whom were on insulin.

Audits of 11 random ward fridges in April 2010 showed that 5 did not have a working temperature gauge in which to ensure the adequate storage of refrigerated medication. In addition, only 2 wards recorded daily temperature readings. It was difficult to note whether insulins were in use or not, thus leading to the production of the fridge storage poster.

In March 2011 all 31 wards had a temperature gauge and 8/11 were recording the temperature daily but not min/max readings (which had been exceeded). Uptake of the storage poster was 50% as it was found that the magnets did not adhere well to the fridge.

Results in March 2012 showed 21/23 wards with a working temperature gauge but only 11 recording daily temperatures and 2 noting min/max readings. Temperature templates were subsequently issued.

Incident data using the system DATIX, showed that reported insulin incidents from December 2010 fell each quarter to September 2011 (subsequently plateauing since).

Themes included wrong insulin or dose prescribed and omission or delay in administration.

Discussion
The prescribing of units was seen to increase within a year due to continual audit feedback. Preliminary results this year show 100% due to the introduction in June 2012 of an insulin drug chart with units pre printed. Awareness of the importance of insulin prescribing and dispensing has been raised amongst medical and pharmacy staff through teaching, dispensing procedures and learning from Datix incidents. Lack of knowledge amongst staff is evident in many cases.

Some interventions have appeared more successful than others in practice such as the uptake of the insulin pocket cards and less so the e learning module. Due to the multi faceted approach it is difficult to note which intervention has had the greatest impact although ongoing education appears to be key and is well received.

Limitations of the audits include small sample size, changing auditors, refined audit criteria and the influence of raised awareness. Staff turnover and access to the various resources may also limit the ability to influence and improve practice.

Conclusion:
A simple multimodal approach can be employed to not only raise awareness and knowledge to all staff groups but also improve practice. Work currently continues to address self administration of insulin by inpatients in completing the requirements of the NPSA.

References
Introduction

Adherence is defined as the extent to which a person’s medication taking behaviour corresponds to the advice of a healthcare professional and non-adherence can be further classified as either intentional or non-intentional. It has been estimated that a half to one third of all medicines prescribed for patients with chronic conditions are not taken as prescribed. In 2003 a World Health Organisation report stated that there is growing evidence to suggest that “increasing the effectiveness of adherence interventions may have a far greater impact on the health of the population than any improvement in specific medical treatments”. Evidence has also shown that there is a clear correlation between increasing medication adherence and a decrease hospital admissions. It has been estimated this could save the NHS between £36 million and £196 million a year. Patients presenting to Harefield Hospital with an acute myocardial infarction (MI) receive intensive support including cardiac rehabilitation and medication counselling by a pharmacist and nurse on discharge. This audit aimed to establish whether patient adherence is maintained post-MI and the level of patient understanding of their medications.

Objectives

The audit will be carried out in the Cardiology Outpatients Department at Harefield Hospital between 9th November and 7th December 2012. The objectives are to determine patient’s adherence to their medications four months and more post MI and to determine patient’s understanding of their medications – why it has been prescribed and what it does.

Method

Data was collected in the form of a questionnaire which was given to patients attending their post MI follow-up appointment 4 months post-MI. The questionnaire was based on the Morisky Medication Adherence Scale (MMAS) and the Brief Medication Questionnaire and was piloted on 6 patients. The results from the pilot led to minor adaptations to the questionnaire, including increasing the area for patients to write down their medications. During the data collection period a total of 44 questionnaires were completed. The first part of the questionnaire was used to determine if the patient was adherent. A score of 7 or greater was classes as adherent as per the MMAS. The second part of the questionnaire was used to determine patient understanding. The medications the patient reported to take were compared against the medications they said they had taken.

Results

Of the 44 patients, 1 was excluded due to dementia. The results are summarised in table 1.

Table 1. Questionnaire results on patient’s adherence and understanding of their medications.

<table>
<thead>
<tr>
<th>Standards</th>
<th>% of patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients are adherent with their medication (n=31)</td>
<td>72.1%</td>
</tr>
<tr>
<td>Forgot to take medication (n=12)</td>
<td>28%</td>
</tr>
<tr>
<td>Trouble remembering if had taken medication already (n=6)</td>
<td>14%</td>
</tr>
<tr>
<td>Not taken medicines for reasons other than forgetting (n=3)</td>
<td>7%</td>
</tr>
<tr>
<td>Stopped taking medication as it made the patient feel worse (n=4)</td>
<td>9.3%</td>
</tr>
<tr>
<td>Stopped taking medication as the patient felt better (n=2)</td>
<td>4.7%</td>
</tr>
<tr>
<td>Forgot to take medication with them when travelling or away from home (n=3)</td>
<td>7%</td>
</tr>
<tr>
<td>Taking medication is an inconvenience / feel hassled to take it (n=2)</td>
<td>4.7%</td>
</tr>
<tr>
<td>Patients can fully list the medication they take and when it is taken (n=19)</td>
<td>44.2%</td>
</tr>
<tr>
<td>Patients understand why they are taking their medication (n=6)</td>
<td>13.9%</td>
</tr>
<tr>
<td>Patients who understand why they take their medication, what they take and when they take it (n=5)</td>
<td>11.6%</td>
</tr>
</tbody>
</table>

Discussion

72.1% of patients audited were adherent to their medication regimen. The main reason for non-adherence was due to forgetting to take medication (28%), many patients also had trouble remembering whether they had already taken their medication on one or more days (14%). Despite not meeting the standard of 100%, it demonstrates that the level of medication adherence post MI is higher than previously reported adherence rates. However a limitation is, despite the questionnaire being easy to use and brief for the patient, it may be biased by patients giving false information about their adherence.

It is disappointing that only 44.2% of patients are able to fully recall the medication they take and when they take it. However, nearly double this figure, 81.4% are able to list 75% of the medications they take and when they take them. After speaking to some patients it became clear that many use prompts such as a dosette box or a list. These are known successful methods to help increase adherence as mentioned in the 2003 WHO Paper. This may explain why some people were unable to recall the details of their medication.

Only 13.9% of patients knew why they were taking all their medication. This is unexpected as patients have intensive medication counselling on discharge from hospital. The results have shown that only 48.8% of patients knew what half of their medications do. This is a poor result; perhaps pharmacists having an increased role in post-procedure outpatient clinics could help to improve patient understanding of their medications and improve adherence.

A MI is a traumatising event meaning patients are less likely to take in all of the information provided to them. A suggestion for improving this would be for pharmacists to counsel patients post discharge, in follow up clinics. This may help to improve their understanding of their medication and the importance of taking it. Improving medication adherence creates savings in the long term through decreased hospital admissions and less medication wastage.

References

Introduction

The HIV/AIDS epidemic has become one of the most important public health problems in recent times. HIV patients often take complicated regimens of antiretroviral drugs with high propensity for complex drug interactions with medication taken for other long-term medical conditions. GPs play a crucial role in the management of long-term medical conditions (e.g. cardiovascular disease, diabetes) and knowledge of the patient’s HIV status and any medication taken to suppress the HIV may be important when managing these other conditions. Other primary health care professionals (HCPs) – dentists, community pharmacists - involved in the overall holistic care of HIV patients may also prescribe or issue medication with the potential to interact with HIV drugs. As primary care has an important role in the long-term management of HIV, the establishment of clear protocols and pathways for care between primary and secondary care is deemed essential for safe delivery of care, and regular communication is strongly recommended unless the patient specifically refuses consent. Supporting this wider disclosure, certain HIV support bodies recommend that patients disclose their status to healthcare professionals other than the specialist.

However, people with HIV have concerns about the stigma associated with their disease, e.g. fear that someone in their community might discover their status or that they may be subject to HIV-related discrimination. Hence they might request that access to their information be restricted to those directly involved in their care, and on a ‘need to know basis.’ This stigma attached to HIV often results in patients not disclosing their status to healthcare professionals. We wanted to ascertain whether our HIV population disclosed their status and therefore medication to other primary HCPs potentially involved in their care. We chose to look at GPs, dentists and community pharmacists.

Objectives

To assess the extent to which patients disclose their status to primary care HCPs and their perception of ongoing barriers to communication with primary care.

Method

A questionnaire, consisting of mainly closed questions with a few open questions to elicit free text comments, was handed to patients attending the HIV service between late 2012 and early 2013. The brief introduction to the questionnaire highlighted that drug interactions are a common occurrence, and present a risk to patients especially when practitioners prescribing or issuing drugs are unaware of other medicines that the patient is taking. The questionnaire was completed anonymously prior to the patient’s appointment.

Results

Fifty-nine patients completed the questionnaire (not all patients answered all questions). There were 44 males and 9 females (6 did not note their gender). The mean age was 45 years (range 21 – 69). Fifty-six (95%) of 59 patients were registered with a GP, and 50 of these 56 responded that their GP knew their status with 43 indicating that this was recorded in the GP notes. For seven patients who had informed their GP, this information was not recorded on their GP records. Only 36 patients had a dentist and 21 (58%) of these had informed their dentist of their status. Twenty-nine patients reported that they buy medicines over the counter from community pharmacies, though only eight (28%) indicated they disclose their HIV status when asked about other medication they take.

The free text comments illustrate patients’ concerns in relation to engaging with primary care practitioners. Concerns over telling their GP revolved around confidentiality, staff gossip, being stigmatised, and lack of HIV knowledge of the GP. Concerns over informing their dentist include being refused treatment, discrimination, confidentiality, does he really need to know as he always wears gloves. Similar issues were described in relation to disclosing to their community pharmacist that they are on HIV medication - stereotyping, being judged, information entered into a computer, embarrassment, confidentiality, being overheard by others, privacy and stigmatised.

Discussion

We found a higher percentage of our patients (89%) had disclosed their HIV status to their GP compared to 75% elsewhere, though the barriers our patients have to disclosing their status reflect those seen elsewhere. We recognise that it is not only GPs who issue medications in primary care. Dentists also prescribe medication with the potential to interact with HIV regimes resulting in side effects or failing HIV therapy, and they likewise may benefit from knowledge of patient’s HIV therapy. Our patients were less likely to make their dentist aware than they were their GP.

Community pharmacists have a role in ensuring prescribed medication and medicines sold over the counter do not interact with medication patients are taking. Without the knowledge of concurrent HIV medication this role, and future roles (e.g. supporting adherence), cannot be effectively carried out. If more patients do share their status with community pharmacy it is important that pharmacy staff do not hold negative feelings and views about the care of HIV patients, rather that a more positive environment where empathy for HIV patients is encouraged. In the community pharmacy setting, which does not frequently care for these patients, staff may require specific training in HIV and why additional consideration should be given to issues around confidentiality, stigma and discrimination.

A resulting action is for staff within the hospital sexual health team to further encourage patients to inform relevant HCPs of their status.

References

1. British HIV Association Standards of Care for people living with HIV, 2013. BHIVA
Introduction
A study of dispensing errors in a UK hospital found internal errors occur in about 2% (0.11-2.7%) of all dispensed items, with 0.008-0.02% errors reaching the patient. With 900 million items dispensed annually in England and Wales, the risk to patient’s safety is significant. The NHS has seen a cultural change from a “blame the individual” attitude to the systemic analysis approach to dealing with errors. In line with the Department of Health’s ‘An Organisation with a Memory’ report which promotes the organisation-wide learning from adverse events, an acute trust has adopted a policy to advocate reflective practice among pre-registration trainee pharmacists (PTPs) where they are expected to complete a reflective worksheet for any errors made. The error is then discussed with the PTP practice and educational supervisors. This investigation will examine internal dispensary errors in terms of rate and potential threat to patient safety.

Objectives
- Determine the internal dispensary error rate of PTPs
- Compare PTP error rate with the overall dispensary internal error rate
- Categorise the severity of the internal errors
- Make recommendations to the pharmacy department management and dispensary staff based on the outcome of this work

Method
Data of all internal errors was collected over a two week period (03/12/12 – 13/12/12) using a piloted data collection form in an automated, acute hospital dispensary. Data included drug details, error type, which staff type made and detected the error, and whether or not feedback was given to staff who made the error. PTPs were asked to maintain a log of their dispensary workload and the total dispensary workloads were gathered from JAC medicines management software. Each error was categorised in terms of its severity after discussion by the auditor, practice supervisor and the Trust’s patient safety pharmacist. This process was completed according to the Trust’s error rating policy. Patient and staff confidentiality was upheld throughout the audit. This study did not require approval by an ethics committee. The errors were categorised as follows:
- Advice/Info: would not lead to harm
- Minor: very small risk of causing harm
- Moderate: significant but not severe discomfort
- Major: lead to permanent patient injury
- Catastrophic: may lead to severe patient injury (organ failure/death)

Results

<table>
<thead>
<tr>
<th>Error Severity</th>
<th>Errors by all staff</th>
<th>Feedback given</th>
<th>(Rate %)</th>
<th>Errors by PTPs</th>
<th>Feedback given</th>
<th>(Rate %)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADVICE/INFO</td>
<td>100</td>
<td>68</td>
<td>(68%)</td>
<td>9</td>
<td>6</td>
<td>(67%)</td>
</tr>
<tr>
<td>MINOR</td>
<td>42</td>
<td>32</td>
<td>(76%)</td>
<td>4</td>
<td>3</td>
<td>(75%)</td>
</tr>
<tr>
<td>MODERATE</td>
<td>19</td>
<td>13</td>
<td>(68%)</td>
<td>6</td>
<td>5</td>
<td>(83%)</td>
</tr>
<tr>
<td>MAJOR</td>
<td>3</td>
<td>3</td>
<td>(100%)</td>
<td>0</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>CATASTROPHIC</td>
<td>2</td>
<td>2</td>
<td>(100%)</td>
<td>1</td>
<td>1</td>
<td>(100%)</td>
</tr>
<tr>
<td>Total</td>
<td>166</td>
<td>118</td>
<td>(71%)</td>
<td>20</td>
<td>15</td>
<td>(75%)</td>
</tr>
</tbody>
</table>

7758 items were dispensed at the dispensary over the data collection period, 1150 of which were dispensed by PTPs. 166 internal errors were detected over the period. The overall internal error rate was 2.14% while PTPs had an internal error rate of 1.74% (20/1150). There is no apparent difference in terms of error types. Table 1 (above) summarises the error severities and the feedback rates to PTPs and all staff.

Discussion
The overall error rate of 2.14% is consistent with the national average internal error rate range of 0.11-2.7%. This rate correlates with an approximate 2% increase in workload through rework and a potential to compromise patient safety. The severity rating results are re-assuring but as there is not a complete correlation between internal and external error types, there may not be a correlation between internal and external errors in terms of their potential to cause harm. Considering national trends of internal error rates, it is reasonable to suggest that the dispensary is working to acceptable standards. However, the lack of benchmarking in relation to error severities is a limitation to this conclusion. This audit may therefore be a useful benchmarking tool for other Trusts undertaking a similar investigation.

The PTP error rate was lower than the overall error rate at 1.74%. PTPs had the objective of dispensing 250 items without error at the time of the study, sustain pressure of continuous assessment and are required to reach particular standards before progressing to the next stage in their training and these may be contributing factors to the lower error rate. This investigation has identified a barrier to reflective practice in the dispensary environment. Staff are not being encouraged feedback to people who make an internal error to facilitate reflective practice.

Limitations:
- The error rate is likely to be underestimated due to data collection fatigue
- Comparison with research is made difficult by the lack of benchmarking, variation in dispensary error definitions and procedural differences in different hospitals.
- Insufficient data available to undergo robust statistical analysis

Recommendations:
- Research the attitudes and barriers of PTPs with regard to reflection in the context of dispensary errors, including an evaluation of the reflective statement form
- Examine data for trends in error types and address in association with management
- Present the audit to the dispensary staff at the Trust to
  - promote reflective practice with regard to dispensary errors,
  - address any internal error trends
  - encourage feedback to people who make an internal error to facilitate reflective learning

References
4 Pharmacy Department, Brighton and Sussex University Hospital NHS Trust. Guidance Notes on Collecting and Scoring Pharmacy Interventions. January 2012
Background
Omitted doses of medication are a national problem: Warne et al found that 79% of inpatients had at least one missed dose \(^1\) and the National Patient Safety Agency (NPSA) published a rapid response alert outlining potential harm caused to inpatients from omitted or delayed medication doses \(^2\). An innovative local approach where pharmacy assistants supported nurses on the 8am and 12pm medicines administration rounds delivered a statistically significant reduction in omitted doses: 1.1% of patients in the intervention group had an unacceptable omitted dose compared to 18.5% of patients in the control group. Also, with respect to critical medicines (defined using the NPSA rapid response alert): in the intervention group 1.1% of patients had an unacceptable omitted critical medicine dose compared to 7.4% of patients in the control group \(^3\). At the conclusion of this study the pharmacy assistant supported service was removed from the intervention ward providing an opportunity to measure the impact of service discontinuation on omitted doses.

Objective
To evaluate whether the reduction in omitted doses achieved with pharmacy assistant supported medicines administration is maintained following service discontinuation.

Methods
The method of data collection from the service evaluation study \(^4\) was employed at six weeks and eighteen weeks post service discontinuation. Unacceptable omitted doses were defined as unintentional (no accountability signature on the drug chart to indicate administration) and intentional but unacceptable (where it is documented that the medicine is not available on the ward and when the ‘other reason’ code is cited but no specific reason given). Critical medicines were as defined by the NPSA \(^2\). Data were collected in September 2012 and December 2012 and entered into a Microsoft Access database for analysis. Advice on NHS research ethics was sought from the Research and Development team at the Trust and the project was registered with the Caldicott Guardian for the Trust.

Results
Six weeks after the pharmacy assistant stopped working on the ward, 106 patient drug charts were assessed. Eight patient data sets (7.5%) had at least one unacceptable omitted dose and seven patient data sets (6.6%) had at least one unacceptable omitted dose of a critical medicine. At eighteen weeks the unacceptable omitted dose rate was 7.5% (six from 80 patient data sets) and the unacceptable omitted critical medicine dose rate was 7.5% (six from 80 patient data sets) (figure 1).

Discussion
This evaluation shows that while an overall reduction in omitted doses exists following discontinuation of pharmacy assistant supported medicines administration, the original reduction in omitted doses is not maintained. A 17.4% reduction was found in the original study; compared to an 11% reduction in the post intervention study.

With respect to omitted doses of critical medicines, a sustained reduction is not observed post service discontinuation. The critical omitted dose rates returned to that of the baseline control group from the original study following the cessation of pharmacy assistant support (see figure 1). The return to baseline critical medicine omitted dose level occurred before the six-week data collection as the rates were not significantly different at six and eighteen weeks post intervention. This indicates that although pharmacy assistant support during medicines administration directly reduces critical medicine omitted doses, their long-term influence on critical medicine omissions after the intervention is withdrawn is negligible. For a more sustainable impact it may be that focussed education, further pharmacy assistant intervention or refresher training for nurses on critical medicines would improve performance in this area.

This study found that an increase in the omitted dose rate (from 1.1% to 7.5%) had occurred six weeks post service discontinuation: however further work is needed to establish a more accurate time frame for this decline. A weakness with this post intervention evaluation is the possibility of a change in nursing personnel during the eighteen-week study period. Staff involved in medicines administration during the original intervention study were trained by the pharmacy assistants; staff who joined afterwards will have received no pharmacy input. Although further work is needed on the other original intervention wards to assess intervention maintenance, these results show positive implications regarding the sustainability of the pharmacy assistant supported medicines administration service. It is accepted that it may not always be possible to provide each hospital ward with a pharmacy assistant to support medicines administration. Therefore it is key that these initial findings support a continued reduction in omitted dose rates following service discontinuation; a legacy to the intervention that is maintained after eighteen weeks.

References
Introduction
Coronary heart disease (CHD) is the most common cause of death in the UK. In 2010, one in five male deaths and one in ten female deaths were attributed to CHD, this totalled around 80,000 deaths. Over the last 5 years, CHD death rates have been falling more slowly in younger age groups (under 50) and there is some evidence that these rates are beginning to level off.

A study aimed to explain the decline in mortality from CHD over the last two decades of the twentieth century in England and Wales and concluded that more than half (58%) of the CHD mortality decline in England and Wales was attributable to reductions in major risk factors, principally smoking. Pharmacotherapy with agents such as statins and aspirin explained the remaining two-fifths (42%) of the mortality decline.

Statin therapy is recommended as part of the management strategy for the primary prevention of cardiovascular disease (CVD) for adults who have a 20% or greater 10-year risk of developing CVD. NICE CG67 recommends that in patients at high risk of CVD lifestyle factors are addressed (e.g. smoking cessation, diet, exercise etc) and then a statin offered after an informed discussion with the patient on the perceived risks and benefits using an appropriate risk assessment tool.

We aim to review all acute myocardial infarction (AMI) admissions in patients aged 50 or under at a large heart attack centre and risk assess for appropriateness of statin prescribing and identify any traits that may identify those at high risk.

Objectives:
- To determine baseline risk of cardiovascular disease in patients presenting with AMI aged 50 years or under using QRISK2 with no prior CVD.
- To determine if patients are on appropriate statin therapy for primary prevention compared to their QRISK2 score. Standard: If QRISK2 score greater than 20% then 100% on simvastatin 40mg daily (allowing for interactions/maximal tolerated dose).
- To assess statin therapy for patients with established cardiovascular disease in accordance with national recommendations. Standard: 100% with total cholesterol less than 4 mmol/L and low density lipid cholesterol less than 2mmol/L.

Method:
Data were collected retrospectively at a large, UK heart attack centre from June 2010 to January 2013. Care Record Service (CRS) system, Electronic Patient Record (EPR) system and inpatient notes were used to identify patients aged 50 and under and admitted with an AMI. Patient demographics required for QRISK2 such as age, ethnicity, post code etc were collected and used to calculate CVD risk using a web based calculator. Clinical details such as past medical history and where available lipid profiles were collected from patient notes.

Where data was unavailable fields were left blank. Patients were defined as having chronic kidney disease if the eGFR was less than 60ml/min/1.73m². To assess baseline risk of cardiovascular disease in patients presenting with AMI aged 50 years or under using an appropriate risk assessment tool.

Results
245 patients aged 50 or under presented with an AMI. From those admitted, 72% had a ST-elevation-MI with the remainder having had a non-ST-elevation-MI. 87% were male, with similar numbers of Caucasian and Asian patients (48% and 43% respectively). The average age was 44 years (SD 5) with 60% being smokers, 13% had diabetes mellitus and 27% having a family history of CVD. Table 1 below indicates statistical therapy and lipid levels of patients collected which shows that less than a quarter of patients are prescribed a statin prior to admission. For primary prevention (QRISK2 score greater than 20%) 9% were prescribed a statin and 100% were prescribed in those with a prior cardiovascular history i.e. secondary prevention.

Table 1. Statin therapy and lipid levels based on primary or secondary prevention

<table>
<thead>
<tr>
<th>Primary Prevention</th>
<th>Secondary prevention</th>
</tr>
</thead>
<tbody>
<tr>
<td>QRISK score</td>
<td></td>
</tr>
<tr>
<td>&lt; 20%</td>
<td>&gt; 20%</td>
</tr>
<tr>
<td>n=201 (82%)</td>
<td>n= 44 (18%)</td>
</tr>
<tr>
<td>Statin therapy</td>
<td></td>
</tr>
<tr>
<td>n=178 (89%)</td>
<td>n= 23 (11%)</td>
</tr>
<tr>
<td>Mean Total Cholesterol (+/-SD)</td>
<td></td>
</tr>
<tr>
<td>5.4 mmol/L (+/-1.2)</td>
<td>6.6 mmol/L (+/-1.6)</td>
</tr>
<tr>
<td>Mean LDL cholesterol (+/-SD)</td>
<td></td>
</tr>
<tr>
<td>3.4 mmol/L (+/-1.1)</td>
<td>3.7 mmol/L (+/-1.3)</td>
</tr>
<tr>
<td>4.6 mmol/L (+/- 1.2)</td>
<td></td>
</tr>
</tbody>
</table>

Discussion
All patients with established CVD in this audit were taking a statin. However, 35/44 patients had a total cholesterol > 4mmol/L which suggests that there is room for optimisation in the patients that were admitted.

More commonly, people presenting with an AMI aged 50 or under had no prior cardiovascular disease. Interestingly the QRISK2 score in the majority of these patients (89%) was less than the suggested level of 20% that indicates patients as high risk. Although patients admitted with an AMI will make up a small fraction of the population, this may indicate a requirement to refine the QRISK2 scoring system in those aged 50 or under in order to facilitate identification. Recent reports have suggested people with diabetes over 40 years of age should be taking a statin to reduce their risk of stroke or coronary events as CARDS study showed a 37% reduction in cardiovascular event and a halving of stroke rate over 4 years. However, this needs to be balanced with the long term adherence of therapy and the risk of side effects. What is clear is for patients aged 50 or under, QRISK2 is unlikely to identify many patients as high risk and a new tool needs to be developed to minimise the risk of a future AMI in this patient group. A limitation was the lack of investigation of the frequency of a GP attendance and whether a QRISK2 score was undertaken by their GP.

References
1 British Heart Foundation. Coronary heart disease statistics. October 2012
3 National Institute for Health and Clinical Excellence. CG 67 Lipid modification. March 2010
Introduction
South London Healthcare NHS Trust (SLHT) merged together from three acute trusts. As a result there is wide variation in practice and in particular with use of Targinact® (oxycodone modified release and naloxone). A protocol has been drafted to standardise use of Targinact® across new organisation and clarifies its position as an alternative to Oxycontin® (oxycodone modified release). The Pain formulary is being reviewed as part of a local CQUN for SLHT, and the following formulary status has been proposed for use of Targinact®.

1. Gastrointestinal surgery, where constipation would be clinically unsafe. The Pain Team should be consulted where prescribing: a) gastrointestinal surgical patients where constipation would be clinically unsafe or b) after surgery if Oxycontin® is required and constipation occurs despite using two laxatives.

Anecdotal evidence suggests patients prescribed Targinact® as first line opioid do not fit the above criteria. Although a frequent choice of opioid analgesic amongst surgical patients, the cost of Targinact® is higher than Oxycontin® and provides an opportunity for potential savings for the Trust. Targinact® is limited by the fact that maximum daily dose is 80mg/40mg and requires topping up by Oxycontin® and laxatives.

Objective
To identify current prescribing of Targinact® follows the proposed protocol across surgical inpatients and highlight areas of inappropriate prescribing by:

1. Quantifying the incidence of Targinact® prescribing against the proposed Trust protocol for gastrointestinal surgical patients.
2. Quantifying the incidence of Targinact® prescribing in non-gastrointestinal surgical patients that have 2 laxatives prescribed with Oxycontin®.

Based on a pilot study, the audit standard is that 70% of patients prescribed Targinact® are either:

a) gastrointestinal surgical patients where constipation would be clinically unsafe or
b) after surgery if Oxycontin® is required and constipation occurs despite using two laxatives.

Method
A pilot study was performed over 5 days in May 2012, to verify the data collection form. It was identified that prescribing of Targinact® was intermittent and therefore data were collected over 4 weeks at Princess Royal University Hospital during June and July 2012. Data were collected across all six surgical wards (gynaecology, orthopaedics, gastrointestinal, ENT and urology) by members of the surgical team (pharmacists, technicians and pre-registration pharmacists) and dispensary pharmacists. All patients were identified by review drug charts. Data collected included patient demographics, type of surgery, dose and duration of Targinact®, allergies to opioids, opioid and laxative use. Medical notes were also reviewed to validate data.

Results
Data were collected on 26 patients including patients in the pilot study. Table 1 lists the prescribing of Targinact® across surgical specialities and Table 2 lists non-gastrointestinal surgical patients that tried laxatives alongside Oxycontin® before starting Targinact®.

Table 1: Targinact® prescribing

<table>
<thead>
<tr>
<th>Type of surgery</th>
<th>Number (%) of patients prescribed Targinact®</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gastrointestinal</td>
<td>12 (46%)</td>
</tr>
<tr>
<td>Orthopaedic</td>
<td>9 (35%)</td>
</tr>
<tr>
<td>Urology</td>
<td>5 (19%)</td>
</tr>
<tr>
<td>ENT/Gynaecology</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Total</td>
<td>26 (100%)</td>
</tr>
</tbody>
</table>

Table 2: Laxative prescribing

<table>
<thead>
<tr>
<th>Type of surgery</th>
<th>Number (%) of patients prescribed laxative prior to starting Targinact®</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orthopaedic</td>
<td>&lt;2 laxatives (56%)</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>≥ 2 laxatives (44%)</td>
<td></td>
</tr>
<tr>
<td>Urology</td>
<td>&lt;2 laxatives (100%)</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>≥ 2 laxatives</td>
<td></td>
</tr>
<tr>
<td>ENT</td>
<td>-</td>
<td>0</td>
</tr>
<tr>
<td>Gynaecology</td>
<td>-</td>
<td>0</td>
</tr>
</tbody>
</table>

The results show that 61.5% (n = 16) met the standard, that Targinact® is prescribed as per protocol.

Discussion
In forty percent of patients, Targinact® is used first line to treat pain when other options could have been considered. Over time, prescribing has extended into other surgical patients and data shows that orthopaedics has the second highest use of Targinact®. This could be because many patients on the orthopaedic ward are of an older population hence in an attempt to reduce polypharmacy Targinact® is prescribed. It was observed within urology patients that Targinact® is used in place of multimodal analgesic postoperatively and that pain relief within this patient group should be reviewed. The surgical directorate accounts for 47.5% PRUH Targinact® expenditure and 54% of this is in non-gastrointestinal surgical patients. As these patients are prescribed against the protocol, switching from Targinact® to laxatives and cost-effective Oxycontin® provides the trust an opportunity to make cost savings.

The limiting factors of the audit were that patient laxative compliance was not assessed, the audit was not performed across all sites due to limited departmental capacity and a baseline of analgesia used in gastrointestinal surgical patients was not undertaken.

Recommendations
To restrict Targinact® prescribing:

1. Prescribers, especially junior doctors need to receive training to prescribe a trial of 2 laxatives alongside Oxycontin® before switching to Targinact® in non-gastrointestinal surgical patients.
2. The Pain Team should be consulted where prescribers wish to initiate Targinact® in patients that do not meet the criteria. This should also be enforced and queried by surgical pharmacists.
3. The formulary and guideline should be finalised to provide stringent controls. A re-audit should be performed with a higher standard set to measure adherence across all sites.

References
Background
Antimicrobial Stewardship was first described in the early 1990s. However twenty years later, there is still no agreed global definition or agreement on elements of an antimicrobial stewardship (AMS). Previous surveys of AMS practice had looked at activity at national, sub-continental and rarely at a continental level activity, but never at a global level. Currently we are unaware how practice varies across the world and how current UK practice compares.

Objectives
To measure the extent and components of global efforts in AMS. To look at the differences between continents, and to see how UK practice compares to these.

Methods
A 43 questions survey was developed and tested using robust survey methodology then refined. The piloting took place in 11 countries across 6 continents to check that the questions where clear in countries where English was not the spoken language. Distribution of the web-based survey worldwide was via a letter from the two organisations that was disseminated in host countries by their various infection societies. The survey package used was SurveyMonkey. Within the UK, this was done through the UKCPA Infection Management Group plus medical infection societies.

Results
There were 665 responses (66 countries from 6 continents): Africa 44, Asia 50, Europe 361, North America 72, Oceania 35, South America 103. From the UK: 109 England, 10 Scotland, 9 Wales & 3 Northern Ireland. For the UK, this was a return rate of 74%. Globally, national AMS standards exist in 32% of countries (UK 100%), and 7% planning too. Sixty percent of hospitals have local standards (UK 85%) and 19% (UK 11%) plan to. Globally 367 (57%) have an Antimicrobial Stewardship Programme (ASP) compared to 78% in the UK with 17% planning them. The main barriers to providing an effective ASP were lack of funding or personal, information technology (IT) and prescriber opposition. For the UK, lack of IT support was the top reason. Globally, the 144 (22%) that plan to develop an ASP, the main barrier is lack of funding. Main ASP objectives were to reduce resistance, improve outcomes and reduce prescribing. In the UK, reducing healthcare acquired infections (HCAIs) was the top driver. Globally, 61% have an AMS policy (UK 70%), 90% a formulary (UK 91%), 93% specific treatment (UK 100%) and 92% prophylaxis guidance (UK 97%). AMS rounds exist in 63% (UK 80%), resulting in reductions of ATM use in 44% (UK 37%), increases in 15% (UK 12%) and no changes in 40% (UK 51%).

Globally 80% (UK 91%) restrict some antimicrobials (ATM): 73% (UK 84%) restrict carbapenems, 63% (UK 88%) quinolones, 58% (UK 91%) cephalosporins. Pharmacy follow up 65% (UK 72%) of the requests for restricted antibiotics. 25% (UK 12%) practice diversity (deliberately using a broad range of antibiotics to reduce resistance to antimicrobials) and 12% (UK 5%) cycle antimicrobials to reduce resistance. 85% (UK 90%) of ASP report antimicrobial usage; 55% (UK 59%) link these data to resistance rates and 48% (UK 57%) to infection rates. Only 19% (UK 6%) have electronic prescribing for all patients.

The intranet is the most common communication method, followed by booklets, e-mail, poster then newsletter. 88% (UK 99%) educate staff, mainly by with face to face induction followed by written information.

Of the 37% who have formally reviewed their ASP, 96% (UK 100%) showed reduction in inappropriate prescribing, 86% (UK 76%) in broad spectrum antibiotics use, 80% (UK 71%) in expenditure, 71% (UK 91%) in HCAI, 65% (UK 50%) in length of stay & 58% (UK 53%) in resistance.

Discussion & conclusions
This survey has demonstrated that the UK is well advanced in its delivery of antimicrobial stewardship compared to the global or continental position. The only are where the UK lags behind other parts of the world is in electronic prescribing. This is echoed in the statement that the main barrier to delivering effective antimicrobial stewardship is the lack of IT or antimicrobial usage data. The other area where we differ from elsewhere is our tighter control of broad spectrum antibiotics (the 4C's) prime focus on reducing the incidence of HCAI. Interestingly, the UK showed a lower decrease of the use of the agents and a smaller decrease in reversing antimicrobial resistance.

Despite the inherent limitations (eg. response bias, unselected institutions, etc), this survey suggests AMS can reduce antimicrobial resistance and expenditures, and should encourage a strategy to promote worldwide antimicrobial stewardship programmes.

<table>
<thead>
<tr>
<th>Indicator</th>
<th>UK</th>
<th>Africa</th>
<th>Asia</th>
<th>Europe</th>
<th>North America</th>
<th>Oceania</th>
<th>South America</th>
</tr>
</thead>
<tbody>
<tr>
<td>Country AMS Standards</td>
<td>100%</td>
<td>10%</td>
<td>29%</td>
<td>58%</td>
<td>20%</td>
<td>50%</td>
<td>23%</td>
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<tr>
<td>Hospital AMS Standards</td>
<td>85%</td>
<td>21%</td>
<td>62%</td>
<td>72%</td>
<td>45%</td>
<td>49%</td>
<td>51%</td>
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<tr>
<td>AMS Programme</td>
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<td>14%</td>
<td>53%</td>
<td>66%</td>
<td>67%</td>
<td>47%</td>
<td>46%</td>
</tr>
<tr>
<td>Antimicrobial formulary</td>
<td>91%</td>
<td>46%</td>
<td>84%</td>
<td>85%</td>
<td>78%</td>
<td>63%</td>
<td>78%</td>
</tr>
<tr>
<td>Antimicrobial guidelines</td>
<td>88%</td>
<td>77%</td>
<td>84%</td>
<td>95%</td>
<td>78%</td>
<td>73%</td>
<td>91%</td>
</tr>
<tr>
<td>AMS ward rounds</td>
<td>86%</td>
<td>54%</td>
<td>52%</td>
<td>70%</td>
<td>39%</td>
<td>67%</td>
<td>61%</td>
</tr>
<tr>
<td>Restrict cephalosporins (all areas)</td>
<td>91%</td>
<td>0%</td>
<td>13%</td>
<td>56%</td>
<td>28%</td>
<td>54%</td>
<td>45%</td>
</tr>
<tr>
<td>e-prescribing (all areas)</td>
<td>6%</td>
<td>2%</td>
<td>33%</td>
<td>13%</td>
<td>39%</td>
<td>18%</td>
<td>7%</td>
</tr>
</tbody>
</table>
Introduction
The Health and Social Care Act 2008 has a Code of Practice for Prevention and Control of Infections and related guidance (criterion 9). The Care Quality Commission (CQC) will use the guidance to assess whether it will register a hospital to provide healthcare services. “Procedures should be in place to ensure prudent prescribing and antimicrobial stewardship. There should be an ongoing programme of audit, revision and update”. Across the world, there is increasing antimicrobial resistance, and a dwindling pipeline of new antibacterial agents. There is evidence that the inappropriate use of broad spectrum antibiotics is associated with the selection of antibiotic-resistant bacteria such as extended spectrum beta-lactamase (ESBL) producing Gram negative bacteria, and the acquisition of methicillin resistant Staphylococcus aureus (MRSA). On European Antibiotic Awareness Day in November 2011, the Department of Health Antimicrobial Resistance and Healthcare Acquired Infection (ARHAI) sub-committee for Antimicrobial Stewardship (AMS) published guidelines for Acute Hospital Trusts in England on AMS called Start Smart then Focus (SSTF). These aimed to improve antibiotic prescribing by describing the infrastructure and AMS elements necessary to achieve it. SSTF also provided examples of audit tools and antimicrobial prescriptions.

Objectives
This study aimed to measure the extent of current antimicrobial stewardship activities and the extent of the SSTF implementation and any improvements seen in AMS. It also aimed to get feedback on the guidance.

Method
A web-based survey was developed using good survey research methodology123. The web-based survey software package SurveyMonkey© was used. A nine question survey was piloted, refined and then distributed through the microbiology, infectious diseases and pharmacy networks in July 2012. This survey was supplemental to the forty-three question 2012 global AMS survey. No ethics approval was required because this was a survey that did not collect patient data.

Results
Data from the global AMS survey showed that eleven (58%) of European countries have national antimicrobial standards. In England, seventy four (52%) of acute hospital trusts responded to the survey by September 2012. This was ten months since SSTF was launched. Of those, 65% rated SSTF as excellent or good for making AMS a Trust priority; 57% for improving their AMS infrastructure; 51% for improving prescribing practice; 37% for improving audit & 31% for improved usage reporting. Only 12% to 22% thought it was poor or less than satisfactory for the same criteria. Twelve percent had introduced an AMS programme in the last year.

A formal review of SSTF has been done by 41% of centres, with 17% planning to do so by the end of March 2013. Eighty-six percent had done an informal review and 52% had developed an action plan.

The main barriers to implementation were a lack of microbiology / infectious diseases time, then pharmacist time. As a balancing question, the main facilitators to implementation were an established AMS group, an enthusiastic pharmacist or microbiologist, or adequate microbiology or pharmacy time.

Prior to SSTF, 67% put indication and 73% put the duration or review date on in-patient antimicrobial prescriptions. Since SSTF, a further 9% have started to put both on prescriptions, and another 13% plan to add indication and 10% plan to add duration to prescriptions by April 2013. Antimicrobial ward rounds have started or are planned in the various specialties: medicine from 64% to 84% of centres, surgery from 60% to 79%, and paediatrics from 25% to 35%.

No national data exists for benchmarking antimicrobial usage in English hospitals currently. Forty percent agreed there should be national benchmarks set to reduce prescribing within hospital with public accountability (similar to healthcare-associated infections), but 43% disagreed mainly because of the difficulty in comparing similar hospitals.

Discussion and conclusion: Whilst the response rate was only half of Acute Trusts, it still gave a representative sample. A criticism of surveys is that the respondents are self-selecting and the responses cannot be validated. The information gathered at part of this survey was used as part of the 2012 European Antibiotic Awareness Day in November. The survey showed that AMS was already quite well established within English hospitals, but helped further to implement AMS.

Some of the criticism of SSTF was that the document did not look professional. In addition, some said it should have been sent to all Acute Trust Chief Executives to implement, but as ARHAI can only offer guidance, this was not possible.

Acute Trust Chief Pharmacists should use the data from this survey to review their current AMS Programme and gain senior support to fully implement the SSTF.

References
2. Burns, K.E. et al., A guide for the design and conduct of self-administered surveys of clinicians. CMAJ, 2008. 179(3): p. 245-52
Introduction

Under the Hackett Report (2011), home care providers are required to have defined governance arrangements for clinical performance and outcome monitoring. Dermatology patients receiving biologic therapies such as adalimumab, etanercept and alitretinoin for severe plaque psoriasis (SPP) and severe chronic hand eczema (SCHE) are High Cost Drugs (HCD’s) which are included under the homemcare initiative. The National Institute of Clinical Excellence (NICE) has published guidance for prescribing and treatment review which the Trust has adopted to monitor clinical effectiveness. For patients which do not meet NICE criteria, individual funding request (IFR) forms are completed. These patients should meet the same review standards to ensure benefit from therapy is maintained.

Aim

To evaluate the level of compliance against NICE guidance for prescribing of biologic/ alitretinoin therapy and to assess the monitoring and treatment review for established dermatology patients at Ealing Hospital ICO.

Objectives

- To evaluate compliance of prescribing of biologic/ alitretinoin therapy against NICE guidance for established dermatology patients
- To assess the monitoring and review of therapy for established dermatology patients
- To identify any cost savings associated with inappropriate therapy

Method

The audit was conducted retrospectively from October 2012 - November 2012. Ethical approval was not required as the aim was to audit against current guidance. An audit tool was constructed and piloted using medical notes. All patients aged over 18 established on biologic/ alitretinoin therapy for SPP/ SCHE and eligible for review between April 2011 and October 2012, were included in the study. Data was collected using the dermatology nurse-led clinic notes and medical notes. Data was recorded on paper audit tool forms, coded to ensure patient confidentiality, and tabulated. Potential cost savings were calculated for patients prescribed medication outside NICE guidance using an in-house dermatology homecare patient tracker.

Results

Table 1. Audit Results

<table>
<thead>
<tr>
<th>Condition</th>
<th>Drug</th>
<th>No. of patients</th>
<th>Eligibility Met</th>
<th>Review at 12 months: Adequate response</th>
<th>Cost saving, £ (approx)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPP</td>
<td>Etanercept</td>
<td>7</td>
<td>7, 100%</td>
<td>7, 100%</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Adalimumab</td>
<td>3</td>
<td>3, 100%</td>
<td>3, 100%</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Adalimumab (IFR)</td>
<td>14</td>
<td>-</td>
<td>14, 100%</td>
<td>£4,137</td>
</tr>
<tr>
<td>SCHE</td>
<td>Alitretinoin</td>
<td>5</td>
<td>3, 60%</td>
<td>5, 100%; 2, 40%</td>
<td>£12,354</td>
</tr>
</tbody>
</table>

See Table 1. 100% (n=7) and 100% (n=3) of patients prescribed etanercept and adalimumab respectively for SPP met the NICE eligibility criteria and were reviewed appropriately at 12 months with an adequate response to treatment. Of the IFR patients prescribed adalimumab, 100% (n=14) were reviewed appropriately at 12 months. One patient did not exhibit an adequate response upon review, however an improvement was seen in the patient’s condition. The potential cost saving calculated if treatment was terminated at 16 weeks (period for which an adequate response should been according to NICE3) was approximately £4,137.

Of the five patients prescribed alitretinoin for SCHE, 60% (n=3) met the eligibility criteria. All patients, 100% (n=5), were suitably reviewed at 12 weeks. 80% (n=4) of patients were reviewed at 24 weeks (max duration of treatment) and treatment was stopped appropriately for 40% (n=2) of patients. The potential cost savings were calculated to be approximately £12,354. Reasons for continued therapy beyond 24 weeks fell outside NICE guidance.

Discussion/ Conclusion

All standards were met for established patients prescribed adalimumab and etanercept for SPP. Although one IFR patient prescribed adalimumab did not show an adequate response at review according to NICE criteria, in practice, it is appropriate for clinicians and healthcare professionals to continue therapy based on clinical judgement where benefit from treatment is maintained. The audit has highlighted that the nurse led dermatology team is efficient in ensuring that SPP patients are reviewed regularly and monitored appropriately.

It was found that prescribing and review of alitretinoin for SCHE did not meet the required standards and substantial savings could have been made. The results indicate a lack of understanding of the NICE guidance for prescribing of alitretinoin. Entries made in patient medical notes support this suggestion as on numerous occasions prescribers were unaware of the need to discontinue therapy. Education and training on the NICE guidance for SCHE is required for all healthcare professionals involved in the care of these patients. The high cost nature of alitretinoin (and other biologic therapies) should be highlighted to all members of staff to improve adherence to guidelines.

There were a number of discrepancies between scores recorded on the disease monitoring forms (e.g. DLQI form) and those transcribed in patient notes. Dermatology nurses should improve their documentation processes in the future. It was also found that without centralised record keeping, the audit management process was difficult and time consuming as information was scattered between nursing and medical notes. THERAPYAUDIT®, a web-based software which facilitates a consolidated electronic record of patient information, is currently being used by other specialties in the trust to monitor patient therapies.

The software should be implemented for dermatology patients to allow for enhanced collaboration, efficient co-ordination of patient treatment, reduced risk of error in prescribing and robust audit management.

References

2. NICE. Etanercept and efalizumab for the treatment of adults with psoriasis. NICE technology appraisal guidance 103, July 2006
3. NICE. Adalimumab for the treatment of adults with psoriasis. NICE technology appraisal guidance 146, June 2008
4. NICE. Alitretinoin for the treatment of severe chronic hand eczema. NICE technology appraisal guidance 177, August 2009
Introduction
Coronary heart disease (CHD) is the UK’s biggest killer with an estimated 2.6 million people living with CHD. The symptom most commonly experienced by those patients is chest pain. Sublingual Glyceryl trinitrate (GTN) is often prescribed to alleviate anginal chest pain when such symptom is experienced by patients. Various studies have shown that not all patients with angina are prescribed GTN and many do not seem to know how to use it. This was shown to be associated with poor quality of life among patients with angina. The National Institute for Health and Clinical Excellence (NICE) emphasised the importance of ensuring that patients with angina are prescribed GTN and provided with full advice on how to prevent and alleviate episodes of chest pain using GTN.

Objectives
This is phase 1 (exploratory phase) of a service development project which aims to assess if patients who were admitted to our cardiology wards with established CHD had been prescribed GTN and if further support and improvements in our service were needed to ensure that patients were using their GTN correctly when experiencing chest pain. The findings should inform our practice, develop our pharmacy services and any necessary interventions to better meet patients’ needs.

Methods
Over two weeks we reviewed the medical notes of consecutive patients admitted to acute cardiology wards with chest pain. All patients admitted due to chest pain, with established history of symptomatic CHD, previous admission to cardiology in our hospital, and no contraindication for GTN were included. During the medicines reconciliation process we assessed: if GTN was prescribed before admission, if the patient received advice on how to use GTN, if GTN was used during an episode of CP and if patients correctly remembered how to use GTN. All data was collected anonymously and any patient who was unsure of how to use their GTN was provided with a full explanation together with a GTN information card. Ethics approval was not needed for this service development project.

Results
35 patients were assessed, their average age was 58 years (range: 34-76). The first diagnosis of symptomatic CHD ranged from 1985 – 2011. All patients had a previous admission to our cardiology department. All patients were prescribed GTN. In total 32 (91%) recalled that they had been given advice on their GTN. Only 2 (6%) patients identified the source of advice to be from the pharmacy team. Out of the 32 that had received advice, 27 (84%) remembered having verbal advice and 2 (6%) remembered receiving both written and verbal advice. Patients did not feel that the GTN written information was readily accessible. 12 (34%) patients reported that they did not use their GTN when they had experienced chest pain. The reasons for not using GTN are shown in table 1. Only 6 (17%) patients showed full knowledge of how to use GTN. 14 (40%) did not know they could repeat the dose either 2 or 3 times with 5 minute intervals and 29 (83%) were not aware that they could use GTN for prophylaxis.

Table 1. Reasons for not using GTN when chest pain was experienced. (n=12)

<table>
<thead>
<tr>
<th>Reason</th>
<th>Number of patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fear of side effects</td>
<td>5 (42%)</td>
</tr>
<tr>
<td>Was not sure if its use was necessary</td>
<td>4 (33%)</td>
</tr>
<tr>
<td>Symptoms of chest pain were unclear</td>
<td>2 (17%)</td>
</tr>
<tr>
<td>Do not always have a GTN to hand</td>
<td>1 (8%)</td>
</tr>
</tbody>
</table>

Discussion and Conclusions
The findings show that patients with established symptomatic CHD were all prescribed GTN, their knowledge and ability to use GTN were not satisfactory. Despite supplying our patients a wide range of written information about GTN, the majority do not seem to remember reading that information and cited verbal advice as most remembered. Written advice should support verbal advice and not be given on its own without emphasis. Patients’ knowledge of GTN use for prophylaxis was particularly poor. The pharmacy team was rarely identified by patients as a source of information about GTN. There is a clear need for pharmaceutical care provided to patients with CHD to include assessment of GTN and addressing concerns and poor knowledge. The pharmacy team should integrate this aspect of medicines optimisation into their medicines reconciliation process, medicines discharge advice, assess the quality of the current written information provide to patients and consider designing accessible brief written advice about how to use GTN.

References
Introduction

Enteral feeding tubes are used in patients with dysphagia in order to safely administer nutrition and fluids. These tubes are also used for medication delivery. Liquid medication formulations are required for administration through enteral feeding tubes (EFT). Tablet crushing or dispersing is common in clinical practice due to a restricted range of medicines available as a suitable liquid preparation. Tablet manipulation is frequently undertaken by nurses, carers and patients using a variety of different methods and is recommended as a means of reducing drug expenditure on liquid medication specials. Previous research indicated that the method of preparation may influence dose delivery. The most accurate method of tablet manipulation has not been determined. Amlodipine is the 8th most commonly prescribed medication in NHS England, over £28M is spent annually on amlodipine, £1.7M of which is on liquid specials.

Objectives

To determine the preferred method of amlodipine preparation for enteral tube delivery through an evaluation of dose recovery.

Method

The amlodipine tablet (Amlodpine Besylate, 10mg, Accord Healthcare), was prepared using one of 6 methods identified from a previous unpublished survey: Dispersion in a syringe (Oral/Enteral syringe 60mL, Medicina), dispersion in a medicine pot, crushed and dispersed using a crushing syringe (60mL, Health Care Logistics), crushed and dispersed using a crushing device (Personal Tablet Crusher, Health Care Logistics), crushed in a pestle and mortar or crushed using two spoons. The resulting dispersion was then drawn into an enteral syringe (if appropriate) and flushed via an 8Fr polyurethane enteral feeding tube (Corpak, UK) into a receiving flask; repeated 4 times for each method.

Dose recovery was determined by HPLC using a 250x4.6mm/5µm C18 column. Mobile phase 0.01M phosphate buffer (pH 2.6):acetonitrile 40:60, UV detection at 240nm.

Unpaired t-test was used to compare dose recovery from each method to control.

Ethical approval was not required for this in-vitro study.

Results

Results are detailed in table 1. No tube was blocked by the resulting dispersions.

<table>
<thead>
<tr>
<th>Method</th>
<th>% dose recovered</th>
<th>SEM (Standard error of the mean)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>100</td>
<td>1.13</td>
<td>0.0717 NS</td>
</tr>
<tr>
<td>Dispersal in syringe</td>
<td>97.31</td>
<td>0.49</td>
<td>0.0060</td>
</tr>
<tr>
<td>Crushing syringe</td>
<td>94.89</td>
<td>1.92</td>
<td>0.0476</td>
</tr>
<tr>
<td>Crushing between 2 spoons</td>
<td>94.80</td>
<td>0.54</td>
<td>0.0002</td>
</tr>
<tr>
<td>Dispersal in medicine pot</td>
<td>93.03</td>
<td>2.57</td>
<td>0.0001</td>
</tr>
<tr>
<td>Crushing device</td>
<td>84.18</td>
<td>1.55</td>
<td>0.0002</td>
</tr>
<tr>
<td>Pestle and mortar</td>
<td>79.99</td>
<td>0.91</td>
<td>0.0001</td>
</tr>
</tbody>
</table>

Table 1. Amlodipine dose recovery

Conclusion

Dispersal in the barrel of a syringe or use of a crushing device did not significantly affect dose recovery; this confirms the research of Powers et al. The dose recovery was higher than that achieved in the Powers study, serving to highlight that this method of administration may be affected by medication properties in addition to operator dependant factors. This study demonstrates that some methods currently used in clinical practice to manipulate tablets may deliver an insufficient dose. Further research is required using different medicines, an evaluation of the effect of particle size on tube blockage, and an evaluation of dispersion volume and flush volume on dose recovery.

References

5. NHS The Information Centre, General Pharmaceutical Services at www.ic.nhs.uk
Introduction
Venous thromboembolism (VTE) is a condition in which there is a formation of a blood clot in a vein, most commonly occurring in the deep veins of the legs or pelvis. This blood clot can become dislodged and transported in blood vessels, causing a blockade resulting in serious consequences. An estimated 25,000 people in the UK die from hospital acquired VTE every year. This includes patients admitted to hospital for medical care and surgery. As part of a national strategy to reduce the rate of mortality and morbidity through hospital acquired VTE, The Department of Health (DoH), have used The Commissioning for Quality and Innovation (CQUIN) payments framework, as an initiative for all Hospital Trusts, to ensure all patients are VTE risk assessed on admission and are prescribed appropriate prophylaxis. The current target set by CQUIN is: 90% of all patients admitted to hospital should be assessed for VTE risk. The Trust has set their own target as 100%.

Objectives
The audit will be conducted on 15\textsuperscript{th} November 2012.
1. To determine the percentage of patients (medical and surgical) assessed for VTE risk on admission compared to a Trust standard of 100% and national CQUIN target of 90%.
2. To determine the percentage of medical patients that were reassessed after 7 days of admission for VTE and bleeding risk compared to a standard of 100%.
3. To determine the percentage of surgical patients reassessed for VTE and bleeding risk 24 hours post-operatively compared to a standard of 100%.

Method
A data collection form was designed to gather data prospectively and retrospectively. A pilot was conducted on the 18\textsuperscript{th} September 2012 to ensure it was fit for purpose. A total of 33 (medical and surgical) wards across both sites were audited on 15\textsuperscript{th} November 2012. Maternity wards were excluded, as they use a different VTE risk assessment tool. All patients available on the ward were audited. Patient’s drug chart(s) and notes that were available were assessed by the ward pharmacists on the day and information was recorded on the data collection form. As this was an audit, ethical approval was not required.

Results
A total of 415 (100%) patients were included in the audit. Of these, 78% (324/415) were assessed for VTE risk on admission. Only 20% (35/177) of medical patients were reassessed after 7 days of admission. 16% (10/64) of surgical patients were reassessed 24 hours post-operatively illustrated in graph 1.

| Percentage of patients VTE risk assessed and re-assessed at NWLH Trust |
|-----------------|-----------------|-----------------|
| Patients VTE risk assessed on admission (n=324) | 78% |
| Medical patients that are reassessed after 7 days of admission (n=35) | 20% |
| Surgical patients reassessed after 24 hours post surgery (n=10) | 16% |

Graph 1: Results obtained from the audit.

Discussion/Conclusion
The VTE risk assessment form is part of the patients drug chart in order to prompt doctors to assess patients on admission, however despite this, the standards of 100% and 90% set by the Trust and CQUIN respectively, are not met. Also the standards for VTE re-assessments for medical and surgical patients were not met. From the sub-analysis of the results, although 91 patients were not assessed on admission, 51 patients (60%) were still prescribed dalteparin. This could suggest that doctors may feel it is unnecessary to complete the VTE assessment form when dalteparin is already prescribed. Sub-analysis of the results also showed, 11/258 (4%) of patients were not prescribed the correct dose of dalteparin according to Trust guidelines i.e. according to the patient’s weight. Further to this, only 68/131 (52%) patients that were not prescribed dalteparin prophylaxis, had a reason/contraindication documented on the drug chart. Therefore training is required to raise awareness of the financial implications through the loss of grants for incomplete VTE assessment forms despite thromboprophylaxis being prescribed as well as training on accurate prescribing for prophylaxis according to Trust guidelines.

One of the limitations of this audit was the reason(s) behind incomplete VTE forms was not established. In future follow up audits a short questionnaire could be designed for doctors to complete in order to determine their views behind not completing VTE forms. Another limitation of this audit was obstetric patients were not included in the sample population as they use a different VTE risk assessment form therefore no results were available for this patient group. The CQUIN standard for VTE risk assessments for year 2013 – 2014 is set to be increased to 95%. Therefore re-auditing following the implementation of recommendations from this audit should be compared with this higher standard in order to improve patient safety and future practice.

To improve adherence to completing the VTE risk assessment forms, the following recommendations have been made:
1. To present the results from this audit at the next Thromboprophylaxis Committee meeting on 24\textsuperscript{th} April 2013.
2. Via internal Trust media; Trust screensavers, daily e-mail bulletin and Trust magazine.
3. Training could be incorporated into the junior doctor’s induction programme, during August 2013
4. Re-audit in September 2013 (after the junior doctors training) in order to assess the improvements in standards.

References
Background

‘Medicines waste’ is defined as any drug product issued for patient care but returned, unused and therefore destroyed. A recent study of this issue in community healthcare identified that this wastage costs the NHS around £300m a year with 50% of that being avoidable – it also identified the cost of making the savings may negate further efforts. There is little published information within the hospital setting. Medicines within the hospital environment can be recycled if their provenance can be assured. During the early winter months of 2012, medicines waste was being returned to UHNS pharmacy stores in such quantities and condition that significant concerns were raised as to the magnitude of financial loss that was being incurred by the Trust due to these poor medicines management practices. An audit conducted over one week identified that £9k of medicines were being destroyed for a variety of reasons. Extrapolated to a whole financial year this amounts to almost £500k. Whilst a proportion of this could not be saved (expiry, incorrect storage, and community source) a significant proportion could be, if returned in a more appropriate manner. In response to this a ‘Medicines Waste Reduction Project’ was implemented to identify good practices to be implemented across the Trust to limit the financial risk associated with medicines waste.

Objectives

The objectives of the project were threefold. To identify the source and nature of returned medicines, investigate reasons why medicines were being wasted and to reduce the quantity and value of medicines produced within UHNS to produce financial benefits.

Method

This quality improvement project (requiring no Ethics Committee approval) was initiated with a joint meeting including representatives of all directorates, from which a project steering group was formed. A wide ranging discussion was held to identify some of the key reasons for medicines waste being generated, and two work streams were identified.

1. Establishment of new medicines waste management processes. Four pilot wards were identified from the original audit data as ‘high’ wasters. These were selected to develop and to implement a new waste management standard operating procedure (SOP) to address some of the causes of waste identified in the meeting. These included ensuring the appropriate re-use of medicines at ward level, introducing ‘medicine waste champions’, improving stock management, efficient transfer of medicines with patients and ensuring that any medicines that had to be returned to pharmacy were done so effectively, using the ‘Returns Kit’ so they could be re-credited to the source ward. Once established these working practices are to be rolled out across the Trust. Returns of medicines to pharmacy from these wards were counted and recorded (name, form, strength, quantity) using a Microsoft Excel spread-sheet, which calculated the value and subsequently sorted into ‘saved’ (returned to stock and credited back to the source ward) or ‘wasted’ (the reason why this action had to be taken was documented).

2. Active management of medicines waste within Pharmacy Stores. A band 3 Senior Assistant Technical Officer (SATO) was employed in pharmacy stores to manage the medicines waste generated by the Trust and document savings made, through his activities. All items returned to pharmacy from all wards and departments were sorted and entered into the database as described above and savings made added to those achieved on the pilot wards.

Results

1. Pilot wards. The new SOP was written, passed through the necessary Trust governance groups and implemented on the four pilot wards identified from the original audit. Alongside the SOP, ‘waste champions’ were identified and trained in its use and this cascaded to all ward staff. Data collected from the pilot wards over the first 8 weeks demonstrating a reduction in waste medicine returned to pharmacy is shown in Table 1. In addition drug expenditure on the pilot areas was monitored as a matter of routine practice through the directorate reporting system and was demonstrated to have fallen by the magnitude described by the savings record. Resulting in drug expenditure equivalent to the same period, 2 years previously.

Table 1: ‘Medicines Waste’ returned by the pilot wards during the first 8 week period

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>231 (Neurology)</td>
<td>£400</td>
<td>£190</td>
</tr>
<tr>
<td>109 (Surgery)</td>
<td>£1,464</td>
<td>£44</td>
</tr>
<tr>
<td>222 (Respiratory)</td>
<td>£2,116</td>
<td>£187</td>
</tr>
<tr>
<td>A&amp;E</td>
<td>£437</td>
<td>£2</td>
</tr>
</tbody>
</table>

2. Active medicines waste management in pharmacy – to date 17,000 waste units have been returned and logged by pharmacy stores. £140k (2% of units returned) has been saved and returned to stock. During the same period a further £97k has had to be destroyed because it was not returned in the correct way. The full roll out of the SOP to the Trust is now being undertaken as a matter of priority.

Discussion

The development and implementation of a new Medicines Waste Management SOP has demonstrated significant benefits for the pilot wards with levels of waste being reduced and substantial savings on the drugs budget being made. This has demonstrated that the process works and whilst large sums of money can be saved by simply sorting the waste effectively, further savings are possible if there is a whole team approach. The former can be done internally by pharmacy alone; the latter requires commitment from ward areas. Further work is to be undertaken over the next financial year to maximise the savings. These savings must be balanced by the cost of employing a Band 3 ATO at £17.6k per year, but this is still cost effective. The potential clinical benefits associated with this project are still to be fully evaluated but more efficient transfer of patients’ own medicines is known to improve medicines reconciliation and reduce unnecessary missed doses of critical medicines. Audits relating to both issues are in the Trust programme for 2013/14 and full clinical benefit of the medicines waste project will be more apparent when this data is analysed.

References

Introduction
A pharmacist prescriber was introduced to support clinical staff working with CV&T, ensuring safe, effective and cost efficient use of medicines and adherence to national guidelines. Investment in clinical pharmacists has been shown to improve patient safety by reducing medication errors and can also save the Trust money.

A pharmacist prescriber within the team can:
- Take accurate medication histories on admission.
- Deliver medicines reconciliation.
- Produce the first prescription.
- Ensure timely discharge prescriptions to meet 11am targets.
- Support the advanced nurse practitioners (ANPs) in their role.
- Allow junior doctors to prioritise their time to sicker patients, particularly important in CV&T due to reduction in junior doctor numbers.

Objectives
- Reduce medication errors and improve patient safety.
- Free up junior doctor time for other clinical priorities.
- Support advanced nurse practitioners, contribute to and action care plans.
- Write discharge prescriptions, expediting discharges and enhancing compliance to national guidance.

Method
A CV&T pharmacist was appointed and qualified as an independent prescriber. Working with the multi-disciplinary team on cardiothoracic wards they have attended ward rounds, contributed to care plans prescribed inpatient and discharge medications. All prescriptions written by the prescribing pharmacist were independently screened by another pharmacist in accordance with governance. Data of work carried out by the pharmacist prescriber were collected over a week. These data were analysed in conjunction with data from the electronic documents (eDoc) system and compared with data from the same week of the previous year extracted from the eDoc system. Data were also collected on a separate occasion, on time taken to complete discharges before and after the introduction of a pharmacist prescriber to see if discharges were expedited and the error rate of prescriptions written by doctors, nurse prescribers and pharmacist prescribers to monitor for patient safety improvements. The introduction of the pharmacist prescriber and follow up of the impact of the role is a quality improvement measure and as such no ethics approval was required. The parameters of the prescribing pharmacist role are detailed in their job description.

Results:
Data were collected and analysed to assess the impact of the service on some of the objectives listed above.

<table>
<thead>
<tr>
<th>Year</th>
<th>15-21 August 2011</th>
<th>13-19 August 2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>HMRs written in 7 days</td>
<td>144</td>
<td>126</td>
</tr>
<tr>
<td>HMRs screened by pharmacy</td>
<td>81 (56%)</td>
<td>56 (44%)</td>
</tr>
<tr>
<td>Created by Dr</td>
<td>119 (83%)</td>
<td>88 (69%)</td>
</tr>
<tr>
<td>Created by ANP</td>
<td>16 (16%)</td>
<td>31 (25%)</td>
</tr>
<tr>
<td>Created by Pharmacist</td>
<td>2 (1%)</td>
<td>7 (6%)</td>
</tr>
<tr>
<td>TTO Rx written by pharmacist</td>
<td>2 (1%)</td>
<td>27 (21%)</td>
</tr>
<tr>
<td>TTOs screened, written by pharmacist (core hours Rx)</td>
<td>2%</td>
<td>48%</td>
</tr>
</tbody>
</table>

Table: 1 Comparison in number of discharge prescriptions written by different health care professionals before and after the introduction of a pharmacist prescriber.

Discussion
Since the introduction of the new post just over a fifth of total cardiovascular and thoracic discharge prescriptions have been written by the pharmacist prescriber. Taking into account that this post only covers core hours during Monday to Friday then forty-eight per cent of discharge prescriptions are written by the pharmacist prescriber during their working hours. Less discharge prescriptions need to be written by junior doctors freeing up their time to spend with sicker patients on the wards.

Supporting the ANPs increases their understanding of medications and their effective use. It also improves communication and therefore workflow within the team, as it utilises the pharmacist’s expert knowledge of medications across a wider patient group.

The pharmacist prescriber has written discharge prescriptions that are free from errors, compared to an error rate of 0.67% for nurse prescribers and 1.05% for doctors. This increases patient safety and means less time is taken by pharmacists to screen and sort out issues on prescriptions. This contributes to a quicker TTO turn around time and more efficient discharges, data shows that there is a 30% reduction in time taken to complete the discharge process when the prescriptions are written by a pharmacist prescriber.

References
Introduction
Medicines administration in UK hospitals is undertaken primarily by nursing staff. The Department of Health (DoH) reports an error rate of approximately 5% of doses administered. Error type varies for many reasons, including medicines administered at the wrong time, to the wrong patient or as a result of unclear prescribing. Harrogate district hospital has approximately 280 beds and employs 671 registered nursing staff, including midwives. The strong partnership between the pharmacy and nursing staff at HDH has led to the development, over the last two years, of medicines management training for nurses. This mandatory study day delivers training in areas of high risk such as anticoagulation and insulin therapy, medicines safety, safe opiate administration and dose calculations. The session encourages nurses to challenge poor prescribing and refer to the pharmacy team for further support, giving them the confidence to safely administer the 2 million+ doses prescribed in a district general hospital every year. This recognises the standards set out by the Nursing and Midwifery Council in that medicines administration is not “solely a mechanistic task… it requires thought and exercise of professional judgment.”

Aim
- To undertake an audit to assess whether the medicines management training program improved the confidence of nurses in medicines related issues

Objectives
- A questionnaire was completed by nurses who attended the sessions
- A post training questionnaire was sent out to the same nurses 6 weeks after the initial training session

Method
Registered nurses completed a questionnaire at the start of the training session and a follow up questionnaire six weeks later. The participants were asked to use a four point scale, to rate their knowledge from ‘no knowledge’ to ‘confident’ in the following areas; Controlled Drugs, Safe prescribing, Calculations, Safe use of Insulin, Oxygen therapy, Anticoagulation. The respondents were also asked to give reasons for contacting the on-call pharmacist.

Results
The post training questionnaire had 44 responses (61%). Pre training, 20 (28%) of the nursing staff felt that they were confident in issues surrounding safe prescribing. This increased by 31% to 26 (59%) respondents after training. 68 (94%) of those who responded to the post training questionnaire would recommend the study day to their colleagues.

The graph below shows the results of the pre and post questionnaire.

Figure 1: Percentage of nurses confident in their knowledge pre and post training

The study day highlights the importance of medicines being given on time and the impact that missed or delayed doses can have, appearing to lead to a reduction in calls to the on-call pharmacist regarding whether a dose should be given, from 50 (69%) to 12 (27%).

In response to incidents in other Trusts, HDH has stopped borrowing of medicines without contacting the pharmacy. This is reiterated at the training and resulted in an increase in calls to the on-call pharmacist from 42 (58%) pre training to 34 (78%) post training.

The DoH recognises that calculations may be required for a dose to be prepared or administered. An increase from 19 (26%) to 25 (57%) was seen in those confident in their knowledge of drug calculations. Although not tested on the day, the principles involved are discussed in detail with a recommendation that if any concerns are identified the individual must follow them up. The training day increased the confidence of nursing staff in all areas of covered. In addition, the day is structured to provide the opportunity to ask medicines related questions of experienced pharmacy staff, directly influencing changes to the pharmacy service. Some of these have been relatively simple, such as ensuring all wards have contact details for their nominated pharmacy team but, anecdotally, have had a positive impact on patient experience. By doing this there has been greater recognition of the role the pharmacy team has in patient care and the effect that good communication can have.

Discussion
The study day covers the rationale behind the requirement for medicines policies and how they can directly affect patient safety. This report has focussed on the nurse’s perception of their own knowledge and so the next steps would involve specific evaluation of high risk areas. For example, assessment of incident reports involving anticoagulation and controlled drugs and audit of oxygen documentation in order to identify whether the training has a direct impact on patient care.

The success of the study day can be summarised in the words of one of our respondents; “better awareness = better safety = better/improved patient care”.

References
Background
It is estimated that, in the UK, there are approximately 500,000 patients currently prescribed oral anticoagulants. Anticoagulants are one of the classes of medicines most frequently identified as causing preventable harm and admission to hospital. In March 2007 the National Patient Safety Agency (NPSA) issued Alert 18 ‘Actions that can make anticoagulation therapy safer’. This alert provided several recommendations, one of which was to ensure that patients prescribed anticoagulants receive appropriate verbal and written information at the start of therapy, on discharge from hospital, at the first anticoagulant clinic appointment, and when necessary throughout the course of their treatment. At present the Trust do not have formal guidelines for the discharge of anticoagulant patients. However all anticoagulant patients should have an electronic patient record (EPR) anticoagulation referral form completed prior to hospital discharge. An evaluation of the anticoagulation discharge process has not been completed since implementation.

Aim
To determine the quality of the current discharge process for local anticoagulant patients and to identify areas that require improvement.

Objectives
1) To determine if an electronic anticoagulation referral form was completed for all local anticoagulant patients discharged from the Trust over a one month period.
2) To ascertain if the information provided on the electronic anticoagulation referral form for local anticoagulant patients was complete.
3) To establish the percentage of local patients newly initiated on anticoagulant therapy that were issued with written information, in the form of a yellow anticoagulant book.
4) To compare the indication of therapy, for local patients newly initiated on anticoagulant therapy, with the length of time between hospital discharge and first anticoagulation clinic appointment.

Method
Data was collected retrospectively from the 1st to the 31st of August 2012. A list of patients discharged from the Trust on anticoagulant therapy during this period was generated from the EPR system. Only local patients intended to be followed up by the Trust’s anticoagulation clinic were included in the results. Patients were also excluded for a number of other reasons such as failed discharge/readmission to hospital or loss of follow up. A data collection tool was created, piloted, and modified to allow collection of the relevant information from the electronic anticoagulation form, patient visit history, and haemostasis blood results available on the EPR system. The data collected was anonymised, entered onto a Microsoft Excel spreadsheet, and analysed.

Results
In August 2012 a total of 209 patients were discharged from the Trust on anticoagulant therapy, of which 25% (52) were local patients. Of these 100% (52) had an electronic anticoagulation referral completed prior to hospital discharge, however 52% (27) of forms contained incomplete information. Of these 52 local patients 27% (14) were newly initiated on anticoagulant therapy during their hospital stay. Medical practitioners reported that 79% (11) of these patients were provided with written information in the form of a yellow anticoagulant book, the contents of which was only noted as explained to 64% (9). However, medical practitioners also reported that 100% (14) of patients were provided with information regarding the following; side effects, interactions, monitoring and over/under anticoagulation. Table 1 shows that the majority of patients newly initiated on anticoagulant therapy were followed up within a week of discharge from hospital.

Table 1: Time between Hospital Discharge & 1st Anticoagulation Appointment for Newly Initiated Anticoagulant Patients

<table>
<thead>
<tr>
<th>Indication for Anticoagulant Therapy</th>
<th>Patients seen within 3 days of Discharge</th>
<th>Patients seen within 5 days of Discharge</th>
<th>Patients seen within 1 Week of Discharge</th>
<th>Patients seen within 1 Month of Discharge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deep Vein Thrombosis</td>
<td>1 (20%)</td>
<td>2 (40%)</td>
<td>1 (20%)</td>
<td>1 (20%)</td>
</tr>
<tr>
<td>Pulmonary Embolism</td>
<td>1 (33%)</td>
<td>2 (67%)</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Atrial</td>
<td>3 (60%)</td>
<td>0 (0%)</td>
<td>1 (20%)</td>
<td>1 (20%)</td>
</tr>
<tr>
<td>Fibrillation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nephrotic Syndrome</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>1 (100%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Totals</td>
<td>5 (100%)</td>
<td>4 (100%)</td>
<td>3 (100%)</td>
<td>2 (100%)</td>
</tr>
</tbody>
</table>

Discussion
The results confirm that electronic anticoagulation referral forms are being completed for local anticoagulant patients prior to discharge, however inpatient INR results and dosage information is often lacking. Percentage of new referrals to anticoagulant services with incomplete information on discharge is an NPSA safety indicator for anticoagulant therapy. The results indicate that patients newly initiated on anticoagulant therapy are being provided with the appropriate counselling; however it appears that use of the yellow anticoagulant book as a patient counselling tool is not favoured by medical practitioners. The results also show that the majority of these patients are being followed up within an appropriate time frame, those that were not did not have therapeutic INR results when they attended the anticoagulation clinic. The service evaluation had a number of limitations; firstly since data was collected retrospectively non local anticoagulant patients were not included due to inaccessibility of follow up information. Secondly the information provided by medical practitioners on the form was assumed to be accurate. Finally the date of the first anticoagulation clinic appointment was recorded as the date the patient actually attended the clinic not necessarily the date the appointment was arranged.

Development and implementation of a formal Trust guideline for the discharge process of anticoagulant patients should be considered to ensure continuity of patient care. The current referral form should be reviewed and condensed to encourage more accurate documentation. As experts in the field of medicines, pharmacists can play a pivotal role in reducing harm associated with the use of anticoagulants and should be encouraged to play a more active role in the communication of patient information to anticoagulant services. Finally evaluation of the referral and follow up of non local anticoagulant patients should also be considered.

References
3) Guy’s & St Thomas’ NHS Foundation Trust - Outpatient Anticoagulation Referrals. Accessed online via GTI GSTFT Intranet on 01/01/2013.
Introduction
This topic was identified as a priority by the Local Services National Institute for Health and Clinical Excellence (NICE) Group, following an audit conducted in 2012 that revealed noncompliance with NICE Technology Appraisal TA77 ‘Insomnia - newer hypnotic drugs’. TA77 included recommendations, relating to benzodiazepine and newer hypnotic drugs, that: non-pharmacological measures should be considered in the first instance; hypnotics should only be used to treat severe insomnia; hypnotics should be prescribed for short periods of time, strictly in accordance with their license; and treatment should only be changed from one hypnotic to another if adverse effects occur directly related to the original choice, and not based on a lack of therapeutic effect of the original. NHCT benzodiazepine and hypnotic policy is in line with TA77 and also states that hypnotics should not be supplied on discharge. NHCT produces a leaflet “How to Sleep Well” (HTSWL) on non-pharmacological treatments that promote sleep, which can be given to patients. This audit did not require ethics approval.

Objectives
- To establish NHCT’s adherence to TA77 and local policy, including the promotion of sleep hygiene
- To make recommendations to improve adherence where necessary

Method
The audit was undertaken in collaboration with the NICE support team. A data collection tool was designed based upon NICE support documents. Data was drawn from prescription cards (on drug choice, dose, and duration) and from running records (on non-pharmacological interventions and review), in both inpatient and outpatient areas. An assessment was made of the level to which the standards in each criterion were met. A total of 100 patients (30% inpatients and 70% outpatients) were selected by simple random sampling from names identified from pharmacy records (n=140). The sample was selected to reflect the areas of highest usage as identified during the earlier audit.

Results
Zopiclone at doses of 3.75mg and 7.5mg represented 95% of prescribed hypnotics. No patients had been given the HTSWL, and non-pharmacological methods of sleep promotion had been discussed with 3% of patients. It was found that hypnotics were prescribed and used for less than four weeks in 32% of cases; longer than 4 weeks but less than 3 months in 18% of cases; and longer than 3 months in 48% of cases. In cases where it was possible to record the total length of time patients were on hypnotics (n=49), the average length of use was 46 weeks. Of the 3% of patients who had switched hypnotics all of these changes were due to lack of effect rather than adverse effects. Eighteen per cent of outpatients had been discharged from NHCT inpatient care on a hypnotic. See table of results.

Table of results

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Non medicine measures discussed</th>
<th>HTSWL issued</th>
<th>Switched hypnotic</th>
<th>Less than 4 weeks continuous use (CU)</th>
<th>More than 4 weeks but less than 3 months CU</th>
<th>More than 3 months CU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage patients of 100</td>
<td>Yes</td>
<td>No</td>
<td>Not applicable</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

Compliant with TA77

Discussion
The audit revealed non-pharmacological methods of promoting sleep were very seldom discussed with patients, nor was the HTSWL used. Hypnotics were frequently used for longer periods than stipulated by TA77, the NHCT policy and the drugs’ licenses, noting that the maximum licensed duration of treatment with zaleplon is two weeks, and for zolpidem and zopiclone it is four weeks. This exposes patients to increased risk of developing tolerance and dependence. These results are disappointing, as the Trust is not meeting its own aspirations for high quality patient care, or the standards set in the NICE technology appraisal. Addressing these issues will be challenging as sleep problems are common within those suffering from mental health problems. Utilising non-pharmacological methods and regularly reviewing treatment should contribute to improving adherence to TA77. Using pharmacy records to generate the sample may not have revealed all cases of long term hypnotic use as some outpatients may obtain hypnotics from their General Practitioner.

Following discussion at the Local Services Drug and Therapeutics sub-Committee, these recommendations which were planned to be carried out after the audit was completed:
- Consultants and team leaders must support prescribers and nursing staff to advocate the recommendations of TA77;
- A training programme should be launched to ensure staff are aware of TA77, to publicise the non-pharmacological methods to promote sleep, and to raise awareness of the HTSWL;
- Non-pharmacological methods of promoting sleep must be discussed with patients before hypnotics are prescribed;
- If hypnotics are prescribed, patients must be informed that the drug is to be used for a short period of time and then the dose reduced and stopped;
- If hypnotics are prescribed on a when required basis the patient should be asked to retire to bed and try to sleep before hypnotics are given;
- Review of hypnotic medication must take place at the weekly multidisciplinary reviews;
- The pharmacy team routinely should inform prescribers when their patients have been using hypnotics continuously for four weeks;
- Long-term users of hypnotics should be supported in reducing their use of hypnotic medication and encouraged to improve sleep hygiene.
- To complete the audit cycle the audit should be repeated annually to monitor progress

References
Introduction
According to NICE guidance concerning medicines adherence, between one third and one half of medications that have been prescribed for long-term conditions are not being taken as recommended. Non adherence is often unintentional, stemming from reasons such as forgetfulness, inability to pay, or poor understanding of instructions, the latter being something which can be easily corrected through discussions with healthcare professionals (HCP) regarding patient’s medications. Improved medication adherence will not only improve the patient health but will also ease the cost-burden on the NHS.

The Commissioning for Quality and Innovation (CQUIN) Framework set a national goal in 2010 to ensure hospital trusts improved responsiveness to the personal needs of patients. “Did a member of staff tell you about medication side effects to watch for when you went home?” is one of several questions in the CQUIN framework, and covers the aspect of medicine information patients receive on discharge. It is important that hospital trusts get patient’s views so that they can assess how they are performing, and from this identify ways to improve services and patient satisfaction, ultimately improving medication adherence and patient health.

Patient satisfaction is a major national priority for both the NHS and the CQC. “Improving patient satisfaction on advice and information given to patients on their medication” is one of the five quality improvement priorities for 2012/13 for Royal Brompton and Harefield NHS Foundation Trust. It is imperative that staff members who speak to patients about their medication are providing appropriate information to patients, so that patients leave hospital well informed and satisfied, and are more likely to continue to adhere to their medication regime post discharge.

Aims and Objectives
To assess the level of satisfaction with the information patients received about their medicines on Cardiology wards at Royal Brompton Hospital.

The audit will be carried out on the two adult Cardiology wards at Royal Brompton Hospital. It will take place over two weeks from 5th to 19th November, and the objectives are to determine how many patients have received verbal information about their medicines during their inpatient stay, how many patients have received written information about their medicines to take home, how many patients are satisfied with the information provided about their medicines and which areas of discussion are the strongest, and which need improvement.

Standards
- 100% of patients will have had a discussion with at least one suitably qualified HCP regarding medications.
- 100% of patients will have received written information to take home regarding their medications (except where no changes were made in hospital).
- 100% of patients will be either very satisfied or satisfied with the information they received regarding their medications.

Method
Data from the Cardiology wards at the Brompton site was audited across a two week time scale using a questionnaire. Ethical approval was not required.

Results
Table 1:

<table>
<thead>
<tr>
<th>Standard question and answers</th>
<th>No. of patients</th>
<th>% of patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard 1: Which HCP spoke to patients regarding medication before discharge?</td>
<td>Nurse 13</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Pharmacist 22</td>
<td>38</td>
</tr>
<tr>
<td></td>
<td>Doctor 12</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>Other/Not applicable (please specify) 2</td>
<td>4</td>
</tr>
<tr>
<td>Standard 2: How many patients were given written medication information to take home?</td>
<td>Yes 17</td>
<td>42</td>
</tr>
<tr>
<td></td>
<td>No, but I would’ve liked some information 5</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>No 9</td>
<td>22</td>
</tr>
<tr>
<td></td>
<td>N/A 10</td>
<td>24</td>
</tr>
<tr>
<td>Standard 3: How satisfied were patients with the information given?</td>
<td>Very satisfied 24</td>
<td>59</td>
</tr>
<tr>
<td></td>
<td>Satisfied 14</td>
<td>35</td>
</tr>
<tr>
<td></td>
<td>Unsatisfied 1</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Didn’t get any information 1</td>
<td>3</td>
</tr>
</tbody>
</table>

Discussion
Standard 1: 78% of patients had a discussion with an HCP regarding medications prior to discharge. 20% of patients did not discuss medication with an HCP. The aim should be for all patients to discuss medication before discharge so they have a clear understanding.

Standard 2: 42% of patients were given written information regarding their medications. All patients on discharge are given a letter containing a list of medicines, and if they receive any medication from the hospital a patient information leaflet will be provided in the medication packet. During counselling HCPs should make patients aware of patient information leaflets and the discharge letter and medication list.

Standard 3: 94% of patients were either satisfied or very satisfied with the medicines information they received in hospital. While this is encouraging, this figure is less than the predefined audit standard of 100% and so there is room for improvement in this area.

Conclusion
Patients should have the opportunity to discuss medication with an HCP, which in turn could help to improve patient adherence. Whilst counselling HCPs should direct patients to the medication’s patient information leaflets advise the patient that they will get a medication list prior to discharge and an opportunity will be available to discuss concerns. Limitations of this audit are that questionnaires were given to patients on the morning of their discharge. At this time several patients had not yet been spoken to regarding their medication, so collecting data at a later time may have been more beneficial.

References
1. NICE; Medicines adherence (CG76); (2009); Available from: http://publications.nice.org.uk/medicines-adherence-cg76 (21/11/12)
3. Department of Health; Using the Commissioning for Quality and Innovation (CQUIN) payment framework – Guidance on national goals for 2011/12; (2008)
4. Inpatient Survey 2011: Royal Brompton
Introduction
The consequence of antimicrobial resistance to public health is a major concern. With a continuous increase in rates of nosocomial infections and antimicrobial resistance, patients are at a significant risk of infection with an expanding array of multidrug-resistant organisms. This as a consequence of inappropriate antimicrobial use in hospitals. Cochrane review showed 81 of 106 (76%) interventions on prescribing in hospital was associated with a statistically significant improvement in appropriateness of antimicrobial prescribing.

Objective
To assess the number of interventions on antimicrobial prescriptions in patients admitted on the medical admissions unit (MAU) over a 10 month period.

Method
- All patients on antimicrobials on the MAU are identified by the antimicrobial pharmacist first thing in the morning on a daily basis.
- An initial screen by the antimicrobial pharmacist assesses the appropriateness of the prescription and the patients presenting condition to the Trusts antibiotic policy.
- Documentation of the indication and duration of the prescription on the dedicated antimicrobial section of the prescription chart is also assessed.
- Screening also involves assessing laboratory results e.g. any reported sensitivities and U’s & E’s, appropriateness of restricted antimicrobials, documentation of microbiology guided advice, the patients previous history of healthcare acquired infections and any potential drug interactions that could compromise patient safety and prolong length of stay.
- Once inappropriate antimicrobial prescriptions are identified by the antimicrobial pharmacist, these are then discussed with the Consultant Microbiologist for further intervention.
- The Consultant Microbiologist and Antimicrobial Pharmacist would then feedback any issues to the post take ward round Consultant and any prescribing issues resolved and educated face to face.
- Changes would be made to antibiotic prescriptions as appropriate, or treatment stopped backed by an explanation of the rationale. The antimicrobial pharmacist would follow up the interventions to ensure these were implemented.
- Practice is audited and presented to directorate and infection control meetings.

Results

<table>
<thead>
<tr>
<th>Method</th>
<th>April 12</th>
<th>May 12</th>
<th>June 12</th>
<th>July 12</th>
<th>Aug 12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number on antibiotics</td>
<td>85</td>
<td>189</td>
<td>133</td>
<td>146</td>
<td>72</td>
</tr>
<tr>
<td>Number of prescribed antibiotics</td>
<td>102</td>
<td>241</td>
<td>161</td>
<td>183</td>
<td>84</td>
</tr>
<tr>
<td>Interventions on choice/compliance to guidelines</td>
<td>19</td>
<td>41</td>
<td>28</td>
<td>34</td>
<td>27</td>
</tr>
<tr>
<td>(18.6%)</td>
<td>(17%)</td>
<td>(17.4%)</td>
<td>(18.6%)</td>
<td>(32%)</td>
<td></td>
</tr>
<tr>
<td>Interventions on undocumented choice/duration on the chart</td>
<td>15</td>
<td>30</td>
<td>17</td>
<td>11</td>
<td>10</td>
</tr>
<tr>
<td>(14.7%)</td>
<td>(12.4%)</td>
<td>(10.6%)</td>
<td>(6%)</td>
<td>(11.9%)</td>
<td></td>
</tr>
<tr>
<td>Interventions on undocumented choice/duration on the chart</td>
<td>15</td>
<td>30</td>
<td>17</td>
<td>11</td>
<td>10</td>
</tr>
<tr>
<td>(14.7%)</td>
<td>(12.4%)</td>
<td>(10.6%)</td>
<td>(6%)</td>
<td>(11.9%)</td>
<td></td>
</tr>
</tbody>
</table>

Table 1: Outcomes on the appropriateness of antibiotic prescriptions on MAU.

A total of 3,221 patients were seen on the medical admissions unit over a 10 month period with 1,496 patients (46.4%) on antibiotics. A total of 1,882 antibiotics (1.26 per patient) were prescribed which required 425 interventions (22.6%). Of these, there were a total of 305 interventions (16%) on choice of antimicrobial treatment and compliance to guidelines, which accounted for 72% of the total interventions made. The rest of the 120 (6.4%) interventions focused on undocumented choice and duration on the prescription chart which accounted for the remaining 28% of total interventions made.

Discussion
A total of 20.72% interventions on choice and compliance to guidelines were made in the first 5 months (April - August) in contrast to a total of 13.88% in the following 5 months (Sept-Jan). In addition a total of 11.1% interventions on undocumented choice and duration on the chart were made in the first 5 months in contrast to a total of 3.32% in the following 5 months. Both these reductions in intervention rate could reflect the improvement in antimicrobial prescribing practice by clinicians on MAU in response to the sustained antimicrobial ward rounds by the antimicrobial pharmacist.

Prescribers are made aware of these interventions face to face or via other communicative methods e.g. pharmacy newsletters to ensure active learning occurs. These audited results are presented to clinicians via quarterly antibiotic steering group meetings where issues are discussed and ideas and suggestions welcomed. Continuous support and investment in pharmacy and medical time can ensure persuasive interventions can be rolled out across the organisation and appropriate prescribing sustained over a longer period of time.

Further work will need to assess the quality of antimicrobial prescribing in relation to the patients presenting condition and clinical and microbiological outcomes.

References:
1. O’Dowd A. Chief medical officer speaks out on antimicrobial resistance, drugs, and homeopathy; British Medical Journal; 2013; 346:f537


Introduction

The POAC drug history is one of the main sources of information used by junior doctors when transcribing regular patient medication on to in-patient charts. Therefore, it is paramount that it is complete and accurate. Inaccurate medication histories at the pre-operative assessment stage can lead to medication-related incidents when patients are admitted for surgery such as interrupted or inappropriate drug therapy, delayed discharge, exacerbation of an existing condition, or increased risk of post-operative complications. The National Patient Safety Agency states that medication errors are most common at the time of transfer between care settings, in particular at the time of patient admission to hospital. It is estimated that 25% of elective surgery patients regularly take medicines for chronic or acute conditions. Such medication needs accurate documentation.

Objectives and standards

To assess whether each patient seen at a POAC has had an accurate medication history taken; and whether this resulted in correct prescribing on the in-patient drug chart at the time of admission. To assess whether each elective surgical patient brought their Patient’s Own Drugs (PODs) to hospital.

Standard 1: An accurate and complete medication history should be taken and clearly documented for all patients admitted for elective surgery at POAC – 100%.

Standard 2: All regular patient medication that needs to be continued post-surgery, should be accurately prescribed on the drug chart – 100%

Standard 3: All patients should bring to hospital their regular drugs kept in the labeled original boxes or blister pack – 100%

Method

A data collection form was created, piloted and subsequently amended in order to obtain the information required as set out in the audit objectives and standards. Data collection took place over a two-week period, from 14/01/13 to 25/01/13 (weekends excluded), on all three surgical wards and the critical care unit. Ward pharmacists highlighted patients who underwent an elective procedure on a daily basis. For each patient the following data was collected: name; hospital number; date & time of admission; ward; whether the pharmacy medication history matched the drug history recorded by the POAC nurse on the POAC questionnaire; whether the patients’ regular medication was correctly prescribed on the inpatient drug chart pre-pharmacy intervention; the time from admission until the medicines were accurately charted; and whether the patient brought PODs to hospital. The drug history taken by a registered medicines management technician or a pharmacist, was compared to the medication history on the POAC questionnaire and then to the inpatient drug chart to check for any discrepancies. Day-case patients were not included in the audit. Data was then analysed using Microsoft Excel. For the purpose of the analysis any incorrect or missing drug name, dose or frequency in the POAC drug history was considered a discrepancy. Ethics approval was not required due to the nature of the project.

Results

Data from 35 drug histories, comprising a total of 186 prescription items was collected. Neither of the original standards set was met. Standard 1 was not achieved as only 9 out of 35 patients’ POAC drug histories were accurately taken (table 1); of which 6 didn’t take any regular medicines. There were discrepancies between POAC and pharmacy drug histories for 114 out of 186 prescription items. Discrepancies included: omitted drugs (92/114), incorrect doses (3/114), omitted doses (5/114), incorrect frequency (2/114) and omitted dose & frequency (12/114). Standard 2 was not met as 67 out of 186 prescription items were mistakenly not transcribed on to an in-patient drug chart. As a result 21 patients had an erroneous drug chart, of which 19 had also inaccurate POAC drug histories. The majority of the drugs mistakenly omitted were cardio-vascular system drugs (20/67) and nutrition & blood drugs (10/67). The median time from patient admission until the medication was correctly charted was from 12 to 36 hours. Standard 3 also fell short as only 10 out of 29 patients who regularly took medication, brought all their PODs to hospital.

Table 1. Audit results

<table>
<thead>
<tr>
<th>POAC Dhx accurate</th>
<th>POAC Dhx inaccurate</th>
<th>Rx items mistakenly omitted on drug charts</th>
<th>Patients with PODs</th>
</tr>
</thead>
<tbody>
<tr>
<td>9 out of 35</td>
<td>26 out of 35</td>
<td>67 out of 186</td>
<td>10 out of 29</td>
</tr>
</tbody>
</table>

Discussion

Although the study has some limitations (small patient numbers, assumption made that the pharmacy medication history is accurate and variation in how a medication history is taken), results show that in the majority of cases the POAC drug histories are not accurate, consequently this leads to poor prescribing. Some of patients’ regular drugs are mistakenly not transcribed to in-patient drug charts at the time of admission. For some kinds of medicines, such as antibiotics, Parkinson’s medicines and insulin, an omitted or delayed dose can have serious and even fatal consequences. In medication histories taken at the POAC that are 100% accurate, the patient is on an average of 0.9 prescription items; supporting the hypothesis that the more complex the drug history, the higher the chance for discrepancies to occur. In addition results show that only few patients brings their PODs to hospital. This produces delays in prescribing/receiving the correct drug/formulation potentially leading to missed doses of critical medicines and patients’ harm. Re-supplying PODs means increased cost for the hospital and causes delays in dispatching medicines.

Recommendation

Provide further training to POAC staff on how to take drug histories accurately. Restructuring the pharmacy service and place emphasis on the elective patients in clinic rather than on the ward by pharmacists attending POACs.

In-patients drug charts and discharge medication to be written at the POAC and dispensed in advance.

Implement a scheme that encourages patients to bring all their current medicines to hospital.

Repeat audit after recommendations are implemented.

References

67. Analysis of AF associated strokes as part of GRASP AF type audit tool to improve anticoagulation management following updated network guidance publication in Outer North East London

Virdi G1, Cooper P1, Duggan S1, Hamed N2, Robinson G1, Sawyer S1, Lailey J2, Wright P1,2, Antoniou S1,2
1Barts Health NHS Trust, London, 2North East London Cardiovascular and Stroke network.

Introduction
Atrial fibrillation (AF) is the most common sustained arrhythmia in England affecting at least 1.4% of the population. AF is associated with a five-fold risk of stroke with 12,500 strokes per year thought to be directly attributable to AF.1,2 Many of these strokes could be prevented with effective anticoagulation treatment. Despite strong evidence supporting the efficacy of oral anticoagulants (OACs) in preventing thromboembolism related to AF, many patients are not prescribed them. This is often due to perceived risks of bleeding and concordance with warfarin in comparison to aspirin in the at risk groups such as the elderly. A national audit tool, GRASP-AF, has been designed by NHS improvement to aid primary care clinicians to risk stratify and effectively manage patients in AF.2 Nationally this has improved warfarin anticoagulation by a modest amount (52% to 54%). East London has devised an educational tool - APEL (Anticoagulant Programme East London) which outlines the benefits and dispels myths of anticoagulation for general practitioners (GPs). The APEL GRASP AF type tool calculates and identifies individuals who are not taking anticoagulation (in line with national GRASP AF tool) but highlights AF related stroke performance of individual primary care organisations (PCOs) as a means of improving anticoagulation.

The aim of this work was to assess whether evaluating AF associated strokes as part of GRASP AF type audit tool would improve anticoagulation management following network guidance publication.

Objective
To demonstrate an improvement in anticoagulation management through:
1. Use of APEL GRASP AF tool to highlight changes in GP anticoagulant prescribing
2. Assess number of strokes attributed to AF in 2012, and how many were on anticoagulation.
3. Comparing data to national GRASP-AF tool

Method
APEL GRASP AF type tool was developed in 2011 by North East London Cardiovascular and Stroke Network for outer north east London (ONEL) PCO’s (4 organisations). The tool enabled practices to identify patients with a history of AF and review the risk profile of individual patients using CHADS2 score as well an assessment of AF related strokes. During implementation, primary care clinicians were supported with educational guidance to decision-making. This provided information about effectiveness of OAC therapy to reduce stroke rates. As an assessment of service provision, ethics approval was not required.

Data from APEL GRASP AF type tool was extracted retrospectively in September 2012 to review:
1. Number of high-risk AF patients (CHADS2 ≥ 2) prescribed OAC and/or aspirin or neither in June 2011 and September 2012.
2. Number of newly diagnosed strokes in 2011/2012
3. Number of newly diagnosed stroke patients who were registered in AF prior to or after diagnosis and how many of these patients were taking OAC.

Results
Table 1: Comparison of therapy in high risk AF patients after APEL implementation

<table>
<thead>
<tr>
<th>Therapy for patients with CHADS2≥2</th>
<th>June 2011</th>
<th>September 2012</th>
<th>Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. of patients (%)</td>
<td>No. of patients (%)</td>
<td></td>
</tr>
<tr>
<td>AF registered patients</td>
<td>7674 (56)</td>
<td>9759 (61)</td>
<td></td>
</tr>
<tr>
<td>CHADS2 score ≥ 2</td>
<td>4258 (56)</td>
<td>5938 (61)</td>
<td></td>
</tr>
<tr>
<td>OAC</td>
<td>1234 (29)</td>
<td>2209 (37)</td>
<td>8%</td>
</tr>
<tr>
<td>Aspirin</td>
<td>1706 (40)</td>
<td>2186 (37)</td>
<td>-3%</td>
</tr>
<tr>
<td>OAC and aspirin</td>
<td>1127 (26)</td>
<td>1409 (24)</td>
<td>-2%</td>
</tr>
<tr>
<td>No antithrombotic</td>
<td>191 (4)</td>
<td>134 (2)</td>
<td>-2%</td>
</tr>
</tbody>
</table>

Additional data collected from APEL GRASP AF type audit tool showed 1369 patients diagnosed with a stroke in ONEL in the year 2011/2012. 137 of these had established AF prior to the stroke of which only 21 were taking OAC.

Discussion
Use of APEL GRASP AF type audit tool demonstrates an improvement of anticoagulation prescribing to reduce stroke rates of 6%, this is 4% more than that seen by the national GRASP AF tool. Evidence for effective stroke prevention with aspirin in AF is weak and has potential for harm as data indicates the risk of major bleeding or intracranial haemorrhage with aspirin is not significantly different to that of OAC, especially in the elderly.2 Fear of falls may be overstated, a markov decision analysis suggests that patients need to fall 300 times per year for the risk of intracranial haemorrhage to outweigh benefits of oral anticoagulants in stroke prevention.3 The high numbers of patients prescribed aspirin solely therapy suggests an over-reliance on aspirin for stroke prevention. Our numbers show a percentage reduction of aspirin prescribed as the sole antithrombotic (40% to 37%) together with numbers not prescribed antithrombetics (4% to 2%). We postulate that the APEL educational tool alongside clinician feedback on local stroke performance has been the driver for this change.

Assuming the lowest absolute thromboembolic risk of patients with CHADS2≥2 is 4% per annum and a relative risk reduction of 64% with OAC therapy, 40 patients would need therapy with OAC to prevent 1 stroke. Using these assumptions, 3 strokes could have been prevented if all 137 patients were taking OAC. Strokes due to AF are more debilitating and cost the NHS an estimated £11,900 in the first year after stroke vs £383 of maintaining one patient on warfarin (including monitoring) for one year.4 These reports are initial findings with ongoing monitoring and reassessment of stroke admissions for the current financial year. By including stroke data as illustrated above, we believe it offers clinicians a tool to monitor outcomes associated with improved anticoagulation and overcome many of the barriers associated with improving anticoagulation.

Limitations
The system currently uses data taken from the CHADS2 scoring system. This has recently been updated with a more accurate CHADS2,VASc risk assessment tool which requires 3 additional fields to be entered. Furthermore the data from APEL GRASP-AF type tool is limited by accuracy of coding in the GP surgeries. Both factors may under report patient’s risk factors and as such more patients are likely to be eligible for OAC therapy.

References

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Introduction
During a hospital stay many surgical patients are prescribed when required (PRN) painkillers alongside regular analgesia, with the aim of controlling any exacerbations of pain. The effective use of PRN analgesia relies on the patient knowing what medication has been prescribed. Inadequate pain control can lead to poor prognosis for the patient and may even result in a host of co-morbidities. Improved analgesia control leads to enhanced recovery, reduced medical and surgical morbidity and reduced length of stay in hospital. Pharmacists visiting surgical wards were often asked by patients if they could have something extra for their pain. At the same time, it was apparent that these patients were not aware that they had been prescribed PRN analgesia and would have requested this had they known. This study, therefore, examined the level of knowledge of surgical patients about the PRN analgesics that had been prescribed for them.

Objective
To investigate the level of patient knowledge of PRN analgesia prescribed on acute surgical wards.

Method
The study being an audit did not require ethical approval. It was carried out on 3 acute admission surgical wards in a Teaching Hospitals NHS Trust. The wards were an acute general surgery ward, an orthopaedic trauma ward and a plastic and maxillofacial unit. Patients identified to have experienced pain in the previous 72 hours and with at least one PRN analgesic prescribed, were included in the study. Patient awareness of PRN analgesia was then assessed using a data collection form. The audit standard set for this study was that proposed by the Royal College of Anaesthetists, namely that 100% of patients should receive information about pain management. The present audit examined the following:

1. Were patients aware that PRN analgesia had been prescribed for them?
2. Were patients aware which PRN analgesics they could request?
3. Did patients know how often they could request each individual PRN analgesic?

The following patients were excluded from the study:
- Patients who had not experienced pain
- Patients who had not been prescribed PRN analgesia
- Patients prescribed patient controlled analgesia
- Patients who had not experienced pain

Results
Eighty six patients were interviewed for inclusion into the audit. The results showed that 45% of the patients were completely unaware that they had been prescribed PRN analgesia. Moreover, 66% of patients did not know which PRN analgesics had been prescribed for them and 85% were not aware how often they could request PRN painkillers. Table 1 summarises the findings. A total of 73% of patients had been asked by a nurse if they required painkillers at some time during the 72 hours preceding the interview with 67% of the patients being asked this during routine ward rounds. It was noted that 84% of patients had received at least one dose of PRN analgesia (nurse or patient initiated) during this time period.

Table 1: Surgical patient awareness of PRN analgesia

<table>
<thead>
<tr>
<th>Patient unaware</th>
<th>from 86 patients (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>That PRN analgesia was prescribed</td>
<td>39 (45%)</td>
</tr>
<tr>
<td>Which analgesics had been prescribed</td>
<td>55 (66%)</td>
</tr>
<tr>
<td>How often analgesia could be requested</td>
<td>68 (85%)</td>
</tr>
</tbody>
</table>

Discussion
The Royal College of Anaesthetists have proposed that as an audit standard, 100% of patients should receive information on pain management. The present audit found that only 15% of patients interviewed had been made fully aware of the PRN painkillers that they could request. In effect, PRN meant ‘Pain Relief Negligible’. The low awareness among patients about PRN analgesia may have been the result of poor communication by doctors, nurses and other health care professionals and the absence of any written information. Patients were not being told about the PRN drugs prescribed on their treatment chart. They were expected to ask for painkillers that they did not know had been prescribed for them. Consequently, patients simply soldiered on with their pain.

At the time of the study, it was found that nurses were adopting a mainly passive approach to the administration of PRN analgesics. Outside normal drug round times they would typically give painkillers only if the patient asked for these. However, recently a new system of ‘intentional rounding’ conducted by nurses and health care assistants has been introduced in the hospital. Under this new initiative, instead of waiting for the patient to ask for painkillers at routine drug rounds, nurses and healthcare assistants pro-actively ask about pain in between normal drug round times and provide information about the ‘top up’ painkillers that have been prescribed. It is also planned to provide written information about PRN analgesia as part of the intentional rounding initiative. Pharmacists and pharmacy technicians can also highlight PRN analgesia when carrying out medicines reconciliation with newly admitted patients. A further re-audit may determine if these measures reduce avoidable patient suffering and stop PRN painkillers being the best kept prescribing secret held hidden from patients.

References
Introduction

Incidence of prescribing errors was measured (9%) in acute hospitals in England, with most occurring at admission. Pharmacists were identified as the main interceptors of prescribing errors. Patient safety initiatives have led organisations such as the National Institute for Health and Clinical Excellence (NICE) to recommend that clinical pharmacists play a key role in medicines reconciliation. Locally at a large teaching hospital, four clinical pharmacists provide pharmaceutical care to the acute medical unit (AMU) with an emphasis on medicines reconciliation. Two of the pharmacists, who practise independent prescribing (IP), have developed a prescribing service where prescribing errors are promptly corrected on hospital admission. Non-independent prescribing (Non-IP) pharmacists rely on medical staff to action their recommendations; increasing the risk that medicine-related problems are not resolved prior to patient transferral to a specialist ward. The risk of unresolved issues is exacerbated by high patient turnover and the limited capacity of medical prescribers to address all identified errors. The anticipated increase in the quality of care provided through pharmacist prescribing was unknown and required to be measured.

Objectives

This study aimed to evaluate the difference in practice of IP pharmacists and Non-IP pharmacists with respect to timely resolution of pharmaceutical care issues (PCIs) and the severity of the impact on missed drug doses and/or dose adjustments.

Method

The South East Scotland Research Ethics Service confirmed that the study did not require research ethics approval. The study was conducted over a period from May to July 2012 when PCIs were identified by all four practising pharmacists during their daily work in the 58 bedded AMU. Documented PCIs were provided to, and analysed by, an independent pharmacist investigator. Patients were separated into ‘IP’ (n=125) and ‘Non-IP’ (n=125) groups, dependent on whether they received pharmacy care from an IP or Non-IP pharmacist. Time taken to resolve PCIs was estimated by the practising pharmacists and categorised into five time-frames (≤1; 1-5; 5-10; 10-20; ≥20 min). A sample of 37 PCIs was assessed by an independent multidisciplinary panel (two physicians, two pharmacists) for validation using a previously established and validated severity assessment tool. The exemplary ranked PCIs were then reassessed by the project team and, if needed, discussed and scores adjusted taking into account different clinical opinions. Based on these scores the remaining data was ranked.

Results

Although the two patient groups were not matched they were similar in terms of age and sex and bias were minimised by the fact that patients were just as likely to be seen by an IP or a Non-IP pharmacist. Table 1 shows the differences in the number of patients with resolved PCIs within the defined time-frames. It demonstrates that in the IP group all PCIs were resolved in five minutes or less in over 70% of patients compared to approximately one third of patients in the Non-IP group.

Table 1: Differences in the number of patients with resolved PCIs in the defined time-frames between the IP and the Non-IP group.

<table>
<thead>
<tr>
<th>Time-frame [min]</th>
<th>IP n=125 (% CI)</th>
<th>Non-IP n=125 (% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤1</td>
<td>19 (15.2 %, 8.9-21.5)</td>
<td>5 (4 %, 0.6-7.4)</td>
</tr>
<tr>
<td>1-5</td>
<td>71 (56.8 %, 48.1-63.1)</td>
<td>40 (32 %, 23.8-40.2)</td>
</tr>
<tr>
<td>5-10</td>
<td>26 (20.8 %, 13.7-27.9)</td>
<td>39 (31.2 %, 23.1-39.3)</td>
</tr>
<tr>
<td>10-20</td>
<td>8 (6.4 %, 2.1-13.5)</td>
<td>30 (24 %, 16.5-31.5)</td>
</tr>
<tr>
<td>≥20</td>
<td>1 (0.8 %, -0.8-2.4)</td>
<td>11 (8.8 %, 3.8-13.8)</td>
</tr>
</tbody>
</table>

There were 37 out of 250 patients who, after review by a clinical pharmacist, still required additional drugs to be prescribed and/or amendments made to already prescribed drugs by medical staff (n=66 PCIs). Of these PCIs 52 (79%) were rated clinically significant or very significant. Thirty-six of these patients were in the Non-IP group and one patient in the IP group. The missed drug in the IP group was due to new legislation on controlled drugs. Patient turnover and the limited capacity of medical prescribers to address all identified errors. The most common error in these patients was unintentionally omitted medicines during reconciliation; frequently: bronchodilators, antianginals, vitamins, proton-pump inhibitors, and analgesics.

Discussion

This study suggests that PCIs in an AMU are resolved quicker by IP than by Non-IP pharmacists. The freed time could potentially allow increased capacity to review more patients. Independent prescribing pharmacists resolve prescribing errors that, if identified by Non-IP pharmacists, may not be addressed by medical staff; raising the need to incorporate additional review of such patients to ensure patient safety; within limited available resources. Patients reviewed by IP pharmacists are at less risk of suffering from unresolved PCIs than those reviewed by Non-IP pharmacists. Pharmacists were aware of the study which may have influenced their practice but should equally have affected both groups of data. Due to staffing resources neither the prescribing activity of the IP pharmacists nor the recommendations of the Non-IP pharmacists were checked unless the patient was moved to another ward and received another clinical pharmacist review. Differences in prescribing error rate between IP pharmacists and medical staff were not evaluated in this study. In addition to IP status, postgraduate qualifications and work experience also varied between the pharmacists; which may have influenced the results and the threshold at which issues have been documented. These findings could inform strategies for the progression and development of pharmacist prescribing within acute care and other secondary care areas.

References

**70. An audit of Pharmacist-led Medicines Reconciliation (MR) completed throughout a Hospital Trust**

Dhanji, S, Barnett, N, Turnbull, F, Sanghera, J, Northwick Park Hospital, North West London Hospitals (NWLH) NHS Trust

**Introduction:**
In December 2007, the National Patient Safety Agency (NPSA) reported that several medication errors at the point of transfer of care had led to severe harm and even fatality. In light of this, the National Institute of Clinical Excellence (NICE) in collaboration with the NPSA released a safety solution stating that all Trusts should have a MR policy in place and pharmacists should be involved in the MR process as soon as possible after admission. A pharmacist-led or level 2 MR was defined in National Prescribing Centre (NPC) guidance as a three stage process; firstly collecting an accurate medication history, secondly checking the patient’s charted medicines against their medication history and finally communicating any discrepancies. This process is key in reducing medication errors and thereby the potential of harm to patients. The completion of pharmacist-led MRs needs to be assessed against standards set by the local MR Policy to ensure that a timely and high-quality service is being delivered.

**Objectives:**
To audit a representative sample of MRs completed throughout the Trust against the following standards:
1. 100% of adult patients admitted between 12pm on Sunday and 12pm on Friday (i.e. ‘weekday’) will have a pharmacist-led MR within 24 hours (1 day) of admission.
2. 100% of adult patients admitted between 12pm on Friday and 12pm on Sunday (i.e. ‘weekend’) will have a pharmacist-led MR within 72 hours (3 days) of admission.
3. 100% of pharmacist-led MRs will include information regarding medicines management (e.g. self or family help).
4. 100% of pharmacist-led MRs will have documented relevant information to aid the patient’s discharge (e.g. further supplies of medicines at home).
5. 100% of documented discrepancies will either have a reason documented for the change in therapy since admission or, where no reason is found and the discrepancy deemed unintentional, will be highlighted on the drug chart with documentation of steps to resolve the discrepancy (e.g. ‘discussed with medical team’).

**Method:**
A data collection form was designed and piloted over three wards, amendments were identified and made to the final audit form. A total of 34 wards were audited, with a random sample of 10 patients being assessed on 32 wards and all patients being assessed on two admissions wards. All data was collected over four days (19th to 22nd November 2012) by the auditor, to eliminate any bias, and any patients for whom the timeframe had not yet passed were followed up. A computer programme (Patient Administration System) was utilised to identify the date and time of admission of patients to a ward to define them into weekday and weekend categories. Collected data was then inputted on to an Excel spreadsheet for further analysis. Ethics approval was not obtained for this study as it was an audit. Wards excluded from audit were Intensive Trauma Unit (ITU) & Elective High Dependency Unit (EHDU) (information on the MR was not readily available), Maternity (MRs are not routinely completed in this directorate) & Paediatrics (MR policy is for adults).

**Results:**
69% (n=328) of all patients assessed across the Trust received MRs within the timeframe specified by the MR policy (Table 1). Weekend MRs performed better than weekday MRs, achieving 83% adherence to their timeframe standard (Table 1), further analysis showed that 69% of weekend MRs were completed by Monday post-admission.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Standard (%)</th>
<th>Number of patients audited</th>
<th>Compliance to criteria (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weekday MRs completed within 24 hours of admission</td>
<td>100</td>
<td>263</td>
<td>66</td>
</tr>
<tr>
<td>Weekend MRs completed within 72 hours of admission</td>
<td>100</td>
<td>65</td>
<td>83</td>
</tr>
<tr>
<td>Medicines management information</td>
<td>100</td>
<td>302</td>
<td>49</td>
</tr>
<tr>
<td>Discharge information</td>
<td>100</td>
<td>302</td>
<td>47</td>
</tr>
<tr>
<td>Discrepancies documented appropriately</td>
<td>100</td>
<td>210</td>
<td>60</td>
</tr>
</tbody>
</table>

**Discussion/Conclusion**
Timeframe standards set by the MR policy are not being achieved for both weekend and weekday admissions. For weekday admissions, current staffing levels are inadequate for 100% MR completion within 24 hours; the Acute Assessment Unit (AAU) does not receive an MR service on two bays. An increase in funding for a full service would aid MR completion within the set timeframe. The current level of service for weekend admissions does not allow for the same 24 hour standard as the weekday service due to shorter opening hours and reduced staffing. However, rather than the current 72 hour timeframe standard, the policy could be adjusted to drive MR completion by Monday post-admission given that this is currently being achieved for 69% of weekend admissions. A recent increase in funding for weekend staffing could accommodate for this change by allocating a pharmacist to complete MRs on AAU at the weekend.

Standards for MR documentation were also not achieved. Recommendations include the introduction of a compulsory yearly training session recapping on MR policy standards and addressing the importance of clear documentation. In addition, all pharmacists should be assessed against the standards on the completion of an MR during an observed ward visit to receive an MR accreditation.

A limitation of this audit was the impossibility of assessing 10 patients on every ward (small ward size or empty beds meaning 10 patients were not available on the ward). All wards routinely completing MRs were included to ensure valid and generalizable results across the Trust.

Overall, recommendations were made with regards to training, policy adjustment and staff resources as none of the standards were achieved. A monthly snapshot audit to assess whether MR timeframes are being achieved is currently being implemented, with a full re-audit of all MR standards conducted annually.

**References**
Audit of aprotinin usage in a specialist tertiary cardiothoracic centre following reversal of license suspension.

Makhecha S 1, Fischer A 1, Chauhan R 1, Royston D 2

1. Department of Pharmacy. 2. Department of Anaesthesia & Critical Care, Royal Brompton and Harefield NHS Foundation Trust, London

Introduction
Aprotinin is an anti-fibrinolytic agent adopted to reduce excessive post-operative bleeding and blood product usage following cardiac surgery that utilises cardio-pulmonary bypass. Following the suspension of the marketing authorisation of aprotinin 1 in February 2008, based on the Blood Conservation using Antifibrinolytics in Randomised Trial (BART) study 1, its use was limited to individual patients under ‘specials’ regulations. However, in Feb 2012, the European Medicines Agency (EMEA) recommended that the suspension of the license be lifted with revised indications 1. In our institution, a specialist cardiothoracic NHS Trust with two sites, the product was available for use on a named patient basis for patients at high risk of bleeding. In response to the EMEA recommendations, local use increased by 11% with a 34% increase in expenditure. We were interested to know if this increased use complied with the Trust’s local guidance on the use of aprotinin.

Aim
To examine if the use of aprotinin in adults complied with the Trust’s local guidance at both sites in our institution. Additionally, to identify interventions that could improve compliance with local guidance and a plan for their implementation.

Objectives
Audit against the following standards:

- 100% of patients will have an electronic prescription documented on the Trust prescribing system (ICIP Philips, Version D)
- 100% compliance with documentation of test doses on ICIP
- 100% adherence to local guide on indication for use
- 100% of patient will have complete and accurate patient details transferred to the pharmacy computer (JAC) systems

Comparing and contrasting practice:

- Exploring practice between the two clinical sites, where hospital A performs conventional cardiac surgery, heart and lung transplantation and ventricular assist device (VAD) therapy whilst Hospital B performs conventional cardiac surgery only.
- Evaluate the use of blood products within 24 hours of surgery at both sites

At the completion of the baseline audit an implementation plan will be generated.

Method
The project was registered with our local Clinical Audit department, ethics approval was not required. The audit was conducted in collaboration with a consultant anaesthetist. A retrospective review of patient records from July 2011 – July 2012 was conducted to identify all adult patients who received aprotinin documented on ICIP within the first 24 hours of cardiac surgery. Patient related information including name, hospital number, type of cardiac surgical procedure, doses of aprotinin including test doses, age of patient, use of blood products and renal function were collected. ICIP data was compared with JAC records. Missing data were identified by checking paper records retrieved from theatres.

Results
See Table 1. The usage in hospital A was significantly greater than hospital B (17.9% versus 1.9%). Documentation of patient details varied between the two sites, with increased accuracy on JAC compared to ICIP. Dose accuracy recorded on ICIP was low (average 9%). On average, 30.5% of indications for use was outside of Trust recommendations for both sites. Documentation of test doses on ICIP was low with an institutional average of 25.5%.

Table 1

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Hospital A</th>
<th>Hospital B</th>
<th>Overall Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of cardiac operations</td>
<td>951</td>
<td>820</td>
<td>886</td>
</tr>
<tr>
<td>Number of patients audited on aprotinin (% total)</td>
<td>170 (18%)</td>
<td>16 (2%)</td>
<td>10%</td>
</tr>
<tr>
<td>Electronic prescription on ICIP</td>
<td>124 (73%)</td>
<td>10 (63%)</td>
<td>68%</td>
</tr>
<tr>
<td>Test doses documented on ICIP</td>
<td>44 (26%)</td>
<td>4 (25%)</td>
<td>26%</td>
</tr>
<tr>
<td>Indications as per Trust guidance</td>
<td>129 (76%)</td>
<td>10 (63%)</td>
<td>70%</td>
</tr>
<tr>
<td>Patient details on JAC</td>
<td>158 (93%)</td>
<td>15 (94%)</td>
<td>94%</td>
</tr>
<tr>
<td>Dose accuracy ICIP vs JAC records</td>
<td>20 (12%)</td>
<td>1 (6%)</td>
<td>9%</td>
</tr>
<tr>
<td>Blood product use within 24 hrs of procedure</td>
<td>136 (80%)</td>
<td>15 (94%)</td>
<td>87%</td>
</tr>
</tbody>
</table>

Discussion
This audit showed on average 32% of records with no documentation of patient details on ICIP. This is a cause for concern as the product is currently dispensed on a named patient basis. Additionally, the dose difference documented on ICIP (n=458 vials) would have amounted to a loss of approximately £33,500 if paper records had not been reviewed. Also, documentation of test doses was poor. This requirement is identified by the EMEA, the summary of product characteristics (SPC) and the institution.

The variance in usage between the two sites was investigated and a sub analysis was performed. Using ICIP data collected. ICIP data was compared with JAC records. Missing data were identified by checking paper records retrieved from theatres.

To determine if this increased use complied with the Trust’s local guidance on the use of aprotinin.

Implementation
The proposed implementation plan is to present the results of this audit to the departments of Anaesthesia and Surgery to highlight identified issues, to produce an educational poster for the operating theatres and finally to collect further data in 12 months.

Summary
To date, there has been no update from the Medicines and Healthcare Products Regulatory Agency (MHRA) or the manufacturer, and the mystery surrounding when, how, and in whom aprotinin will be licensed still remains.

References

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72. An evaluation of pharmacist prescribing in a hospital setting

Background
Supplementary pharmacist prescribing was introduced in 2003.1 Pharmacist prescribing rapidly evolved with the introduction of pharmacist independent prescribing in 2006, which resulted in pharmacists being able to prescribe all medications within their competence, except controlled drugs (CDs). Pharmacists can now prescribe all medicines.

The White Paper published in 2008, Pharmacy in England: Building on Strengths, Delivering the Future2 showed the importance of the pharmacist playing an integral role in the healthcare system and the desire to maximise the skills and roles of the pharmacist in the future.

Prescribing errors remain a serious problem.3 A systematic review carried out by Lewis et al6 found that medication errors occurred in 7% of all medication orders. The General Medical Council’s EQUIP Study, involving 19 Trusts in North-West England, found 11,077 errors from 124,260 medication orders (8.9% prescribing error rate).³ The error rate varied according to prescriber: 8.4% Foundation Year 1 doctors, 10.3% Foundation Year 2 doctors, consultants 5.9%, nurses 6.1% and pharmacists 0%.³

It is well recognised that involving pharmacists in the prescribing pathway reduces the risk of an error reaching the patient.5 What is less well understood is whether using pharmacists as prescribers also reduces risk of error.

Objectives
To quantify prescribing by pharmacists and the number of prescribing errors made.

Methods
The study was undertaken across three district general hospitals where pharmacists were routinely prescribing across all clinical areas. Part 1 assessed prevalence of prescribing by pharmacists and part 2 assessed the prevalence of prescribing errors made by pharmacists. In part one, point prevalence of prescribing by pharmacists was assessed by counting the number of items prescribed by a pharmacist compared with all items prescribed on the inpatient treatment chart. Data for part 1 were collected for all patients on the ward, one ward at a time from September 2012 to October 2012. In part 2, an assessment of errors made by prescribing pharmacists was made; a clinical check of prescribing by pharmacists was undertaken by other pharmacists, recording errors as categorised by the EQUIP Study.4 Data for part 2 were collected over two consecutive weeks in November 2012. Advice on Ethical Approval was sought from the Trust’s Research Development Unit.

Results
A total of 457 patients were included in part one of the study with the pharmacist prescribing for 182 (39.8%) of patients. Pharmacists prescribed 12.9% of all items (680 from 5274 items). Prescribing type is shown in Table 1. Pharmacists prescribed a wide variety of medication from 12 out of the 15 BNF categories (no prescribing of drugs used in malignancy, immunology and anaesthetics). The majority of prescribing was for central nervous system, cardiovascular and respiratory medicines.

In part two, 1,413 pharmacist prescribed items were clinically checked, with 4 errors (0.3%) noted. The errors found in this study were: 1) simvastatin 40mg and amlodipine 10mg co-prescribed (maximum simvastatin dose with calcium channel blocker is now 20mg); 2) morphine sulphate 10mg/ml solution was prescribed instead of oxycodone 5mg/ml solution; 3) diltiazem co-prescribed with simvastatin 40mg; 4) medication was not signed by the prescriber.

Table 1: Phase 1 – Type of prescribing by pharmacists

<table>
<thead>
<tr>
<th>Type of prescribing</th>
<th>Items prescribed (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regular medication not prescribed</td>
<td>463(68%)</td>
</tr>
<tr>
<td>New drug</td>
<td>127(19%)</td>
</tr>
<tr>
<td>Wrongly prescribed items</td>
<td>51 (8%)</td>
</tr>
<tr>
<td>Item stopped</td>
<td>20 (3%)</td>
</tr>
<tr>
<td>Dose Change</td>
<td>10 (1%)</td>
</tr>
<tr>
<td>Re-written for clarity</td>
<td>9 (1%)</td>
</tr>
<tr>
<td>Total</td>
<td>680 (100%)</td>
</tr>
</tbody>
</table>

Discussion
This study has shown that almost half of patients admitted to two district general hospitals were prescribed a medicine by a pharmacist, with 1 in 8 of all items being prescribed by pharmacists. The main area of prescribing was regular medicines not being prescribed following admission. The EQUIP study reported that 1 in 3 prescriptions for regular medicines were omitted. Whilst our study shows pharmacists improving prescribing in areas such as regular medicines being omitted, it is also encouraging to see that 1 in 5 of the items prescribed by pharmacists was for new therapy. This study also shows that pharmacists are not focusing on a limited formulary of medicines but are prescribing from all but three sections of the BNF.

Pharmacists in our study have proven to be competent and safe prescribers with an error rate of 0.3%; this has been demonstrated in a number of clinical settings.

References
Background
The estimated cost of medicines waste in primary care and home care is £300 million per annum in England in 2009. Given the financial pressures on the NHS to make efficiency savings, is now the right time to discuss reusing medicines returned by patients? The Royal College of Nursing have called to reuse returned medicines and the NHS Sustainable Development Unit survey found that 52% of the public would likely accept re-issued medicines. The General Pharmaceutical Council has also stated that "medicines returned to pharmacies by patients and those that are date expired can be used in the event of a pandemic influenza". The current situation in the United Kingdom is that medicines returned by patients must be destroyed and not be reused.

Mackridge et al assessed returned medication for possible reuse using the following criteria: over 6 months until expired, complete and unadulterated patient pack, unbroken security seal in the case of devices and no special storage requirements; 25.3% of patient returns met these criteria for reuse. Before a wider debate on reusing returned medicines can be started, we need to understand better the views of patients and professionals on reusing returned medicines.

Objectives
To assess patient and professional views on reusing returned patient medication.

Methods
Two questionnaires (patient and professional) were developed using current literature and tested. The professional questionnaire was converted to an electronic survey using Survey Monkey™. The study was undertaken at the end of 2012 in North East England. The survey link was emailed out to one general practitioner and practice nurse in all medical practices across three primary care trusts. It was sent to all community pharmacies, with a covering letter asking one pharmacist to complete the survey from each pharmacy. It was sent to every pharmacist working at three hospitals in North East England and pharmacists working for three primary care trusts. A reminder email was sent out four weeks after the initial email. The patient survey population was inpatients and outpatients at a hospital in North East England. The survey was a self completed paper based questionnaire. Both surveys were analysed descriptively with thematic analysis being used for open questions. The NHS Trust’s R&D department advised that NHS ethics was not needed.

Results
The overall response rate was 43.2% (309 responses from 715 patients and professionals), with 38% (n=46/121) of doctors, 44.6% (n=54/121) of nurses, 43.2% (n=83/192) of community pharmacists, 41.1% (n=53/129) of hospital pharmacists, 73.7% (n=14/19) of practice pharmacists and 44.4% (n=59/133) of patients responding.

Overall 70.2% (n=217/309) of patients and professionals supported reusing medicines, with 89.4% (42) of doctors, 75.9% (41) of nurses, 61.6% (39) of pharmacists and 66.1% (39) of patients stating that reusing medicines would be acceptable. However, only 14.6% (45/309) would reuse medicines unconditionally, with 55.7% (172/309) insisting on some form of check before medicines are reused. For respondents refusing to reuse medicines, the main reasons are show in Table 1.

Table 1: Thematic analysis of why respondents won’t reuse medicine

<table>
<thead>
<tr>
<th>Professionals</th>
<th>Thematic Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Doctors</strong></td>
<td>- Tampering with medicines “Tampering, where did it actually come from?”</td>
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<td></td>
<td>- Contamination “counterfeit medicines and people adulterating medication”</td>
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<td></td>
<td>- Fraud “Perverse incentive for pharmacies to re-use returned medication and claim funding twice”</td>
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<tr>
<td><strong>Nurses</strong></td>
<td>- Tampering with medicines “Medicines may not be as on pack - may have been switched - (not purposely) but a dangerous possibility”</td>
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<td></td>
<td>- Infection control “Health and Safety/Infection Control”</td>
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<td></td>
<td>- Storage “that they have been handled by someone else, not stored correctly, muddled up with other medicines”</td>
</tr>
<tr>
<td><strong>Pharmacists</strong></td>
<td>- Storage</td>
</tr>
<tr>
<td></td>
<td>- Fraud concerns “How payment will be managed is a further concern. How would the NHSBSA know what to pay us for?”</td>
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<td></td>
<td>- Quality “unable to guarantee the quality of the product, even if the packaging is intact and the product looks fine”</td>
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<tr>
<td><strong>Patients</strong></td>
<td>- Being dispensed expired medicines “could be out of date, or contaminated”</td>
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<tr>
<td></td>
<td>- Handled by persons unknown “do not know where they have been”</td>
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<tr>
<td></td>
<td>- Contamination “catching disease”</td>
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</tbody>
</table>

Discussion
The government has pledged to make £20 billion of efficiency savings in the NHS by 2015. Medicines are a major cost to the NHS with £300m of drugs being wasted every year. This survey of professionals and patients has shown that over two thirds of respondents would support the reuse of medicines returned by patients. Those not supporting the reuse raise important concerns regarding the safe reuse of medicines. Despite the relatively small sample size of this study, particularly by study group, there appears to be a clear indication of support for medicines reuse. Now is the right time to be undertaking further robust research into the development and testing of processes that would allow for the safe, effective and ethical re-introduction of previously dispensed medicines back into the supply chain.

References
Introduction
The antimicrobial stewardship guidance “Start smart- then focus”, published by the Department of Health highlights the importance of restricting unnecessary antimicrobial prescribing in secondary care. The main aim of the guidance is to reduce antimicrobial resistance and improve clinical outcomes. In October 2012 Ealing Hospital NHS Trust (EHT) introduced a new neonatal and paediatric antimicrobial guideline to ensure the safe and effective use of antibiotics in paediatrics. The guideline was devised by a team of consultants, specialist paediatric pharmacist and the microbiology team, and is evidence-based according to local practice and antibiotic resistance patterns. The guideline implemented new changes according to recommendations made by the National Institute for Health and Clinical Excellence (NICE) and the British Thoracic Society, which includes the use of Gentamicin and Benzylpenicillin for the treatment of neonatal sepsis, and the use of Amoxicillin for chest infections as opposed to Co-amoxiclav respectively.

Aim
Ensure appropriate prescribing of antibiotics for all paediatric inpatients and outpatients according to the new antimicrobial guideline.

Objectives
1. Design an audit data collection form to assess adherence to EHT’s neonatal and paediatric antimicrobial guideline.
2. Audit against the following standards: 100% of antibiotics prescribed must comply with the indication as per guideline, allergy status and indication of antibiotic documented on drug chart, microbiology/ infectious disease approval obtained if outside the guideline, documentation of a 48 hour review, stop date indicated and duration of antimicrobial therapy must comply with guideline.
3. Collect data during the month of November 2012 for inpatient and outpatient paediatrics receiving antimicrobial therapy.
4. Analyse data and examine compliance with the guideline.
5. Present results to paediatric and pharmacy department.
6. Suggests recommendations or devise an action plan from the audit to increase compliance to the guideline.

Method
The audit proposal gained permission from Ealing Hospital NHS Trust audit department and did not require ethical approval from the National Research Ethics department. The audit was undertaken in collaboration with the paediatric ward pharmacists and the dispensary pharmacist at the screening bench in outpatients. Initially a week’s pilot was conducted using the specially designed audit form and data collection included all paediatric patients who were prescribed antibiotics. After the pilot two amendments were made to the data collection form and official data collection was from 04/11/12 until 30/11/12. The results from the pilot were not included in the data analysis as it was mainly from SCBU and Lammass of which we had sufficient data. Data collection included all paediatric patients prescribed antibiotics from all paediatric wards including the special care baby unit (SCBU), maternity ward (Lammass) and out-patients (including A&E). The audit tool included the criteria shown in the table below.

Results
During the month of November a total of 73 paediatric patients received antibiotics, with a total of 111 antibiotics prescribed. With regards to indication a total of 95% (105) of antibiotics prescribed were for an indication as per guideline (table 1). 95% (70) of patients had their allergy status documented, 76% (84) of antibiotics prescribed had the relevant indication documented on the drug chart, 14% (16) had a 48 hour review documented and 14% (15) had a stop date. Due to a lack of documentation of duration or stop date it was not possible to assess whether duration complied with the guideline.

Table 1: audit results

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Number (percentage of total)</th>
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</thead>
<tbody>
<tr>
<td>Number of patients audited</td>
<td>73</td>
</tr>
<tr>
<td>Number of antibiotics prescribed</td>
<td>111</td>
</tr>
<tr>
<td>Microbiology/ Infectious disease approval obtained if outside the guideline (n=10)</td>
<td>4 (40%)</td>
</tr>
<tr>
<td>Total antibiotics prescribed with indication as per guideline (n=111)</td>
<td>105 (95%)</td>
</tr>
<tr>
<td>Allergy status documented (n=73)</td>
<td>70 (95%)</td>
</tr>
<tr>
<td>Indication documented on drug chart (n=111)</td>
<td>84 (76%)</td>
</tr>
<tr>
<td>Documentation of 48 hour review (n=111)</td>
<td>16 (14%)</td>
</tr>
<tr>
<td>Stop date given / duration documented (n=111)</td>
<td>15 (14%)</td>
</tr>
</tbody>
</table>

Discussion
The guideline was well received by the doctors with the majority of antibiotics prescribed (95%) were for an indication as per guideline. The main area of concern is that doctors are not prescribing antibiotics according to the general antibiotic prescribing policy as set out by the department of health. Only 14% of antibiotics prescribed had a 48 hour review or duration documented. Although the duration of antibiotics administered may be correct, however there is no indication on the drug chart as to whether the doctor had reviewed the effectiveness of the antibiotic in the relevant patient. Another area of concern is documentation of indication with only 76% of antibiotics prescribed had their indication documented on the drug chart. Documenting indication on the drug chart allows other healthcare professionals to identify why the patient is taking a certain antibiotic. The main limitation to the audit is that it was done during the month of November, which may have not been the peak month for infections in children. Further work could be to conduct the audit during the winter and summer months separately to compare different prescribing patterns for different infections which are prevalent during that time of year.

In conclusion 100% compliance to the guideline standards were not met and further action is required. This could be achieved by providing further training to doctors with regards to antimicrobial prescribing and highlighting the importance of adhering to the guideline. The guideline should be reviewed on a yearly basis to ensure that the recommended antibiotics still remain the most effective for that infection.

References