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Regional Pre-Registration Pharmacist Winners 2019

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Bowmed Ibisqus Antimicrobial Management Award 2019
1. Investigating Penicillin Allergy in a District General Hospital

Katie Heard, Daniel Johnson, Munirah Rahman, Croydon Health Services NHS Trust

Background

Beta-lactam antibiotics (BL) are among the most effective and widely prescribed anti-microbial medications. While beta-lactam allergy is reported by 10-16%[1,2] of the UK population, 10% or fewer are typically a true IgE-mediated sensitivity[1]. BL allergy limits antibiotic choice and patients may come to harm as a result[3,4]. NICE guideline CG183, "Drug Allergy: Diagnosis and Management"[5] makes recommendations on the documentation of drug allergies. It advises that at least the drug, nature of allergy, severity and date of first occurrence are recorded. We audit compliance with CG183 at a district general hospital, aiming to reduce inappropriate limitation to antibiotic treatment created by inadequate documentation of BL allergy.

Objectives

i. Obtain the prevalence of documented BL allergy in inpatients
ii. Audit the documentation of beta-lactam allergy against national guidelines.
iii. Determine the feasibility to document in full, further characterised or remove beta-lactam allergy.

Method

(i) Point prevalence survey of the adult inpatient population obtaining allergy data from the electronic patient record (EPR) [Cerner®]. Allergies and adverse reactions to "penicillin: - antibiotic class -" and specific BL were identified. (ii) Data was audited against NICE guidance CG183[5]. (iii) A foundation doctor conducted a structured interview with patients with a documented beta-lactam allergy, seeking to obtain full documentation. Local clinical governance approval was obtained [ref 2019/121]. This study did not require ethical approval.

Results

Of 489 adult inpatients, 61 (12.5%) had documented allergies to BL. 11 severe, including anaphylaxis.
Nature of reaction was documented for 34 patients, severity in 16 and date of onset in 2, 1 documentation was fully compliant.
Excluding patients unavailable due to discharge, illness or absence, 35 patients were interviewed. Full documentation was achieved in 17 patients, 5 severe allergies were identified and 6 were delabelled. 16 patients had no documented nature of allergy prior to interview; post-consultation 6 reactions remained unknown.

Conclusion

The observed prevalence of BL allergy aligns with UK population estimates[1,2]. Documentation of beta-lactam allergy is currently sporadic, a short, structured interview, enables beta-lactam allergies to be documented in full, further characterised or removed.
Future work includes educating patients and staff, changing the process of allergy recording, and an investigation into the antibiotic therapy and patient outcomes of those with a documented BL allergy vs not.

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UKCPA Patient Safety Award 2019
2. Pharmacist Independent Prescribers – Making Discharge Safer

Taylor J & Davies C, The Newcastle upon Tyne Hospitals NHS Foundation Trust, Newcastle upon Tyne

Introduction

Publications have demonstrated that prescribing errors in inpatient and discharge settings by doctors remain a patient safety concern[1,2]. A service improvement initiative identified errors on discharge prescriptions from our trust as having a significant negative impact on patient safety/quality of care. Pharmacist Independent Prescribers (PIPs) were proposed as a possible solution to this[3,4].

Objectives

1. To establish the impact of PIPs on the error rate on discharge prescriptions from two adult medical wards in an NHS secondary care teaching hospital in England.

Method

This study did not require ethics approval.
Pharmacist Independent Prescribers (PIPs) were utilised to prescribe discharge medication on two adult inpatient medical wards between June 2018 and March 2019. Doctors continued to prescribe the discharge medication on the other four adult inpatient wards on the same site. PIPs were already an integral part of the multidisciplinary team (MDT) on the wards, attending the daily MDT meeting and making active clinical decisions, but the prescribing of discharge medications and adding supplementary information regarding medications to the discharge letter were new interventions. Prescribing errors identified on discharge were recorded by non-prescribing clinical pharmacists working with those wards for one week of every month and categorised as per the EQUIP study[2].

Results

A total of 1101 prescriptions were reviewed; 706 written by doctors and 395 by PIPs. Analysis of data showed that 6% of prescriptions written by PIPs contained errors. PIPs made less prescribing errors than doctors on discharge prescriptions (6% of prescriptions contained one or more errors vs 46% of prescriptions). 19% of prescriptions written by doctors contained multiple errors compared to 0.5% of prescriptions written by PIPs. This demonstrates that PIPs facilitate a safer discharge process.

Conclusions

Our data demonstrates that PIPs facilitate safer transfer of care when they are involved with the discharge prescribing process. Utilising pharmacist prescribers within the multidisciplinary skill mix on medical wards can significantly benefit patient care and safety.

During the course of our work, we identified that the use of PIPs resulted in the release of doctor time and anecdotally improved the time to completion of discharge letters. Future work is needed to explore whether length of hospital stay could be influenced by PIPs.

References

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Poster Presentations

3. Clinical Review of antifungal treatments in cancer patients in a UK district hospital

Adamson C, Liu A, Gloucestershire Hospitals NHS Foundation Trust, CGH Cheltenham

This study did not require ethics approval

Background

Invasive fungal diseases are important causes of morbidity and mortality. Cancer patients are at high risk of invasive fungal infections due to immunosuppression caused by chemotherapy and radiotherapy, hence the usage of antifungals is high in this speciality. However, nationwide there is lack of consensual information and guidance on prescribing antifungal drugs which has increased the risk of inappropriate use and financial burden to health authorities. Therefore, a prospective audit was carried out in a UK district hospital to assess the appropriateness of antifungal treatments on cancer patients and make recommendations accordingly. This audit is part of the medicines optimisation CQUIN 2018/19 from the NHS England South West region.

Objectives

1. Ensure antifungal choice, dose and duration is compliant with local antifungal guidelines or recommended by microbiologists.
2. Ensure all patients initiated on antifungals are reviewed within 48-72 hours and weekly thereafter by the clinical team.
3. Ensure appropriate diagnostic tests are undertaken for patients prescribed antifungals.

Method

A prospective audit to capture all inpatients in haematology/oncology adult wards within quarters 3 and 4 in 2018/19 who received antifungal treatment for either invasive candidiasis/candidaemia or mould infections, and antifungal prophylaxis (primary or secondary).

Results

26 patients were audited, and 33 antifungal treatments were prescribed. 11 patients were prescribed antifungals for treatment, including 3 cases of invasive candidiasis, 3 cases of candidaemia, 1 case of invasive aspergillosis, and 4 cases of localised infections such as oral candidiasis. 15 patients were prescribed prophylactic antifungal treatment for immunosuppression; of which two patients had their antifungal changed due to invasive candidaemia and fungal chest infection whilst they were receiving prophylaxis.

21 prescriptions (64%; N=33) complied with the local guidelines or were recommended by microbiologists. All patients receiving antifungal treatments for invasive fungal infections have followed microbiology guidance in terms of diagnostic tests taken. However, only 7 antifungal prescriptions (21%, N=33) had been reviewed within 48-72 hours; but review at week 1 increased by 12%. 12 prescriptions (36.4%, N=33) had no antifungal review whatsoever. There were 429 days of antifungal therapy costing the hospital £35,936.92. Four patients were on posaconazole, a high cost drug, which is currently not recommended on the local guideline for antifungal prophylaxis in immunosuppressed patients.

Conclusions

More work is needed to improve compliance with the local guidelines and surveillance of antifungal use. It further proves that there is a need for a local antifungal stewardship team (AFS), which is outlined in the latest NHSE Medicines Optimisation CQUIN 2019/20 Programme[1], and that appropriate diagnostic investigations[2] should be undertaken prior antifungal treatments. Regular review of antifungals in view of duration, choice, de-escalation/ IV to oral switch and therapeutic drug monitoring is crucial for prudent prescribing. Regional antifungal stewardship should be encouraged to ensure guidelines are current and tailored to the patient needs.

References

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4. An audit on initiation of obeticholic acid for primary biliary cholangitis

Anindita Adhikary, Pre-registration Pharmacist, Supervisor: Louise McGivern, Advanced Clinical Pharmacist – Hepatology, Leeds Teaching Hospital

Background

Obeticholic acid (OCA) is a new treatment option for primary biliary cholangitis (PBC) introduced in April 2017. Current main-stay treatment has been treatment with ursodeoxycholic acid (UDCA). An estimated 45% of patients taking UDCA may not be achieving an adequate response to treatment so there is an on-going need for second-line therapies.

Objectives

To identify if OCA is prescribed in the Trust according to the NHSE standards i.e. for PBC patients who are intolerant to or are not responding to therapeutic doses of UDCA.

Audit Standards
OCA should be prescribed according to NHSE guidance 100% of the time through MDT referral. It should be prescribed in combination with UDCA in patients who show an inadequate response to UDCA i.e. persistence of alkaline phosphatase (ALP) of more than 1.67 times the ULN at 12 months of treatment or as monotherapy if patients are intolerant to UDCA.

Methodology
Patients were identified from PBC-OCA MDT list between April 2018 and September 2018. 29 patients were included in this audit and electronic prescribing was used to look back at patients. The data collected included patients who were referred for consideration of OCA and who were not eligible, the current dose of UDCA patients were on before starting OCA, patients showing inadequate response to UDCA (ALP of more than 1.67 times ULN on full dose of UDCA for at least 6 months), patients intolerant to UDCA, side effects of UDCA experienced by the patients and if PBC was proven in the patients. This data collected was recorded in a Microsoft Excel spread sheet which was designed for the audit.

Results
Of the 29 patients data was collected for, 19 patients were recommended OCA. 100% patients were prescribed OCA that completely followed the guideline. 63% had sub-optimal response to UDCA and 32% were intolerant to UDCA. 5% had suboptimal response to UDCA as well as were intolerant to it.
Of 10 patients who were not recommended OCA, 50% of the patients were not on the full dose of UDCA, in 20% patients, ALP level did not meet the criteria for prescribing OCA, in the remaining 30%, either the patient declined UDCA (10%), PBC was not proven (10%) or ALP<1.67xULN and PBC not proven. Thus, the audit did meet the standard set for 100% of the patients. Side effects to UDCA noted were mainly pruritus (83%), vomiting (8%) and diarrhoea (9%).

Conclusion
The audit did meet the standard set for 100% of the patients. The initiation of OCA followed the NHSE guideline in that the patients who were on UDCA for PBC, either showed inadequate response to UDCA or were intolerant to it. The patients who did not meet the criteria for OCA were mainly not on full dose of UDCA and needed to be titrated up before they could be considered for initiating OCA.

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5. What makes pharmacists feel valued? An interpretative phenomenological analysis

WITHDRAWN

6. Stress in the NHS: Assessing Pharmacist and technician levels of perceived stress

WITHDRAWN

7. Implementation of self-administration of medicines at a community hospital rehabilitation unit

Helen Allcutt, Kate Ellis and Lizzie O'Neill, North Somerset Community Partnership, Clevedon

Context
The work was conducted in a small community hospital in South West England. The patient group were rehabilitation inpatients; the team included pharmacists, a pharmacy technician and nurses. This study did not require ethics approval.

Problem
Patients should maintain responsibility for self-administration of medicines whilst inpatients unless assessed as unsafe[1]. Patients were not being offered the opportunity to self-administer; staff administered all medicines.
Self-administration can improve medicines compliance (95% up from 83%) and understanding (90% up from 46%)[2], reducing the risk of errors, improving medicines safety and promoting independence. Not offering self-administration prevents patients from availing of associated benefits.

Assessment of problem
The pharmacy team recognised that self-administration was not happening and consulted nursing managers; the infrastructure to support self-administration was not in place.
Self-administration is part of rehabilitation; when the hospital was closed for refurbishment, with a planned shift to rehabilitation, managers were engaged about self-administration.

Intervention
The interventions were: purchase medication lockers; develop a Standard Operating Procedure and Assessment Tool; staff training; provide patient information to enable informed consent and opportunities to ask questions; undertake assessments to identify suitable candidates.

Strategy for change
Implementation was scheduled for December 2017. A March 2019 target of assessing 95% of patients within 48 hours of admission was set. Staff engagement, training, equipment purchase and procedure ratification was undertaken prior to initiation. Implementation was planned in two phases: assessments undertaken by pharmacists and pharmacy technician only; gradual addition of nurses also completing assessments.

Measurement of improvement
During 2018-19, quantitative data was collected, measuring timing of assessment and number of patients self-administering. Data was collated and analysed in Microsoft Excel. Patient feedback was obtained via a focus group.

Effects of changes
The target was achieved by March 2019. 121 patients were admitted in 2018-19, 62 reached 'supervised' and 16 attained 'independent' self-administration. This shows patients are now provided opportunities to self-administer medicines, a significant change in practice.

Implementation has promoted independence and provided assurance about patients' ability to safely manage their medicines.
Patients were keen to self-administer and understand their treatment. Patients described anxiety and disempowerment when not self-administering in acute hospitals. One patient wanted more information about medicines.

Conclusions
Staff training and procedure development was key. Future work includes addressing patients' desire for more medicines-related information.
Challenges to implementation included nurse staffing issues and nurses being less confident completing assessments than pharmacy professionals. Additional nurse support was provided in response to staff feedback.
Offering patients the opportunity to self-administer medicines has been fully implemented with significant numbers of patients participating. Self-administration improves patient safety and experience because patients will be better prepared for discharge.

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8. Mobile Dispensary Project

Ana Armstrong, Tania Beadling, Wendy Longman Joanne Rhodes, Surrey and Sussex Healthcare NHS Trust, Redhill

Ethics approval not required

Problem
Routine data collection showed that discharge medication To Take Out (TTO) is completed on average within 65 minutes of arriving in pharmacy. TTOs then wait on average for 1 hour (range 18 minutes to 3 hours) for a porter to collect them and deliver back to the wards. Medication that is required more urgently will often be collected by ward staff, however this takes front line staff away from patient facing roles.

Intervention
We trialled the use of a mobile dispensary, consisting of a computer workstation with integrated lockable cupboard and a bluetooth printer, for one month to see if we could speed up TTO processing time, whilst maintaining the same level of patient safety. This study did not require ethics approval. The mobile dispensary was allocated to the medicines management pharmacy technician (MMT) responsible for four Elderly Care wards. It was stocked with medications that would commonly be required for TTOs, and also with medication that could be required at short notice such as restricted antibiotics and intravenous iron. The MMT was contactable via bleep, and would aim to dispense as many items on the ward as possible.
Data collected included if the medication was for a TTO, an in-patient item, or an item that needed relabelling, how many items dispensed per patient, and the time taken for the whole dispensing process to be completed.

Results
During the project period the Elderly Care wards required 25 TTO, which took 229 minutes to dispense. Of these, 17 TTOs bypassed the main dispensary completely, and were done at the mobile dispensary. They took an average of 14 minutes (range 1 – 52 minutes) from being screened by the pharmacist, to being ready on the ward for a patient to take away. Combined these 17 TTOs took a total of 4 hours to process (average 14 minutes per TTO) versus an estimated 42.5 hours (average 150 minutes per TTO) if they had gone to main pharmacy and delivered back to the ward with a porter.
There were 126 items dispensed for in-patient on the wards. The total time spent on these was 172 minutes (2.8 hours), an average of 1.4 minutes per item. Using pre-project data we estimated that those same items could have taken 25.2 hours (average 12 minutes per item) to be dispensed by main pharmacy and then get back to the ward if they were collected by a porter

Discussion
The results show that the mobile dispensary resulted in medication being available on the wards ten times quicker compared to being dispensed in the main pharmacy department. Other potential benefits include a computer solely for the use of the pharmacy team, less front line staff time taken away from patient duties to pick up medication, increased patient satisfaction as medication available quicker, and beds becoming available earlier on the day of discharge.
On the back of these results the Trust has invested in two mobile dispensaries so that the pharmacy department can keep on providing this service permanently.

9. Adaptation of the Royal Stoke Pharmacy Workforce Calculator (RSPWC) for a specialist nephrology ward

Kate Webb[1], Eleanor Barratt[2], Sarah Buckley[1] and Ruth Bednall[1]
[1] University Hospitals of North Midlands NHS Trust, Stoke-on-Trent. [2] Keele University, Keele

Background
In 2018, the RSPWC was validated nationally.[1] The RSPWC identifies clinical pharmacy staffing levels and its associated costs. The calculator was created for use in generalist in-patient areas. It's use in specialist areas such as nephrology has never been explored.
Clinical pharmacy requirements for Nephrology were described in 2002, recommending 1 whole time equivalent (wte) pharmacist per 250 renal replacement patients and 1 wte pharmacist per 60 transplants per annum.[2] However there was no information regarding the clinical staffing levels required to cover a Nephrology ward.

Objective
This service evaluation explores whether the RSPWC can be adapted for use to a specialist Nephrology ward, caring for Renal Transplant, Acute Kidney Injury, Peritoneal dialysis, Haemodialysis, Vasculitis and Chronic Kidney Disease patients.

Method
This service evaluation did not require ethics approval. Data was collected in January 2018 when the 28 bedded Nephrology ward had an average length of stay of 5.1 days.
Initially the daily tasks completed by a pharmacist (Band 8a / 8b) and medicines management technician (Band 6) on the Nephrology ward were observed and documented. On five occasions, the time taken to complete daily tasks and the number of times an activity was conducted per patient

admission was assessed. These times were averaged, which replicates the work done to validate the RSPWC.[1] The average number of medications on a Nephrology in-patient chart was calculated by reviewing all 28 patient charts on the ward on one day. This data was then compared to the data within the RSPWC, to see whether it could be adapted for use on this Nephrology ward.

Results

Manipulation of the RSPWC to this Nephrology ward, identified that 1.71wte pharmacists and 1.12 MMT's are required to staff the ward, with costs increasing from £122,123 to £155,512.

Daily tasks conducted on the Nephrology ward replicated those described within the RPSWC calculator apart from the addition of attendance on consultant morning ward rounds. The average number of medications on a drug chart increased from 8 in the original RSPWC to 18. Intervention frequency also increased from 1 to 9 interventions per patient admission. However, the time taken for each intervention reduced from 5 minutes to 1.8 minutes.

Conclusion

This service evaluation has demonstrated that the RSPWC can be adapted for use to a specialist nephrology ward.

The study showed that several of the pharmacist tasks were completed in less time compared to the validated RSPWC. The authors believe that this was because senior pharmacists cover the specialist area.

Further work needs to be undertaken to validate the transferability of this study to other Nephrology wards nationally.

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10. Evaluating the effectiveness of digital communication within the Medication Safety Officer network

Samrina Bhatti[1], Nicola Wake[1], Yogini Jani[2], [1]NHS Specialist Pharmacy Service, London,
[2]UCLH Centre for Medicines Optimisation Research and Education, London

Background

The Medication Safety Officer (MSO) role was created following a Patient Safety Alert, with an action to network through regular online webinar meetings and an online forum[1.] Our aim was to assess the effectiveness of digital platforms in facilitating interaction and communication by the MSO network.

Objective(s)

The objectives were to:

- establish the proportion of MSOs who interact through monthly webinars and online forum
- identify barriers and facilitators for engaging digitally within the MSO network

Method

An online survey and semi-structured interviews were used. The online survey was disseminated through the official mailing list for all (400) MSOs registered with the Central Alerting System in December 2018. Responses were anonymous unless respondents volunteered their contact details in the survey, which was designed to recruit participants for a follow up semi-structured telephone interview to gain more insight. Semi-structured interviews were conducted by telephone, transcribed and transcripts sent to the interviewees for validation of responses. This study did not require ethics approval.

Results

84 MSOs responded to the survey (21% response rate) and ten individuals participated in the semi-structured interviews. The majority of the respondents were pharmacists (79/84, 94%), mainly from NHS Trust large healthcare providers (44/84, 52%).

Most MSOs (61/84, 73%) joined the monthly webinars and considered the frequency appropriate. 47/84 (56%) of the respondents believed the webinar was useful for networking via the chat function. However, interview data highlighted that with the monthly frequency, the chat function was considered more suitable for non-urgent medication safety issues. Ten (12%) survey respondents reported they did not attend the webinars, some due to technical difficulties and others because of lack of time within their role.

The online forum was used less frequently, with a third of the respondents (27/84, 32%) that had never used it and only 3/84 (4%) having used it more than once a month. Reasons included difficulty in gaining access due to security restrictions, usability and lack of responsiveness to queries. Approximately half of the MSOs 37/84 (44%) reported having face to face meetings with other MSOs in their geographical area, which was beneficial in discussing non-urgent queries. Others had a preference to email or telephone a colleague previously known to them, for timely medication safety advice.

The main limitation of the work is the low response rate that may not be fully representative. Those who engage with the service are also more likely to engage with the survey. For further studies, unengaged individuals could be identified via the MHRA and approached.

Conclusions

Digital communications through webinars and online forums can facilitate networking, but requires a robust information technology infrastructure that can be accessed without difficulty. User friendly platforms can help the MSO network achieve critical mass, greater interaction, and allowing access to timely information[2].

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11. An audit of stock oral/enteral liquid management on the adult intensive care units (ITU's)

Aoife Boyle, Pharmacy Department, St George's University Hospitals NHS Foundation Trust, London

Background

Most critical care patients have enteral feeding tubes sited for feed and drug administration; therefore many liquids are required to be kept as stock. Recording the date-of-opening (DOO) of a liquid is essential to enable an expiry date check, whilst ENFit® bottle adapters (bungs) should be utilised to reduce risk of wrong route administration, improve administration accuracy and reduce waste, as highlighted by the National Patient Safety Agency alert (2007).[1]

The stability of oral liquids is altered on opening; in-use shelf life may be significantly shorter than the manufacturer's expiry date, increasing risk of waste. Recording the date-of-opening (DOO) of a liquid is therefore essential to enable an expiry date check.

This audit is a follow-up of a recent quality improvement project on the General Intensive Care Unit to improve stock liquid management and to determine current practice on the other adult ICU's.

Objective(s)

- To evaluate the number of opened stock liquids with a completed DOO label.
- To determine the number of opened stock liquids that contain an ENFit® bung.

The audit standards are:

- 100% of opened stock liquids have the DOO label completed.
- 100% of opened stock liquid contain an ENFit® bung.

Method

This audit included stock oral liquids in the stock cupboards across the adult ITU's (n=4) and at patient's bedsides (n=49) over a three-day period (7th-9th May 2019).

A re-audit was undertaken three weeks later (28th-31st May), after a nursing awareness campaign on the importance of correct liquid management was conducted through the ITU matrons and social media.

Data was prospectively collected by two pharmacists; one per audit cycle using the same method with the data collection tool designed. This study did not require ethics approval.

Results

Baseline audit: 56.3% of opened stock liquids had a completed DOO label, 15.5% contained a bung.

Re-audit: 77.9% had a completed DOO label, 38.2% contained a bung.

Only 9.95% of opened bottles achieved both standards at baseline. This increased to 33.8% on re-audit.

32 bottles were identified for destruction due to the lack of a date-of-opening at baseline. That wastage was calculated at £212.10.

Re-audit identified 16 bottles for destruction, with a wastage cost of £105.77.

Conclusion

The baseline audit identified a significant level of wastage across the ITU's; primarily due to poor DOO recording, causing products to be unusable. Minimising medicine waste is a clear aim of the recent NHS Long Term Plan, with medication optimisation a key focus.[2] Ensuring safe medication use is essential to improve clinical outcomes and achieve financial goals.

The short audit periods were recognised as a limitation; potentially affecting data accuracy and generalisability. In order to reduce wastage, a stock list review was undertaken to identify liquids which could be switched to crushable/dispersible tablets. Continuous nurse education is also required.

References

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12. The impact of an electronic alert in preventing duplicate anticoagulant prescribing

Alison Brown[1], Gillian Cavell[1], Nikita Dogra[2], Cate Whittlesea[2], [1] Pharmacy Department, King's College Hospital, London, [2] UCL School of Pharmacy, University College London

Background

Anticoagulants are high-risk drugs. An NHS England Patient Safety Alert was published in 2015 highlighting harm from inappropriate co-prescription of anticoagulants[1].

A 'duplicate anticoagulant alert' (Anticoagulant MLM) was implemented within our electronic prescribing system (EPMA) to alert prescribers if co-prescription of two or more anticoagulants was attempted, with the intention of preventing the completion of a potentially harmful prescription.

We conducted a retrospective review of the impact of the Anticoagulant MLM on preventing co-prescription of low-molecular weight heparin (LMWH) and direct oral anticoagulants (DOACS)

Objectives

- To measure the extent to which the alert prevents unintentional duplicate prescription of LMWH and DOACs (standard 100%)
- To determine the number of alert override incidents and resulting harms.

Methods

The study took place in a 950 bed acute teaching hospital in the UK.

A report of all Anticoagulant MLM alerts generated by the EP system for adult inpatients between 26th June 2017-8th October 2018 was generated. Incidents where attempts were made to prescribe a LMWH to a patient already prescribed a DOAC were identified.

Data on drugs prescribed, alert acceptance or override and duplicate anticoagulant administration were collected.Where the alert was overridden, appropriateness of the override was assessed using electronic patient records (EPR) by an anticoagulation specialist pharmacist.

Ethics approval was not needed

Results

During the study period the Anticoagulant MLM triggered on 894 occasions, 113 were in response to attempted prescription of a LMWH for a patient already prescribed a DOAC.

Of these 65/113 (57.5%) were overridden (duplicate prescription completed) and 48/113 (42.5%) were accepted (duplicate prescription avoided).

Of the 65 overridden alerts, consecutive doses of both anticoagulants were scheduled appropriately and no duplicate dose was administered in 44 cases (44/65, 67.7%).

Fifteen duplicate prescriptions were either cancelled before administration or not administered concurrently (15/65, 23.1%).
Duplicate doses were administered against 6 prescriptions (6/65, 9.2%), on 3 occasions within 2 hours of each other with duplicate therapeutic effect.
No patient harm was identified from EPR review.

Conclusions
The alert prevented inappropriate co-prescription of anticoagulants to 48 patients. Overrides were justified in 44 cases. Therefore, anticoagulants were correctly prescribed for 92/113 (81.4%) patients. The standard of 100% was not met
Prescription review prevented duplicate anticoagulation therapy from being administered to 15 patients.
It is unclear why alerts were overridden when inappropriate. It was outside the scope of this project to interview prescribers. 'Alert fatigue' [2] and alert frequency[3] have been described as factors limiting the effectiveness of electronic alerts in changing a planned course of action.
The alert remains in place as a barrier to error. Further work is needed to identify reasons for anticoagulant alert overrides.

References

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13. Flushing IV lines in accordance with a NHS Patient Safety Alert

Avani Chana, Nina Barnett, Viraj Patel, Pharmacy Department, London North West University Healthcare NHS Trust

Background
When an infusion is administered, there is a small amount of drug that remains in the tubing, known as "dead" volume. Therefore, it is important to flush the administration tubing (infusion set) to ensure the expected dose of medication is administered.
In November 2017 the NHS issued a patient safety alert, focussing on flushing of infusion sets and cannulae after procedures, to be implemented by August 2018[1]. However, at LNWUHT, there are currently no local guidelines to support implementation.

Objective
To determine whether infusion sets are being flushed at LNWUHT in accordance with the NHS patient safety alert.

Method
Northwick Park Hospital and Central Middlesex Hospital sites at LNWUHT were included in this study, where 24 wards at Northwick Park Hospital and 1 ward at Central Middlesex Hospitals were audited retrospectively for a period of 1 week during Oct 2018. This study did not require ethics approval.
Two methods to assess flushing were used:
A convenience sample of 10 infusion sets were retrieved from the waste container in each of the 25 wards and visually assessed as to whether the infusion set had been flushed or not. It was assumed the infusion set was not flushed if it was still attached to the infusion bag or bottle that contained the drug and/or there was visible liquid remaining in the drip chamber and infusion set line.
In addition, the medication charts for patients, to whom the infusion set belonged, were reviewed to identify whether a flushing solution had been prescribed and administered on the same medication chart as the infused medication. The category of drug administered by infusion was recorded.

Results
Of the 10 infusions sets per ward assessed (total 250 infusion sets), only one of these infusions (1/250, 0.4%) appeared to have been flushed on visual inspection.
For the 194 infusion sets that could be identified by patient name, no flushing solutions were prescribed alongside the medication to flush the infusion.
In relation to identification of medication charts, 56/250 infusions were not attached to an infusion set with a patient name so prescribed and administered flushes could not be identified.
Antibiotics were the most commonly administered drug class (124/250, 49.6%). None of these antibiotics were flushed after the infusion was completed.

Conclusion
Most infusion sets inspected were not flushed after completion in accordance with current national guidance. This means that patients may be receiving sub-therapeutic doses causing reduced treatment effectiveness or treatment failure. In the case of antibiotics, this may give rise to an increase in antimicrobial resistance[2].
To ensure infusion sets are flushed after drug administration, a standardised flushing practice should be established as part of a local policy and supported by updating monographs in the IV drug policy to include instructions on how to administer flushes.

References

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14. Patient counselling by pharmacy team on discharge medicines on two surgical wards

Siobhan Conaghan, Charlotte Wright, Zainab Zulfikar, Mid Yorkshire Hospitals NHS Trust, Wakefield

This study did not require ethics approval

Context
The pharmacy service to the surgical wards at the Mid Yorkshire Hospitals Trust has been developed over the past two years. This has largely focussed on reconciling admission medicines and supply of medicines for discharge. Counselling patients on newly prescribed medicines has not become routine practice for the pharmacy team, which consists of pharmacists, technicians and pharmacy support workers.

Problem
Inpatient survey results show below average results for measures relating to information given to patients about medicines on discharge. This includes written information and information about potential side effects.

Assessment of problem and analysis of causes
A near patient dispensing trolley is used on these wards for discharge medications. Pharmacy staff were observed dispensing discharge medications and giving them to the nurse to give to the patient, rather than giving them directly to the patient.
Pharmacy staff are not routinely counselling patients on their new medicines. Nursing staff were observed giving discharge medicines to 9 patients, although they gave information regarding how to take the medicines to 8 of them, they were not observed explaining about potential side effects.
Use of the near-patient dispensing trolley is not maximised, thereby reducing the opportunities that pharmacy staff have to counsel patients with the medicines.

Intervention
'Counselling cards' have been developed with salient points, including side effects, for the most commonly dispensed medicines. A workshop has been held for relevant pharmacy staff to improve confidence and to help embed the process of taking medicines directly to the patients.
The process for using the near patient dispensing trolley has been changed. Pharmacy staff (pharmacist or technician), now give the medicines directly to the patient.
The use of 'predictive ordering' in advance of a discharge prescription has been stopped. To ensure that use of the dispensing trolley is maximised, discharge prescription is accurate and the patient has received relevant information regarding their medicines.

Measurement for improvement
Numbers of prescriptions dispensed from the trolley have increased from 74 in April 2019 to 95 in June 2019.
Numbers of patients counselled by pharmacy staff on their discharge medicines has increased from 0 on initial observation, to average of 8/week. It is expected this will continue to rise.
Patient survey results will be reviewed once available.

Effects of changes
Number of discharge prescriptions screened by pharmacists has increased, following the cessation of predicting in advance what medicines will be included. This improves the accuracy of written medicines information available to the GP and patient.
Number of patients having counselling on potential side effects of their medicines has increased, due to pharmacy staff using the 'counselling templates' for commonly used medicines. Whether this change in practice will be reflected in the patient survey results remains to be seen, it is conducted annually in July.

Conclusions
Linking a new step (patient counselling) to an existing process (near-patient dispensing) helps embed it into practice and increase staff confidence doing it.
Developing standard format of counselling for commonly used medicines reduces the variation in information, thereby improving information quality.
Patient satisfaction with this process is yet to be remeasured, informal feedback is positive.

15. Educational Infrastructure for Band 6-7 progression programme - supports progression and increases quality

Alice Conway, Ann-Marie Heffernan, Fiona Rees, Jemma Sanger, Megan Hockly
Pharmacy Department Brighton and Sussex University Hospitals NHS Trust

Introduction
Educational governance of band 6-7 pharmacist progression posts needs to be integral to their training programme. Processes should aim to develop capacity for education management of this staff group and integrating with current educational infrastructure including the Foundation Pharmacist (FP) Local Faculty Groups (LFG). The LFG have been established to monitor the progress of each FP and ensure good systems and processes are in place. LFGs report into a Local Academic Board thereby ensuring Education Governance.

Objectives
Establish criteria to support the educational infrastructure band 6-7 progress posts development
Develop systems to monitor the progress of these posts

Method
A novel educational infrastructure was established from the introduction of new progression posts Autumn 2018. Eight criteria of achievement were developed from HEE Quality Framework.[1] Membership of the FP LFG was expanded to include Band 6-7 trainee representatives and their respective Educational Supervisor (ES).Trainee reps were required to attend in-house trainee representative training. Quarterly meetings with ES and Practice Supervisors (PS) and Educational Programme Directors (EPDs) established to enable regular reviews and improvement of the educational programme. A learning agreement (LA) was developed for Band 6 -7, ESs and EPD to clarify role expectations. Rotational training packs were developed with learning outcomes (LO) aligned to the Joint Pharmacy Board (JPB) Certificate in General Pharmacy providing access to an e-portfolio for supervised learning events and relevant activities to be monitored. ES were required to complete HEE Regional ES training for foundation pharmacists.
The educational infrastructure was included in the Annual HEE LFG showcasing good practice and endorsed by the Chief Pharmacist.
This study did not require ethics approval.

Results
The eight criteria developed were all achieved since the progression posts had been established Autumn 2018 for the 5 Band 6-7 pharmacists and shown below:
1) FP LFG memberships included all Band 6 -7 progression ES and trainee representative.
2) Attendance log of Trainee rep at all FP LFG
3) Quarterly meetings held and reviewed FP progress with ES, PS and EPD.
4) LAs signed by all parties
5) All ES completed HEE Regional ES training,
6) Rotational training packs developed with LO for each rotation
7) E-portfolios were utilised to monitor progress
8) LFG reports incorporated into Annual LFG reports with examples of notable practice and has clear timelines for actions

Discussion/Conclusion
A quality educational infrastructure provided opportunity for the department to highlight good practice and critically review any outstanding issues or challenges. The incorporation of Band 6-7 progression posts into the FP LFGs ensures educational governance and avoids fragmentation with the different FPt pathways. It ensures transparent systems and processes to develop learning programmes as well as quality assures trainee teaching and assessment. Use of an e-portfolio monitors progress.Trainees' feedback is central to this process. The LFG model applies to other groups of

progression posts. We are aware of work to develop programmes for staff not undertaking formal post graduate qualification. A small cohort size was a recognised study limitation.

References
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16. Practice Supervisor Requirements for Multisectorial East Sussex Better Together HEE Vocational Training Schemes

Conway A[1], Purdy S[1], Furner R[1], Reygate K[2], [1]Pharmacy Department East Sussex Healthcare NHS Trust. Eastbourne
[2]Pharmacy Health Education England London, Kent, Surrey and Sussex Crawley

Introduction
East Sussex Better Together Foundation to Advanced HEE Vocational Training Scheme (ESBTVTS) is a multisector vocational training pilot, for pharmacists registered at least one year, covering 6 speciality rotations across 4 NHS patient care organisations. Practice supervisors (PS) are required within each sector to provide support, supervision and training to VTS pharmacists, as well as undertake Supervised Learning Events (SLE) with them to monitor their progress and development.[1] Agreement by sector hosts, to PS training requirements, was needed to clarify PS expectations of their role, which underpins the scheme's quality educational infrastructure and ensures consistency of PS across sectors.

Objectives
Development of PS orientation guide suitable for multisector training programme
Establish minimum and optional PS training requirements to support VTS pharmacists.
Apply gap analysis to PS skills and make recommendations

Method
Current PS and Educational Supervisor (ES) training requirements for Regional pharmacy foundation programmes were reviewed by the VTS Programme Directors. A PS orientation guide with minimum and optional PS requirements was presented to the VTS Stakeholder Project Board and Local Faculty Group for agreement.
For the gap analysis PSs within each sector were required to state if they had achieved the agreed training requirements using a simple checklist. Response percentage of those met were calculated using Microsoft Excel 2011. This study did not require ethics approval.
Data collection period was November 2018 to May 2019.

Results
The PS orientation guide was established with 5 sections, covering PS Role and Responsibilities, Educational Governance and PS Support, Outline of SLE and Workplace Assessments, Support Mechanisms within Organisation, and Checklist of PS Training Requirements.
Nine minimum PS training requirements were agreed by partner organisations which PS were expected to undertake, with 6 optional training requirements.
There have been 12 PSs since the programme commenced. Nine (75%) PSs completed the checklist with PS representation from each sector.
Six (n=9, 67%) met all minimum requirements including Regional PS accreditation, awareness of Trainees Requiring Additional Support processes, Local Faculty Group and RPS Frameworks. Two PSs had not completed minimum training requirement necessary to undertake SLEs, one for not having their job description updated with the PS role. Five (55%) had not completed any optional PS requirements. Four had completed some optional requirements, 3 of SLE double marking with another PS.

Conclusion
Development of minimum PS requirements supports educational governance within the programme and demonstrated a high uptake with Regional PS course accreditation, providing the consistency of PS supervision within the different sectors.
SLEs are integral to demonstrate VTS pharmacist progression,d greater emphasis is needed for all PSs to complete this training and support engagement with the gap analysis. Optional training requirements have identified good practice of SLE double marking, supporting reliability of use of these tools between PSs, sharing of practice, and enhancing a community of practice between sectors. This will be further evaluated to review whether double marking should move from optional to minimum requirement.

A study limitation of small numbers is acknowledged.

References
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17. Implementation of a novel extended pharmacist service to a surgical admissions unit

Cowles E, Evans L, Valero C, Norfolk and Norwich University Hospital Foundation Trust

Background
The existing pharmacy service to our 34bedded emergency surgical admission unit (EAUS) is provided by a rotational pharmacist for 2hrs daily with the expectation to complete clinical review and medicines reconciliation (MR) for priority patients. Along-side the national drivers for changing the delivery of clinical pharmacy services (Carter report 2016[1]), there were local and internal clinical governance triggers.

Objectives
To ascertain if a specialist prescribing pharmacist, allocated solely to EAUS, working in an integrated way, would improve patient care.

Method
The service was designed using perceived local demand and patient footfall patterns. The service and intervention data was recorded over four weeks. The specialist Pharmacist (independent prescriber) was present for a full working day Monday to Friday, prioritising;

1. Patients for imminent / emergency surgery
2. Post-take ward round
3. Transfers from Emergency Department
4. Remaining patients seen as per local procedure.

Patients had MR completed, a clinical review and adjustment of medications as appropriate. This trial did not require ethics approval.

Results

1591 patients attended EAUS during the 4week period. The outcome was assessed using the following outcome measures;

1. Ward round
    a. 13 post-take general surgery ward rounds attended, an average of 8 patients on each.
    b. A total of 105 patients were seen and 121 interventions made – an average of 1.2 interventions per patient.
    c. The most frequent interventions made were regarding antibiotics, analgesia, thromboprophylaxis and MR.
    d. Interventions were made on an average of 69% of the patients seen each day.
2. Medicines reconciliation
    a. An average of 27 undertaken daily (pre-trial average 12).
    b. 98% were undertaken within 24hrs of admission (pre-trial average 76%).
3. Interventions
    a. An average of 35 patients were clinically reviewed daily
    b. An average of 21 interventions were made each day by the Pharmacist (excluding ward round)
    c. An average of 8 patients were transferred to the unit and seen before, or alongside, the receiving surgical team with EPMA prescribed by the Pharmacist.
4. Discharge
    a. An average 7 discharges were processed by the Pharmacist each day (remaining patients were admitted or required no medication).
    b. The average turnaround time for discharge supply was reduced from 120minutes to 17minutes.

Conclusion

The results identified that integrating into the multi-disciplinary team (MDT) produced a more efficient service. Changing priority to reflect patient movement and clinical need resulted in fewer patients undergoing interventions without appropriate medication review. The Pharmacist made timely, informed decisions about discrepancies, dosing and monitoring by being involved in the initial plan. Patient flow was improved with quicker discharge supplies.

The nursing and surgical teams received the service positively with 100% agreeing the service improved medication safety and patient care. Not only is this a logical, positive way to work for all involved, it was exemplar of a truly integrated extended MDT. A substantive role is now funded and staffed with expansion to a 7 day service planned.

References

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18. Improved safety of prescribed direct oral anticoagulants (DOACs) via quality improvement methodology

Helen Davies, Clara Danielsen, Sue Wooller, Pharmacy Department, Royal Glamorgan Hospital,
Cwm Taf Morgannwg University Health Board, Llantrisant

Context

At Royal Glamorgan Hospital (RGH), the pharmacy anticoagulant team manage all DOAC prescriptions. The majority used for venous thromboembolism (VTE) are prescribed via the ambulatory emergency care unit (AECU), while DOACs for atrial fibrillation are prescribed via various routes.

Problem

Oral anticoagulants are high-risk.[1] DOACs, while perceived as easier than warfarin, are not without problems. Despite the robust anticoagulant service at RGH, the pharmacy team intervened on almost 90% of all DOAC scripts to ensure patient safety. Reviews also identified times where a DOAC already prescribed for VTE was not the most appropriate choice, warranting a switch in treatment. Reviewing DOAC scripts for problems also led to repetition of work within the pharmacy team. Scoping was required to identify why we made so many interventions on DOAC scripts, and to review our workflow and identify areas of inefficiency.

Assessment of problem

Several tools were used to define the problem and generate solutions, including: process mapping, a fishbone diagram, Pareto analysis, stakeholder analysis and construction of a driver diagram. Problem categories varied, but included incomplete information on prescriptions, drug interactions and incorrect renal function calculations.

The outcome measures generated were:

1) The number of DOAC scripts that required a pharmacist intervention.
2) The number of patients that needed to change anticoagulant therapy after already starting treatment.

Pareto analysis confirmed that AECU was the ideal target for the interventions. The pharmacy anticoagulant team, AECU consultants and staff were engaged throughout due to clear communication and involvement in the scoping sessions. This study did not require ethics approval.

Interventions

The interventions generated were:

1) Create and display an educational poster in the AECU.
2) Create a 'telephone checklist' to screen new referrals to the anticoagulant team to identify potential problems at the start.
3) Run an educational session for AECU consultants and staff on the routine problems with DOAC scripts and how to address them.

.These were run over a four week period between the dates of 18th December 2017 – 19th January 2018

Our outcome measure targets were:

1) Reduce the number of pharmacist interventions needed on DOAC scripts to 20% by the end of February 2018
2) Reduce the number of patients that need to change anticoagulant therapy after already starting treatment to zero by the end of February 2018

Results were analysed using Microsoft Excel 2013 ®.

Effects of change

Our outcome measures were met by implementing three simple, cost-free cycles. Interventions on DOAC prescriptions were reduced to 20% or less, and no patients required a change of medication mid-treatment. Preventing the need to change therapy mid-treatment preserved the trust between patient and healthcare provider.

Conclusions
These measures have improved the efficiency of our pharmacy work systems, promoted patient safety and built on our excellent working relationship with AECU staff. Consideration of human factors and clear communication throughout cemented this success.

References

1. 1000 Lives campaign. The 'How To guide' for Improving Medicines Management. High Alert Medications, Primary Care. 2008. http://www.1000livesplus.wales.nhs.uk/opendoc/179307/ *(Accessed 14 Feb 2018).*

19. Medication Safety Benchmarking: East of England Acute NHS Hospitals Incident Reporting Comparison

Anne Downing, The Queen Elizabeth Hospital King's Lynn NHS Foundation Trust

Background
The Medication Safety Officer (MSO) role was created in 2014, the result of an MHRA/NHS England stage 3 patient safety alert, to improve reporting and learning from medication incidents[1]. Suggested actions included reviewing all medication incident reports to ensure data quality. Incident reports are sent to the National Reporting and Learning System (NRLS) and allow national learning from healthcare incidents. For individual organisations, the NRLS also reports monthly and six-monthly patient safety incident data using broad classifications[2]. These reports, however, do not allow MSOs to closely examine and compare medication reporting rates and classification types.

Objectives
- To establish an average medication incident reporting rate for acute NHS hospitals in the East of England and compare organisations.
- To assess whether reporting rate and incident types are influenced by prescribing method (electronic versus paper).
- To identify differences in classification of incidents between organisations.

Method
Each organisation provided data on medication incidents reported during December 2018 classified using NRLS Common Classification System (CCS)1. Data not in CCS1 format was fitted to the closest classification possible.
Bed days was calculated using number of occupied beds reported on 15th December 2018 by NHS England Winter Daily Situation Reports multiplied by 31. For a specialist hospital an estimate of open beds was used.
Incidents per 1000 bed days was calculated as follows:

$$\text{Incidents per 1000 bed days} = \frac{\text{Nº Incidents}}{\text{Nº Bed Days}} \times 1000$$

An organisation was deemed to use paper charts if the majority of their adult inpatients were prescribed medication in this way.

This study did not require ethics approval.

Results
740 medication incidents were reported across 9 organisations (11 hospitals).
There was an average of 4.3 medication incidents per 1000 bed days (range 3.4-5.5).
Those organisations using electronic prescribing reported 4.4 medication incidents per 1000 bed days, opposed to 4.1 for those using paper drug charts.
Administration incidents accounted for 46% of all medication incidents reported. Administration incidents made up a higher proportion of reports in those organisations using paper drug charts (57%) than electronic prescribing (31%).
"Other" incidents made up 15% of all medication incidents reported. Those organisations reporting higher than the average stated that they do not have an individual reviewing all incidents and classifications due to time constraints as a result of having multiple roles.
"Prescribing–Other" was the fourth most common incident reported; this is attributed to lack of CCS1 classification for "medicine not prescribed".

Conclusions
- This study provides assurance to the organisations involved that reporting rates and types are similar across the region.
- Prescribing method does not influence reporting rates, but administration incident reports are higher in organisations using paper drug charts.
- MSOs should be given sufficient time to review all medication incidents to ensure accurate classification and to avoid using "other" classification.
- The NRLS should consider creating a new classification of "Prescribing–Omitted Medicine".

References

1. NHS England/MHRA. Patient Safety Alert. Stage Three: Directive. Improving medication error incident reporting and learning. London: NHS England; 2014.
2. NHS Improvement. Monthly data on patient safety incident reports. https://improvement.nhs.uk/resources/monthly-data-patient-safety-incident-reports/ (accessed 30 May 2019).

20. Assessment of the quality of medicines information on hospital discharge summaries

French S, Chapman E, Petricheva E, Onatade R. Barts Health NHS Trust, London

Background
The main format for communicating care information from hospital to the next healthcare provider is via discharge summaries. However medication errors do occur during care transfers. Accurate discharge information regarding medicines is imperative to ensure continuity of care, and to prevent harm.
This study was undertaken to provide assurance on the quality of medicines-related information provided on discharge summaries from a large acute trust.

Objectives
To assess whether medicines reconciliation information on discharge summaries met required information standards.
To create baseline data for potential Key Quality Indicators for the clinical pharmacy service.
Method: Setting was a large acute hospital trust, with 2000 inpatient beds across four hospitals. Over ten consecutive weekdays, fixed for each hospital, samples of pharmacy-validated discharge summaries by the dispensaries were prospectively reviewed. Exact dates were agreed for each hospital based on investigator availability.

Data was collected by Medicines Management Pharmacy Technicians, Pre-Registration Trainee Pharmacy Technicians and Pre Registration Pharmacists using a standardised tool to assess the presence of clear documentation on each discharge summary regarding the following:

- Allergies
- Stopped medication and reasons
- Dose changes and reasons
- New medicines and reasons

Each day, data collectors compared the paper inpatient drug chart, the patients' notes and the electronic discharge summary. Only patients due for discharge on the day were included, to ensure completeness of all documentation.
Total sample size was calculated based on a 95% confidence interval and a 50% response distribution for each standard. Alpha was set at 0.05%. Each hospital was then apportioned a target number of discharge summaries, according to the average number received weekly.
This study did not require ethics approval.

Results
501 discharge summaries were reviewed. Results are presented as percentage ranges across the hospitals.

- Allergies – From 501 summaries, 99.4% (range 93% – 100%) had allergy status recorded. There was wide variability between hospitals with the recording of the nature of allergies, ranging from 0% to 96.4% of summaries.

For the other indicators, complete data was available from three hospitals (347 summaries).

- Stopped Medication – Where medication was stopped, 84% - 94% of summaries noted this appropriately. Of these, 40% to 59% had reasons for discontinuation recorded.
- Dose changes – 83% - 91% of summaries appropriately recorded that one or more medication doses had changed. Documentation of reasons for dose changes ranged from 29% to 55% of summaries.
- New medicines –70% - 98% of summaries recorded information on new medicines, where this had occurred. However in only 25% - 62% of these summaries were reasons for discontinuation documented.

Conclusions
All hospitals provided some basic medicines information on transfer of care, to aid reconciliation post-discharge. However, documentation of the nature of allergies and reasons for changes was insufficient and significantly variable between hospitals. More work is required to ensure all discharge summaries consistently meet required standards. These are feasible 6 standards to use as Quality Indicators. Limitations include non-standardisation of the ward specialties from which data was collected, therefore generalisability may be limited.

21. An Evaluation of Critical Medicine Missed Doses for Hospital Inpatients

Gallagher M C. Supervisor: DeFreitas A. Salford Royal Foundation Trust

Background
The National Patient Safety Agency produced the Rapid Response Report, highlighting the potential harm caused to patients when missed doses occur[1]. Following this report, the Trust formulated a list of 'critical medicines', for which administration should not be omitted or delayed[2]. Examples included in the list are insulin, anti-coagulants, anti-epileptic and anti-Parkinsonian agents.

Objectives

- To quantify the amount of missed doses over a period of time, focusing on critical medicines
- To identify and categorise the reasons why these doses were missed
- To suggest and implement solutions to reduce the amount of missed doses throughout the Trust to below 5%

Methods
A report on missed doses was completed using data from the electronic prescribing system to identify the percentage of missed doses by ward and reasons for omission between December 2018 and February 2019. This data was filtered to quantify how many doses were missed according to the Trust's list of critical medicines.

This study did not require an ethics approval.

Results
A total of 256,684 doses of critical medicines were prescribed for hospital inpatients, with 6.5% omitted. The most common reason for omission was 'patient refused' (~30%) followed by 'drug not available' (~20%). The reason for omission for 9% was documented as 'other' without further explanation. The remaining reasons fall into the following categories: 'absent from ward' (13%), 'administration issue' (12%), 'clinical reason' (12%) and 'miscellaneous' (3%). A small proportion of missed doses were unclassifiable due to unclear documentation.

Discussion and recommendations
Having established a baseline for missed doses of critical medicines, a Task and Finish Group has been created to identify the root causes and to produce an action plan with the aim of reducing missed doses to below the national average of 5%.
From the issues identified, the following recommendations were made:

1. It is apparent that the free text and pre-filled selection options available to nurses are not being utilised, these require review to improve record keeping.
2. The percentage of missed doses categorised as 'drug not available' highlights the importance of reviewing storage and supply of medicines. The tools currently available in the Trust on how to find medicines need revising and re-publicising.
3. Educating patients on their medication will encourage them to actively engage in their treatment preventing unnecessary refusal of medicines.
4. Raising nurse's awareness of critical medicines and advising them on when it is appropriate to escalate refused medicines to the medical team and addressing the implications of missing these medicines, through the medicines safety newsletter and training.

A test of change will be undertaken on four selected wards; any effective changes will then be implemented across the Trust. The Business Intelligence team is currently working on a dashboard that will provide live data on missed doses across the Trust, allowing for a re-audit to take place once improvements have been made.

References:
1. National Patient Safety Agency. Rapid Response Report. Reducing Harm from Omitted and Delayed Medicines in Hospitals. 2010.
2. Elrouby S, Harper L. Medicines Policy, Salford Royal Foundation Trust. 2017

22. Associated risk factors for medication-related problems in United Kingdom hospitals

Cathy Geeson, Luton and Dunstable University Hospital, Luton,
Li Wei and Bryony Dean Franklin, UCL School of Pharmacy, London

Background

There is growing evidence of a need to improve medication safety, as outlined by the World Health Organization's Global Patient Safety Challenge: Medication Without Harm[1]. Clinical pharmacy plays a key role in improving medication safety, but increasing demands on hospital pharmacy services have resulted in calls for clinical prioritisation[2]. This study aims to inform prioritisation by quantifying associations between clinically relevant medication-related problems (MRPs) and potential risk factors/groups.

Objective

To quantify statistical associations between risk factors and the study outcome: preventable MRPs that were at least moderate in severity.

Method

As previously described[3], patients from adult medical wards at two UK hospitals were prospectively included into this observational study between April and November 2016. Eighteen potential risk factors were pre-selected based on previous research and expert opinion. Univariable and multivariable logistic regression modelling was used to determine relationships between risk factors and the study outcome.

This study required and received ethics approval.

Results

Among 1,503 eligible admissions, 12 of the 18 risk factors/groups were associated with the study outcome on univariable analysis: age, number of comorbidities, socioeconomic status, previous allergy, number of previous hospital admissions, number of medicines prescribed, parenteral medicine administration, renal function, serum albumin, white cell count, use of high-risk medicines (specifically systemic antimicrobials, antidepressants, anticoagulants, anti-diabetic medication, epilepsy medicines and aminoglycosides/glycopeptides), and primary diagnosis (genitourinary and musculoskeletal-integumentary systems). Body mass index, history of dementia, liver disease, serum potassium, serum sodium and platelet count were not associated with the study outcome.

Multivariable analysis found only five risk factor/groups to be independently associated with the outcome: number of comorbidities (odds ratio [OR] 1.15, 95% confidence interval [CI] 1.07-1.22), socioeconomic status (OR 1.05, 95% CI 1.01-1.09), previous allergy (OR 1.30, 95% CI 1.03-1.64), use of high-risk medicines (epilepsy medicines and systemic antimicrobials, OR 1.61, 95% CI 1.16-2.25 and OR 1.44, 95% CI 1.08-1.92 respectively), and the primary diagnosis 'gastrointestinal system' (OR 0.52, 95% CI 0.32-0.86). The majority of adjusted ORs were also lower compared to the equivalent univariable analyses.

Conclusions

Multivariable analysis suggests that associations between the study outcome and risk factors/groups can be explained, partly or fully, by other risk factors. This suggests that risk is multifactorial; a combination of risk factors may therefore need to be considered when developing clinical prioritisation tools.

Strengths of this research include adherence to prognostic research recommendations; this has potential to enhance quality of data collection and reduce bias. Other strengths include the large sample size and use of two study sites to increase generalisability. A limitation of the study is possible underestimation of the prevalence of MRPs due to the observational nature of the study.

References

1. World Health Organization. WHO Global Patient Safety Challenge: Medication Without Harm, 2017.
2. NHS England. Transformation of seven day clinical pharmacy services in acute hospitals, 2016.
3. Geeson, C. Wei, L. Franklin, BD. Development and performance evaluation of the Medicines Optimisation Assessment Tool (MOAT): a prognostic model to target hospital pharmacists' input to prevent medication-related problems. *BMJ Quality & Safety* 2019:bmjqs-2018-008335

23. Adherence to the NICE guideline for managing multiple sclerosis relapse with intravenous methylprednisolone

Rachel Dorsey-Campbell, Awat Ghafour Ibrahim and Chandni Radia
Imperial College Healthcare NHS Trust, Charing Cross Hospital, London

Background

Corticosteroids treat multiple sclerosis (MS) patients who are relapsing. National Institute for Health and Care Excellence (NICE) recognises the lack of evidence of direct comparison of intravenous versus oral steroid to treat a relapse. It recommends intravenous methylprednisolone (IVMP) at 1g daily for 3-5 days for those whom oral route is contraindicated, not tolerated or has failed and those needing hospital admission for a severe relapse.[1] Meta-analysis study showed there was no significant difference in relapse improvement at 28 days between oral methylprednisolone (OMP) and IVMP.[2] Subsequently, our Trust restricts the use of IVMP to treat MS relapse patients. However, MS patients are commonly booked in for IVMP administration to treat their relapse. IVMP is associated with increased cost due to hospital admission, requiring bed space, nursing and administration staff time.

Objectives

The objectives were to determine whether IVMP was prescribed according to the NICE guideline to treat MS relapse and to establish the reasoning for choosing IVMP over OMP between January and March 2019. Six standards of 100% compliance target were investigated; IVMP is prescribed for a clinical diagnosis of a MS relapse; clear documentation of clinical diagnosis of a MS relapse; OMP prescribed and given as first line to treat a MS relapse; IVMP prescribed after trialling and failing OMP or OMP contraindicated or not tolerated; clear documentation for the reason IVMP chosen over OMP and IVMP prescribed at 1g daily for 3-5 days.

Methods

This study did not require ethics approval whilst Trust approval was attained. Data was collected retrospectively and a total population size of 43 patients was determined from the Planned Investigation Unit booking spreadsheet containing all patients admitted for IVMP between January and March 2019. Only MS patients treated with IVMP were analysed. Therefore, a population size of 38 MS patients was obtained. Due to this relatively low number, a sample size was not used. A pilot study was carried out on 5 patients, thereafter further data to collect were added on.

Results

None of the six standards of 100% compliance was achieved. Only 76% of MS patients were prescribed IVMP for a confirmed diagnosis MS relapse. The poor documentation of MS relapse diagnosis lead to only 45 % compliance being achieved. None of the patients had OMP prescribed first. Only two patients had documented reasons for IVMP: patient request and swallowing difficulties. Poor compliance to NICE recommendation for IVMP course was also observed as 94% of them were treated with a 2-day course of IVMP.

Conclusion
There is a need in improving our MS service in treating patients with a relapse and avoiding unnecessary admission for IVMP when they can be treated with OMP in the community.

References

1. Multiple sclerosis in adults management guidance (CG186). National Institute for Health and Care Excellence. [Internet]. Nice.org.uk. 2014 [cited 9 May 2019]. Available from: https://www.nice.org.uk/guidance/CG186/chapter/1-Recommendations#relapse-and-exacerbation.
2. Liu S, Liu X, Chen S, Xiao Y. Oral versus intravenous methylprednisolone for the treatment of multiple sclerosis relapses: A meta-analysis of randomized controlled trials. PLOS ONE. 2017;12(11):e0188644.

24. Review of Antimicrobial Prescribing for Urinary Tract Infections in Accident & Emergency

Gagandeep Gohlar, West Middlesex University Hospital, London

Background
Increasing antimicrobial resistance has been a key driver in setting national antimicrobial prescribing standards. Urinary tract infections (UTIs) account for 20.6% of all UK prescriptions, necessitating stringent prescribing practice.[1] Patients presenting to Accident & Emergency (A&E) with lower UTI (LUTI), upper UTI (UUTI) and catheter associated UTI (CAUTI) should be treated in line with local antimicrobial guidelines and microscopy, culture and sensitivity (MC&S) results. Provision of adequate treatment is imperative in prevention of progression of infection to sepsis or renal failure. Patients requiring further intravenous antibiotics are referred to the Outpatient Parenteral Antimicrobial Therapy (OPAT) service. Introduction of Cerner electronic health records in 2018 has enabled review of antimicrobial prescribing in A&E, that would have proven extremely challenging with paper patient records.

Objectives
The aim of this study was to determine appropriateness of antimicrobial prescribing for UTI and review if patients could have been referred to OPAT for admission avoidance. Standards set included:

1. 95% of patients with UTI will be treated with appropriate antimicrobials
2. 95% of patients with UTI will have a urine sample taken
3. 100% of patients will not be prescribed an antibiotic they have a documented allergy to
4. 95% of patients requiring intravenous antibiotics will be reviewed for OPAT

Method
Data was collected from A&E Cerner records for adult and paediatric UTI admissions between October and November 2018. A sample of 100 patients were collected via randomised selection and four patients were excluded due to incorrect admission coding. The study was conducted at an acute teaching hospital. A pre-registration pharmacist accessed, collected and populated data into a pre-designed Excel data collection tool. Data collected included: patient demographics, indication, antimicrobials prescribed during episode, allergy status, OPAT referral and inpatient admission data. The study did not require ethics approval and was registered locally prior to data analysis.

Results
Data analysis of 96 patients determined that 95 patients received antibiotics and one received a catheter change only. The most common presentation was LUTI (53%), followed by UUTI (29%) and CAUTI (18%). Overall, 60 patients (63%) were discharged from A&E and 44 (73%) were treated appropriately. Only 51 (53%) patients had a urine sample sent for MC&S, 15 patients were treated via OPAT and 13 patients with UUTI were admitted for intravenous antibiotics. Allergy status was not documented in two patients and one patient with a documented penicillin allergy received co-amoxiclav, with no adverse effect reported.

Conclusions
Although the standards were not met at the expected targets, majority of patients received appropriate treatment. This study highlighted the need to focus antimicrobial stewardship and improve antimicrobial prescribing practice within A&E. It also identified that OPAT referrals could reduce a proportion of admissions.

Recommendations include dissemination of results to A&E, improvement in prescriber education and supporting staff in antimicrobial stewardship, allergy documentation and OPAT pathways.

References

1. Dolk, FCK., Pouwels, KB., Smith, DRM., Robotham, JV., and Smieszek, T. Antibiotics in primary care in England: which antibiotics are prescribed and for which conditions? Journal of Antimicrobial Chemotherapy 2018;73: ii2–ii10.

Acknowledgments: Zarah Chaudhry

25. Acute Kidney Injury management in Primary Care: Exploring Healthcare professionals' attitudes and perceptions

Alan Green[1] (Academic Pharmacist Practitioner, University of Sunderland); Professor Scott Wilkes[1] (Head of School of Medicine and Professor of General Practice and Primary Care) and Dr Sue Shaw[2] (Advanced Renal Services Pharmacist, Royal Derby Hospital), [1]Pharmacy Department, Dale Building, University of Sunderland, Sunderland, Tyne and Wear, [2]Pharmacy Department, Royal Derby Hospital, Derbyshire

Background
Acute Kidney Injury (AKI) is rising and is now in the top 10 conditions causing admission to hospital.(1) Sick day guidance relates to advising patients to temporarily stop certain medicines when they are not feeling well.(2) Community Pharmacists (CPs) are well placed to provide effective measures such as a brief intervention. Therefore this role could be expanded to preventing, delaying and managing kidney injury in the community.

Objectives(s)
To explore the attitudes and perceptions of General Practitioners (GPs) and CPs on the management of AKI in the community and to describe the barriers and facilitators to optimal management of AKI in the community.

Method
Qualitative in-depth semi-structured interviews were conducted with community pharmacists (n=4) and general practitioners (n=6). Interview data was coded and analysed using constant comparison of the data via a thematic analysis process. Purposive sampling was undertaken to obtain a diverse as possible group of healthcare professionals within each profession.

Results
Overall, the concept of AKI sick day guidance was well received by the participants and they saw the benefit of their use in primary care. They were keen to see them being used in practice. However, moving from the concept of AKI sick day guidance to implementation in practice was much more difficult to come to a unified conclusion of what best practice should look like. Factors affecting implementation include: 1) professional credibility and responsibility to deliver the service; 2) uncertainty and strength of relations to deliver a unified approach and; 3) the resources including time to change current practice.

Conclusion
To be able to take AKI sick day guidance forward a clear partnership and buy-in from both CPs and GPs is required with a closer working relationship and understanding of each other's knowledge and skills. A clear pathway is required for all healthcare professionals to be comfortable in their role relating to AKI management and that these roles are agreed and clearly defined.

References

1. Taylor J (ed). Acute kidney Injury. Health Service Journal supplement; 23 June 2011.
2. Think Kidneys. "Sick day" guidance in patients at risk of Acute Kidney Injury: a Position Statement from the Think Kidneys Board. Version 9: January 2018

26. Investigation into the prescribing practice for patients post renal transplantation with type II diabetes mellitus

Crystal Kline (Year 3 MPharm Student, University of Sunderland), Alan Green (Academic Pharmacist Practitioner, University of Sunderland), Pharmacy Department, Dale Building, University of Sunderland, Sunderland, Tyne and Wear

Background
Patients following renal transplantation are at an increased cardiovascular risk compared to the general population. Hopefully their renal function is improved and therefore medicines contraindicated prior to transplant may be appropriate to use.

Objectives(s)
This observational study aimed to determine the prescribing practice for type II diabetes and new onset diabetes after transplant (NODAT) following renal transplantation specifically focusing on the appropriate prescribing of metformin.

Method
Local NHS trust prescribing data was assessed looking at patients who had undergone a renal transplant and had been diagnosed with a form of diabetes pre- or post-transplant. The patients' treatment for their diabetes, estimated glomerular filtration (eGFR), type and year of transplantation were recorded. Patients with type 2 diabetes or NODAT were assessed for the appropriateness of metformin being used in their therapy.

Results
One hundred and eleven patients were identified via the local NHS trust prescribing systems as a renal transplant patient and having diabetes. Fifty-five were type 1, 40 were type 2, 7 had NODAT and the remaining 9 patients had incomplete data to determine type of diabetes or had not received their transplant at this point. The 40 patients with type 2 diabetes showed that 5 patients' eGFR was not sufficient to be prescribed metformin (<30ml/min/1.73m^2), 6 patients were already on metformin appropriately, 9 were managed with diet alone, 4 patients' eGFR was between 30-45 ml/min/1.73m^2 and therefore in theory metformin could be considered with caution. The remaining 16 (40%) patients with type 2 diabetes could have been on metformin based upon their eGFR (>45ml/min/1.73m^2). A further analysis of the 16 eligible patients showed that 3 patients were receiving other oral antidiabetic agents and 13 were on insulin alone (8 on biphasic insulins, 4 single intermediate/long acting insulin, 1 unknown insulin regime). Of the 7 patients with NODAT, 2 were on metformin, 1 had a contraindication to metformin, 1 was diet controlled and 3 (43%) had an eGFR >45ml/min/1.73m^2 and could be considered for metformin (all 3 were being treated with insulin as a monotherapy).

Conclusion
There is a cohort of individuals who may not be receiving the most appropriate medication for their diabetes in terms of preventing long-term vascular complications and mortality. Evidence shows that metformin has an additional cardiovascular benefit with guidance also supporting its use in type 2 diabetes.(1) When it is determined that insulin is required for treating a patient's type 2 diabetes it would still be recommended to continue metformin (if tolerated and no contraindications). Limitations in the study are the small sample size, the lack of HbA1c readings to assess the patients' diabetes control, allergy status was not reviewed and the medicines list was based upon the clinic letter information as a single source.

References

1. National Institute for Health and Care Excellence. Type 2 diabetes in adults: management. NICE; 2015 [updated 2017 May]. (NICE guideline [NG28]). Available from: https://www.nice.org.uk/guidanceng28

27. Independent Prescribing Pharmacist improves timeliness of medicines supply at discharge on stroke ward

Sarah Griffiths[1], Lee Jones[1], David McRae[1], Dr James White[2], [1]Pharmacy Department, [2]Stroke Consultant**,** Prince Charles Hospital, Cwm Taf Morgannwg University Health Board, Merthyr Tydfil

Background
Currently, local practice is that Discharge Advice Letters (DALs) are completed by medical staff and can often be a timely process. A recent study identified that independent prescribing pharmacists (IPPs) completing clinical summaries and discharge prescriptions for medical patients decreased the time from 'medical decision to discharge' (MDTD) to actual discharge.[1] The present study sought to determine whether adopting a modified version of this intervention (omitting the 'second' pharmacist 'clinical check') would have a similar effect on discharges from the acute stroke unit at our hospital.

Objective
- To determine whether an IPP completing the combined local electronic clinical summary and discharge medicines document (eDAL) improves the timeliness of medicines supply at discharge.

Method
This study did not require ethics approval. The study, carried out in October 2018, comprised a two week 'control period' followed by a two week 'intervention period'. In the control period, medical prescribers completed clinical summaries and reviewed the pre-populated (by pharmacy) discharge medicines section before signing off eDALs. Once signed off, eDALs were clinically checked and dispensed on the unit. In the intervention period, the IPP completed clinical summaries, reviewed the discharge medicines section, signed off and clinically checked eDALs. The IPP only signed off eDALs in the intervention period if she had attended the physician-led stroke ward round where the MDTD was made. A data collection form was

designed to record time points from MDTD to completion of the accuracy check of discharge medicines. Data were collected prospectively in both periods by the pharmacy team. To provide suitable comparison, only discharges which took place on the day of MDTD were analysed. Statistical analysis comparing median times in both groups was performed using the Mann-Whitney U test in SPSS (IBM, version 25).

Results
Fifteen patients were discharged in the control period and 26 in the intervention period. Seven eDALs in the intervention period were written by medical prescribers (outlying non-stroke patients seen as part of general medical ward round). These were excluded from the analysis. The median eDAL processing time (MDTD to completion of the accuracy check of discharge medicines on the ward) was significantly less in the intervention group (60 versus 195 minutes, *P*=0.004). Notably, the median time between the MDTD and clinical summary being commenced was significantly less in the intervention group compared with the control group (8 versus 70 minutes, *P*=0.027).

Conclusions
An IPP working as part of a physician-led stroke team improved the timeliness of medicines supply at discharge by completing both sections of the local eDAL. However, these findings should be interpreted with caution due to the small number of discharges included in the study. A larger pilot is warranted. The pilot should include a comparison of the quality of clinical summaries completed by medical prescribers and IPPs and should seek to determine whether the intervention releases medical prescriber time.

References

1. Biggs, M. Biggs, T. Independent Prescribing Pharmacists Supporting the Early Discharge of Patients Through Completion of Medical Discharge Summaries. Journal of Pharmacy Practice 2018; 1-3.

28. A quality improvement project on heparin infusion safety at a teaching hospital

Hackett A, Oborne A, Ritchie E, Chanda R, Hunt BJ, Breen K, Guys and St Thomas' NHS Foundation Trust

Context
A Trust-wide electronic prescribing and medicines administration (EPMA) system was implemented in an acute teaching Trust in 2015. Complex infusions e.g. heparin remained on paper due to EPMA functionality limitations (complex infusion function was added in later EPMA upgrades) . A multidisciplinary team involving nursing, medical and pharmacy staff working within anticoagulation, EPMA and medication safety sought to address this limitation.

Problem
Anticoagulants such as warfarin and unfractionated heparin are recognised as high risk drugs requiring close monitoring. Heparin infusions and monitoring using the activated partial thromboplastic time ratio (APTTr) to ensure therapeutic anticoagulation and minimise adverse effects were co-recorded on paper templates. Incident reporting identified the paper system resulted in inappropriate monitoring and management of heparin infusions, and dose omissions which can lead to patient harm.

Intervention
To implement an EPMA system to replace the paper system for the prescribing, monitoring and administration of heparin infusions for all non-critical care adult inpatients.

Assessment
Audit (March 2016, paper system N=14) and re-audit (March 2019, EPMA N=26) measured against eight standards and incident rate per prescription.

Strategy for change
Prior to EPMA system launch (approximately 18 months):
- Multidisciplinary group revised the guideline[1], prescribing and monitoring, and analysed reported heparin incidents identifying trends.
- EPMA heparin infusion 'order set' developed for prescribing, monitoring and administration
- Ratification at Trust governance committees
- End user testing with nursing and medical staff
- Developed staff training videos and circulated to the Trust
- Face to face training for nursing, medical and pharmacy staff.

Post EPMA heparin infusion launch (approximately 2 months):
- Daily referral to senior anticoagulation pharmacist to review patients initiated/continued on heparin infusions to ensure medical/nursing staff were competent with the change in process.

Measurement for improvement
Post EPMA heparin infusion launch, a re-audit took place over one month.

Effects of changes
Standards measured and results from 2016 v 2019 audits (Chi square statistical analysis applied):
1-Baseline APTTr checked before starting infusion (93%v100%p=0.1).
2-Received correct loading dose of heparin based on APTTr (79%v96%p=0.07)
3-APTTr checked 6hours after infusion started (72%v100%<0.05)
4-APTTr checked 6hours after infusion titrations (86%v96%p=0.2)
5-APTTr in target range within 24hours (50%v70%p=0.2)
6-APTTr checked 24hourly after 2 consecutive APTTr's in range (100%v100% no change)
7-Patient receives a medical review 24hrly (65%v100%p<0.05)
8-Heparin syringe and giving set changed 24hrly (65%v100%p<0.05)
Heparin infusion incidents reduced from one incident per 1.6 infusions to one incident per 6.5 infusions. Heparin infusion incidents as a proportion of all anticoagulant incidents reduced from 43% to 20%.

Conclusions
An electronic solution for high-risk, complex infusions such as heparin prescribing and monitoring improved care quality and safety. However, such changes take significant time and staff to develop and implement.

Limitations
- A small sample size limited the significance of some clinical standards assessed.

References

1. Trust adult guidelines for unfractionated heparin infusions for systemic anticoagulation for APTT 2–2.5. 06/03/2019

This study did not require research ethics approval but was registered as an audit

29. Using FP10 prescriptions as a gateway for in-depth antimicrobial prescribing audits: An evolution of methodology, results and outcomes

Ryan Hamilton[1] & Allister Grant[2, 1]Pharmacy Department, [2]LLR NHS Alliance, University Hospitals of Leicester NHS Trust

WITHDRAWN

30. Utilising ePACT2 to monitor and influence antimicrobial prescribing within outpatient clinics

Ryan Hamilton & Corrine Ashton, Pharmacy Department, University Hospitals of Leicester NHS Trust

WITHDRAWN

31. Using health literacy techniques to develop patient information for counselling on antibiotics courses

Kiyah Beck, Koulla Ioannou, Sidrah Ahmed, Syeda Nadia Zaman, Gill Hawksworth, Saima Afzal, Sarah Frank. University of Huddersfield, Philip Howard, University of Leeds

Background

Antimicrobial resistance (AMR) is a worldwide public health crisis. Health texts currently exceed public reading skills. 43% aged 16-65 in England do not have the skills to read and understand health information[1]. One way to increase understanding and encourage behaviour change is through Health Literacy (HL) techniques defined as *"The ability of individuals to gain access to, understand and use information in ways which promote good health",* which may help deliver elements of the 5-year antimicrobial resistance strategy as set out by the Department of Health in 2019[2].

Objectives

Develop a patient information leaflet (PIL) on antibiotic courses & AMR, incorporating HL techniques.
User test PIL with patients
Identify if PIL was effective in improving patient knowledge on antibiotic use.
Identify if HL techniques made it easier for patients to understand the information provided.

Method

This study required and received ethics approval. Using the revised Royal Pharmaceutical Society (RPS) Checklist for Community Pharmacy and HL techniques (including 'Patient Education Materials Assessment Tool"[3]), a PIL and patient questionnaire was developed. Data was collected from 8 consenting community pharmacies, over a 5-week period. The PIL was used as a counselling tool by pharmacists and handed to patients during the dispensing of short-course antibiotics. Convenience sampling was used to complete face-to-face questionnaires with patients receiving counselling using the PIL.

Results

106 patient questionnaires were completed.
94% of patients had taken antibiotics before. Patients were asked about AMR knowledge before exposure to this PIL. 13% knew a lot, 57% knew something, 21% had heard of AMR, but didn't know anything about it, 9% had never heard of AMR – and of these, 89% had taken antibiotics prior to the study.
Level of education correlated to AMR knowledge, with 90% of university graduates having "some/a lot knowledge" about AMR, compared to 64% college/sixth form leavers and 57% school leavers.
96% of patients agreed the PIL improved their knowledge on appropriate antibiotic use. 81% of patients intended to change their behaviour and thought the PIL had improved their antibiotic knowledge; 51% of these chose "always finish a prescribed course of antibiotics" (only one choice was permitted). All patients stated the PIL was easy to follow. 90 (90%) of the 100 patients who had previously received antibiotics thought the counselling received using the PIL was easier to understand than previous counselling.

Conclusion

Although a small sample, most patients had taken antibiotics before. Education about AMR is needed at the point of antibiotic dispensing. Simplified information in PILs developed using HL techniques could help raise awareness of AMR and appropriate antibiotic use. This pilot suggests patient's behaviour can be influenced by structured counselling drawing on HL techniques. Future work could include different formats of the PIL for different cohorts.

References

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2. DH 2019. UK 5 year AMR strategy
3. Shoemaker et al, Development of the Patient Education Materials Assessment Tool
4. (PEMAT); Patient Education and Counseling 96 (2014)

32. Using health literacy techniques to support pharmacist practice when counselling on antibiotics courses

Kiyah Beck, Koulla Ioannou, Sidrah Ahmed, Syeda Nadia Zaman, Gill Hawksworth, Saima Afzal, Sarah Frank, University of Huddersfield, Philip Howard, University of Leeds

Background

Antimicrobial resistance (AMR) is a worldwide public health crisis.
Health Education England (HEE) suggests tackling AMR through increased education to improve awareness '. Many written health information materials currently exceed public reading skills. 43% of people aged 16-65 in England do not have the skills to read and understand health information[2].
One way to increase understanding of AMR, encouraging behaviour change, is through Health Literacy (HL) techniques defined as *"The ability of individuals to gain access to, understand and use information in ways which promote good health".* Improving patient knowledge on short course antibiotics using a patient information leaflet (PIL) incorporating HL techniques may help deliver elements of the DH 2019 5-year antimicrobial resistance strategy[3].

Objectives
User test the PIL as a structured counselling tool by practicing community pharmacists
Identify if they believe it was a useful counselling tool which supported their practice.
Identify if they believe patients benefitted from the written counselling provided compared to the verbal counselling patients are usually given.

Method
This study required and received ethics approval. Using the revised Royal Pharmaceutical Society (RPS) checklist for Community Pharmacy and HL techniques (including 'Patient Education Materials Assessment Tool"[4]), a PIL and pharmacist questionnaire were developed and piloted. The PIL was used over a 5-week period as a counselling tool by 8 consenting community pharmacists and handed to patients during the dispensing of short-course antibiotics. After the 5-week period, the pharmacists filled out a questionnaire.

Results
106 patients were counselled using the PIL. All 8 pharmacists completed questionnaires; and thought the PIL supported their practice. Only 6 pharmacists continued to hand out the PIL when investigators were not present. Four of these thought it was quite useful, 2 thought it was very useful.
On a scale of 1 (not at all) to 5 (improved a lot), pharmacists scored how much they thought the PIL would improve patient's knowledge on appropriate antibiotic use. 63% of pharmacists (5/8) scored the PIL '5' or '4', meaning they thought the PIL would improve patient knowledge.25% (2/8) scored it 3, and 12.5%(1/8) scored it 2.
63% of pharmacists (5/8) did not feel that the PIL took longer than their standard counselling, and of those that felt it took longer, 66% (2/3) felt that this was worthwhile.

Conclusion
PILs developed using HL techniques can be used to simplify information and could help to raise awareness of AMR and appropriate antibiotic use, alongside supporting pharmacists' practice as a structured counselling tool. Pharmacists believed that compared to the verbal counselling patients are usually given, the written counselling using HL techniques led to improved AMR education at the point of antibiotic dispensing.

References

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3. DH 2019 .UK 5 year AMR strategy
4. Shoemaker et al, Development of the Patient Education Materials Assessment Tool (PEMAT); Patient Education and Counseling 96 (2014)

33. Prescribing Warfarin: An Audit Of Anticoagulation Charts And Dosing Guidelines

Heine K. Countess of Chester NHS Foundation Trust, Chester

Background
Oral anticoagulants are a class of medicine identified as frequently causing preventable harm and admissions to hospital[1,2]. Warfarin is a high-risk medication due to its long-half life, narrow therapeutic index and association with food and drug interactions. This Trust has electronic prescribing however the software does not accommodate daily variation in doses. For this reason warfarin prescribing remains paper based.

Objectives
The objective of this audit was to review the warfarin prescribing within this Trust for appropriateness and accuracy. The standards evaluated were:
- 100% of warfarin charts must have all required patient information completed.
- When initiated as new therapy, 100% of warfarin charts must have the initiation regime documented (i.e. rapid or slow loading) and initial doses prescribed accordingly.
- Where continued on admission to hospital 100% of warfarin doses should be prescribed, monitored and adjusted appropriately per the guidance provided.
- 100% of INR monitoring should be carried out as per chart guidance.

Method
This study did not require ethics approval.

Data was collected from patients' charts between 17:00-18:00 on weekdays over a four-week period. Data was collected prospectively to improve accuracy regarding completion of chart information i.e. ensuring completion on admission and not discharge.

Results
- 31% of warfarin charts were completed correctly. The intended duration of therapy was the most commonly omitted piece of information (86%). Two thirds of charts did not have the treatment indication (66%) or target INR documented (64%). 24% of doses were not prescribed at the time of data collection.
- 100% of patients newly started on warfarin had charts completed, baseline INRs taken, and appropriate initiation doses prescribed. 75% had the initiation regime indicated.
- 72% of doses were adjusted correctly in response to an INR result. The most common reason for a dose being considered inappropriate was due to the dose not being increased enough (50%).
- 87% of patients had baseline INRs taken on admission to hospital. 24% of tests were considered unnecessary. The main reason for testing to be considered inappropriate was testing too early. Excessive INR monitoring has been identified as an area for financial savings.

Conclusions
This audit identified several areas requiring improvement for warfarin prescribing within the Trust. The poor level of chart completion questioned the evidence base on which prescribers make a clinical judgement about doses prescribed and a significant percentage of doses have been identified as not being prescribed in time for 18:00 administration. Whilst observations suggested an overly cautious approach to warfarin prescribing, this leads to increased premature interventions which may lead to overall poorer INR control. Areas for improvement have been escalated internally where appropriate.

References

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34. Development of band 6-7 pharmacist progression training program

Megan Hockly, Ann-Marie Goacher, Jemma Sanger; Brighton and Sussex University Hospitals NHS Trust, Brighton

Context

The band 6-7 pharmacist progression program was developed in the Pharmacy department at Brighton and Sussex University Hospitals NHS Trust.

Problem

Difficulty recruiting band 7 pharmacists led to strain on the quality of pharmacy services, patient safety and department morale. Teams had below minimum required staffing levels which meant taking annual leave and toil became unmanageable. Senior pharmacists met to discuss a recruitment strategy.

Intervention

Band 6 posts had many applicants, so the concept of creating a band 6-7 progression role to help fill the gaps in our band 7 posts was born.

Over three months, senior pharmacists met to review the training program content and develop training packs in line with the Royal Pharmaceutical Society Advanced Level Framework[1] and Clinical Pharmacist Diploma objectives. This was supported by the departmental education governance structure. Feedback was sought from band 6 pharmacists on the appeal of a progression program. This study did not require ethics approval.

We are awaiting feedback from our current cohort who are all recently qualified and enrolled on the diploma. Preliminary results have been positive. We will use anonymous questionnaires and group feedback sessions to measure trainee satisfaction with the program and the impact on the multidisciplinary team. We will also audit quality and quantity of clinical interventions before and after implementation of the program.

Effects of changes

Linking the band 6 and 7 positions bridges the gap that the traditional career path creates, allowing retention of locally trained band 6's and removing the need for staff to apply externally to achieve this progression. Our trainees have all successfully progressed through the first two stages of the program and attained positions on the trust ADVANCE Clinical Practitioner Program giving us a 100% retention rate.

Improvement in staffing levels and management of annual leave and toil was apparent after reviewing ward cover schedules and toil time records from time periods before and after the introduction of these posts.

To mitigate potential problems with the program we had to ensure equitable and unbiased assessments across the board, equal opportunity to complete tasks set, and transparency of decisions for salary increment. Barriers to overcome included availability of all parties involved to attend progress review meetings before the salary returns deadline. Due to the success of the program further ***progressional*** roles have been created within the department for both pharmacists and technicians.

Conclusion

By not relying on the traditional recruitment process and thinking laterally we have improved the recruitment and retention of staff. The goal-orientated nature of the program is structured to motivate staff and ensures their development is to a consistent standard. Experience and feedback should continue to be shared as posts are rolled out across new specialities to maintain continuity and program governance. This recruitment model demonstrates benefits over the current system. It has the dual advantage of meeting the training needs of individuals and staffing needs of the department which improves quality of service.

References

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35. Could medication-reviews identify patients that benefit from follow-up in the ICU-Recovery Clinic?

Carol Ann Jones, Department of Critical Care, Guys and St Thomas NHS foundation Trust, London

Background

Intensive Care Unit (ICU) survivors may experience complications following hospitalisation. Complications include, new or worsening cognitive impairment, mental health conditions, physical disabilities and social impairment. Due to the complexity of surviving ICU, the Society of Critical Medicine developed a term "Post-intensive Care Syndrome" (PICS). PICS is defined as new or worsening impairments in physical, cognitive, or mental health status arising after critical illness and persisting beyond hospitalisation. Greater awareness regarding the long-term outcomes of ICU survivors has led to the implementation of ICU Recovery Clinics (ICU-RC). ICU-RCs have been proposed as a potential mechanism to address the multifaceted unmet needs of ICU survivors, including, medicines optimisation, addressing physical function, psychological needs, and reducing the rate of preventable readmissions[1]. Currently, invitation to the ICU-RCs is performed by intensivists screening discharge summaries. Given the reported benefit of a medication review (MR) conducted in an ICU-RC, we hypothesise that a MR conducted by pharmacists will help identify patients that will benefit from an ICU-RC review.

Objectives

- Identify whether pharmacists can play a role in developing an inclusion criterion for ICU-RC.
- Determine whether a retrospective MR on admission to ICU, and discharge from ICU/hospital could identify patients at risk of PICS.

Method

45 patients were analysed over a 2-month period. Retrospective MRs of admission and discharge medication were conducted using two clinical systems, IntelliVue Clinical Information Portfolio and Electronic Prescribing Record. Patients admitted and/or discharged on medication from the following classes: antipsychotics, antidepressants and anticoagulants were identified. These classes were chosen in collaboration with the intensivists, as pre-ICU depression and psychosis increase the risk of PICS[1]. Additionally, ICU-RCs provide an opportunity to review anticoagulation therapy initiated for the treatment of ICU acquired thrombosis.

Data was analysed using Microsoft Excel v2016. Descriptive analyses were undertaken, including frequency counts of medication prescribed at the different phases of care. Clinic lists compiled by the intensivists were utilised to identify whether patients were invited to the ICU-RC. This study did not require ethics approval.

Results

A total of 66.7% (4/6) patients on an antipsychotic and 66.7% (8/12) of patients on an antidepressant pre-admission were not invited to the ICU-RC. 62.5% (5/8) of patients initiated on an antipsychotic and 60% (3/5) of patients initiated on an antidepressant, during their ICU admission, were not invited to the ICU-RC. 24% (6/25) of patients who were initiated on an anticoagulant, during their ICU admission, were not invited to the ICU-RC.

Conclusion

This study supports previous studies[1,2] which have identified the need for MRs in ICU survivors, due the prevalence of medication discrepancies in this population. In addition to clinic involvement, pharmacists can play a role in developing an inclusion criterion for ICU-RC patients, and in-turn identify patients at risk of PICS.

References

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36. Evaluation of Adherence to Trustwide Surgical Antimicrobial Prophylaxis Formulary

Christopher Kirby, Senior Clinical Pharmacist, Chris Herring, Lead Divisional Pharmacist,
Wirral University Teaching Hospital NHS Foundation Trust. Wirral

Background

Healthcare-associated infections (HCAI) are of considerable concern for the NHS and other healthcare providers. Potentially up to 16% of HCAI are due to surgical site infections (SSI) which can lead to poor patient outcomes, longer hospital stays, and greater costs[1,2]. The Trustwide formulary aims to improve antibiotic prescribing to rationalise prescribing and benefit patients.

Objectives

- Determine the proportion of procedures adhering to Trustwide antimicrobial formulary.
- Evaluate if deviations from the Trustwide antimicrobial formulary are clinically appropriate.
- Identify significant or repeating reasons for inappropriate formulary deviations.
- Identify directorate level prescribing trends.
- Identify individual consultant prescribing trends.
- Identify any significant differences with data from previous audits.

Method

The audit assessed the clinical appropriateness of surgical antimicrobial prophylaxis (SAMP) at a large Trust in Northwest England through quantitative data collection. This study did not require ethics approval. Data was collected on all day-case and inpatient surgery for patients ≥16 years old over a 3-day period in January 2019. Data collection was retrospective using electronic and paper patient notes and entered onto a database using Microsoft Excel®.

Prescribing was compared against Trustwide formulary recommendations for adherence. The patient notes were then interrogated to determine if prescribing was clinically appropriate by assessing infection alerts, allergy status, bacterial cultures, and co-morbidities. National and international guidance was also referred to for clinical appropriateness.

Results

Overall improvements were seen with formulary compliance. Current appropriate SAMP is 84%, this continued the upward trend seen in previous years at the Trust (2019, 84%; 2016, 75%; 2015, 66%; 2014, 55%). Most clinical areas improved their percentage of appropriate SAMP. Colorectal surgery performed strongly, nearly doubling appropriate SAMP from 2016 and achieved 86%. Upper gastrointestinal (UGI) increased significantly from 2016 however remained unacceptably low at 45%. A significant drop was seen in biliary surgery to 57%.

In total 198 procedures were analysed, 22 cases deviated from Trustwide formulary without clear or documented rationale. 10 cases had no Trustwide guidelines and no documented rationale for SAMP. Trauma & Orthopaedics (T&O), UGI, and urology accounted for >50% of the cases with inappropriate prescribing. The main trends were incorrect dosing of gentamicin and errors when prescribing second-line formulary recommendations. Some patients with positive MRSA swabs were not identified and therefore not prescribed the recommended dose of teicoplanin.

Conclusions

The results show sustained improvement in appropriate SAMP partially attributed to regular microbiology ward rounds and pharmacist-led prescriber education. Development of a robust formulary has aided positive results, though correct use of second-line antibiotics needs to be re-enforced in all areas, as does gentamicin dosing and actioning MRSA alerts. Further expansion of the local formulary is needed in breast and UGI surgery to clarify SAMP requirements. Following from this report there will be increased directorate level feedback at senior and junior level.

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37. South East Acute Trusts Collaboration -Recruiting pharmacy undergraduates to Work Experience Programmes

Clifton E(1), Conway A(1), Haddon A(2), Kung HF(2), Lean V(3), Radford A(3), Sale L(4),
Brighton and Sussex University Hospitals NHS Trust(1); East Sussex Healthcare NHS Trust(2);
Western Sussex Hospitals NHS Foundation Trust(3); Surrey and Sussex Healthcare NHS Trust(4)

Background

One recruitment strategy to promote Acute Trust Preregistration Pharmacist Training Programmes to undergraduates is to provide third year undergraduates work experience programmes. To optimise resources and expertise between neighbouring Trusts it was agreed to advertise and recruit collaboratively to the varied work experience programmes.

Objectives

Develop a recruitment process outlining responsibilities for each Trust.
Identify numbers applying from Pharmacy Schools (HEIs)
Evaluate student satisfaction of the recruitment process

Method

Trust Pharmacy Education Leads met to develop a recruitment strategy including timescale, advert, format of interview, and identification of resources required to commit to the venture. Staffs involved with the recruitment process were required to have completed their respective Trust recruitment training to be involved in the interviews.

An online application form was devised using google forms and promoted via the HEELaSE website. Post interview applicants were asked to complete a piloted evaluation form consisting of questions on recruitment venue, process, feedback and highlights of the sessions and areas for improvement. The first part of the evaluation form included demographic information such as gender and HEI, the second part asked about the interview venue. The third part asked about the recruitment process. The final part was a multiple-choice grid to rate the format and structure of the interview. There was also an additional free-text section for any comments. The qualitative comments were thematically analysed.
Evaluation forms were emailed post interview feedback and interview outcome. Successful candidates were contacted by the Trust that offered them a position and the responsibility of providing feedback on unsuccessful candidates was divided up between the interview panel leads with feedback focussed on key points from the documentation of candidates answers to the questions to support their future development. The study did not require ethics approval.

Results
75 applications were received from 13 HEIs with 53 (70.7%) from 3 local HEIs. 40 (53.5%) were from one local HEI. 61 applicants were shortlisted and 58 applicants were interviewed. Each candidate was interviewed by a panel of a minimum of 2 representatives from different Trusts using values-based interview format. Of the 58 interviewed, 23 were offered places across the 4 Trusts; all vacancies filled.
Response rate of student evaluations post interview was 19 (34 %). Of which 18 (95%) agreed that the interview process was well organised and 19 (100%) agreed that they were well informed throughout the interview process. Of the 12 (65%) that requested feedback post the interview, all agreed that the feedback was constructive and timely (within 7 working days of request), 11 responders agreed the feedback would help with future interviews, however one student disagreed. A study limitation was the low questionnaire response rate.

Conclusion
Collaboration of resources between Trusts supported a smart process for all 23 summer student vacancies to be filled for respective summer student schemes and supported development of staff with recruitment experience. It is intended that the developmental feedback will be valuable for future interviews for undergraduates as they prepare for Oriel and Newly Qualified Posts.

38. Impact of pharmacist in facilitating adalimumab biosimilar uptake

Jon Kwok (Lead prescribing pharmacist in Gastroenterology), Gareth Price (Chief Pharmacist), Jane Holyoak (Medicine Management Pharmacist), Lancashire Teaching Hospitals NHS Foundation Trust, Preston

Context
A commissioning framework for biologics was published by NHS England to support faster and more effective uptake of best value biological medicines (1). The pharmacy team at a teaching hospital in the North West took this opportunity to plan and facilitate the switching process with an aim to produce beneficial impact on medicines optimisation.

Strategy
A project plan was developed and approved by the Trust Medicines Governance Committee and the switch commenced on the date suggested by NHS England. This did not require ethics approval. Patient consent letters were sent four months prior to switch so that patients were given early opportunity to discuss any concerns. Management of stockholding of branded and biosimilar products was planned in advance with pharmacy procurement team and out-patient dispensing partner. Service level agreement (SLA) was agreed with contracted homecare company and follow up letters were sent to patients confirming the final biosimilar product just one month before the switch.

Measurement for improvement
Define software is used to monitor and analyse medicine usage monthly. Pharmacy dispensing system is also used to generate a more detailed dispensing report on a monthly basis and identify any anomalous prescribing. Reports are presented to the clinical team as a regular feedback. There is on-going engagement with the clinical team to monitor effectiveness of the new biosimilar product.

Effects of changes
All patients who have been switched remain clinically stable and no adverse effect has been reported. The switch also results in significant saving to the health economy. This enables the NHS to maximise the value for patients from the amount it spends on adalimumab and allows much needed headroom for funding innovative treatments and/or improvements in pathways of care (1). The ambition set by NHS England "90% of new patients being on the best value biological medicine within 3 months of product launch and 80% of existing patients within 12 months" has been achieved. Results show that there was an uptake of biosimilar adalimumab of 75% in the first month, 88% in the second month and 97% in the third month, whilst the national uptake had an average uptake rate of 23% after 3 months across the North West region (2). The outstanding 3% was down to patient's allergy and clinical decision.

Conclusion
There are a number of actions that positively contributed to the successful switch programme of biosimilar adalimumab. Early identification of a pharmacy lead for the project, and early and ongoing engagement with all stakeholders are keys to success. A robust oversight of stock management also has a positive impact on biosimilar uptake. From this project, we have identified that it may have been beneficial to develop the project plan at an even earlier stage.

References
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39. Intravenous Insulin Infusions after the implementation of an electronic prescribing system

Catherine Leon, Clare Crowley, Oxford University Hospitals NHS Foundation Trust, Oxford

Background
Intravenous Insulin infusions are used to treat hyperglycaemia in hospital patients with diabetes, who are unable to eat for an extended period. Variable-rate intravenous insulin infusions (VRIII) are complex and error-prone. Frequent monitoring and adjustments ensure safe, effective glycaemic control. Locally VRIIIs are the focus of ongoing improvements to optimise safety and usability. Comprehensive guidance on prescribing, administration and monitoring (PAM) of VRIII has been supported by local bespoke paper proformas.

The Trust moved to an electronic prescribing, monitoring and administration system (ePMA), including for VRIIIs. It was not known what impact ePMA has had on VRIII practice. System changes can introduce unintended risks therefore review of practice was timely.

Objective(s)
To review PAM practice against Trust VRIII guidance. Standards were:

- 100% of VRIII prescriptions comply in terms of
  - Prescription (appropriate indication, starting regimen, actions for other diabetes medicines, concurrent fluids and hypoglycaemia rescue)
  - Administration and monitoring (VRIII and fluids as prescribed with appropriate blood glucose and ketone testing)
  - Review (adjustment of insulin regimen)
- No hospital acquired hyperglycaemic harm while on VRIII (diabetic ketoacidosis (DKA) or hyperglycaemic hyperosmolar syndrome)

Method
A weekly ePMA report was run to identify adult inpatients prescribed a VRIII. Patients were excluded if under care of teams with specialist VRIII guidelines and when the prescription was not administered. Data from electronic and paper records for each prescription was recorded using a pre-piloted Excel™ spreadsheet. The first 24 hours PAM records were reviewed. Ethics approval was not required.

Results
The retrospective audit of VRIII (n=26) prescribed and administered at an acute teaching hospital was undertaken between October 2017 and February 2018. Seven prescriptions fully met the prescribing criteria. The most frequent deviations being the selection of regimen and failure to continue or suspend other diabetes medicines. Two patients' administration and monitoring records fully complied with the guidelines. Eleven patients met the criteria for altering regimens, of which four had regimen changed. One patient developed DKA.

Conclusions
The audit identified issues across the whole PMA process of VRIII. Compared with paper proforma, ePMA improved areas where prompts were inbuilt but other areas were completed inconsistently.
Issues with VRIII documentation were apparent in the varying methods of recording administration. A mixture of paper and electronic documentation were used and some paperwork was unable to be located. The main limitation was the sample size, but the results mirror feedback from clinical practice and were sufficient to highlight issues. Further work is being undertaken to embed electronic documentation and explore why VRIII regimen changes and management of other diabetes medicine was not adhered to.
This audit provides evidence that complex workflows including VRIII PMA need careful planning when transferring to electronic systems and review following implementation.

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40. A clinical audit of TTO oral antibiotic prescribing practices in A&E

Hoi Yan Kari Leung, Joanne Munns, Western Sussex Hospitals NHS Foundation Trust

Background
Antimicrobial resistance (AMR) is a threat to modern medicine and healthcare systems that requires coordinated action on a local and international level. In 2009, Commissioning for Quality and Innovation (CQUIN) national goals were introduced to incentivise change in order to encourage clinical quality improvement[1]. Given the dire public health implications that AMR poses, a CQUIN target for 2017/2018 concerns reduction in antibiotic consumption. Despite discounting IV antibiotics in light of the sepsis CQUIN target, audits carried out at the trust identified A&E as the department with the highest usage of oral antimicrobials. In order to meet the CQUIN target, it was imperative to examine the use of TTO oral antibiotics in the A&E department.

Objective(s)
This study aims to quantify antibiotics prescribed in A&E for a two-week period and to determine whether these were prescribed in line with trust guidelines. The objectives were to record TTO oral antibiotic prescriptions dispensed in A&E and to compare treatment and indication of dispensed oral antibiotics to the trust guidelines in order to ascertain clinical appropriateness[2].

Method
A two-week prospective, observational study was conducted in the A&E department at a secondary care, district general hospital in Sussex, UK. The cohort comprised of patients who were prescribed TTO oral antibiotics when they were seen in A&E between 1st November and 15th November 2017. A&E department staff members completed a paper-based data collection tool. Clinical appropriateness of antibiotic prescribing was assessed by comparing the diagnosis and choice of antibiotics prescribed to the Trust's Adult Empiric Antimicrobial Treatment Guidelines[2]. Indications were classified according to body systems categories in the trust guidelines. This was a clinical audit; therefore, this study did not require ethics approval.

Results
75 data entries were identified and included in this audit. The majority of infections diagnosed fall into the 'skin and skin structure' category (46.7%), followed by 'respiratory' and 'head and neck'. 12 prescriptions (16.0%) were identified as inappropriate use of antibiotics when referenced against trust guidelines. The majority of these prescriptions (66.7%) were issued for 'skin or skin structure' related infections. Co-amoxiclav was the antibiotic that was most commonly prescribed inappropriately.

Conclusions
The disproportionate number of inappropriate antibiotic prescriptions for 'skin and skin structure' infection demonstrates the need for further guidance to support prescribers. Co-amoxiclav was most commonly prescribed inappropriately, likely due to its broad-spectrum action. Prescribers may prefer to prescribe co-amoxiclav for wounds whereby the causative agent is unknown or in cases where multiple groups of bacteria are suspected. The trust is currently reviewing A&E specific ambulatory guidelines with the involvement of the Antimicrobial Stewardship Group, and an A&E consultant to implement new guidelines and support education of staff. The reported findings also support the involvement of non-medical prescribers such as independent prescribing pharmacists who can act as gatekeepers to appropriate antibiotic prescribing.

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41. Improving The Process Of Issuing Controlled Drugs At The Royal Stoke Hospital

Helen Lewis, Senior Pharmacy Technician, Ruth Bednall, Fiona Bevan, Jo Roye, Mike Poulson, Alison Bond, Lyn Barnard, Laurence Bradley, Sarah Athersmith, University Hospitals of North Midlands NHS Trust, Royal Stoke University Hospital site

Introduction

The Controlled Drugs (CD) room receives an average of 40 ward stock and 14 discharge prescriptions each day.
Concerns were raised about the current system as, over 100 lines of CDs were stored on free standing open shelves, which created the opportunity for picking errors.
Due to the poor flow of work in the room, ward boxes would start to be dispensed at 09:00 and were often still being checked at 17:30, which meant that patients were potentially missing doses of crucial medications.
In 2018, planning commenced for the installation of a CD automated dispensing unit and the project was completed in March 2019.
At this time CDs were being checked by pharmacists but it was identified that this should be the role of an Accredited Checking Technician (ACT).

Objectives

- To reduce the amount of picking errors by restricting access to a small amount of drugs during one transaction.
- To create a streamlined process within the room to increase accuracy and speed.
- Using electronic registers to record all details of receipt and supply of schedule 1 and 2 CDs in line with Regulation 20 of the 2001 Regulations[1].
- To advance the roles and responsibilities of an ACT and increase pharmacists clinical time on the wards.

Method

- Setting up a task and finish group ensuring minimal disruptions to the service.
- Holding weekly telephone calls with Omnicell to ensure clarity between both parties.
- Estate works in the room to facilitate the use of the cabinet.
- Thorough testing - updates were made to ensure that the unit provided everything that it needed to.
- Reviewing CD processes and Standard Operating Procedures.
- Training all pharmacy staff with a demo unit.
- Using paper registers in conjunction with the electronic records until accuracy was guaranteed
- Providing extra support to the CD room.

Results

- The time to dispense and check CDs has been dramatically reduced as ward boxes are generally dispensed and checked by 15:00.
- Due to the mechanism of the robot and the careful planning of drug storage, the chance of a picking error has been reduced by up to 98%.
- Escaped picking errors have reduced since the implementation of automation
- 98% accuracy between electronic and paper registers; the errors being minor spelling mistakes
- 6 hours of pharmacist time per day was removed from the dispensary setting, increasing their time for clinical patient care.

Further assessment of impact continues as process embeds in practice.

Next steps

- To look at funding for the implementation of CD automation at County Hospital

Conclusion

The implementation has been successful through regular meetings and thorough training, enabling paper registers to be withdrawn.
Staff were initially concerned that automation would slow down the dispensing process, but results show that it has improved the service we provide to our internal and external customers by reducing dispensing and checking times and increasing accuracy.
By developing the pharmacy technician role, pharmacists are able to spend more time performing clinical duties in accordance with the Carter Report.

This study did not require ethics approval.

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42. Evaluating how Pharmacist Independent Prescribers impact the discharge service

Catherine Loughlin, Ulster Hospital, South Eastern Health and Social Care Trust,
Dr Kate Shemilt, Liverpool John Moores University

Background

Fewer junior doctors were funded in 2017/2018 at the Ulster Hospital. Additional Pharmacist Independent Prescribers (PIP) were employed to write the Discharge medication and advice letter (DMA) (the medical content and medication list). There was a need to assess how this would impact the discharge service.

Objectives

Pre and post implementation of the PIP writing the DMA:

- Evaluating time taken to complete the DMA
- Evaluating incidence and severity of interventions on the DMA and classifying the errors according to the Eadon scale [(1)]
- Exploring staff opinions on the discharge process

Method
A mixed methods pre and post case study approach was chosen. Quantitative data, which consisted of timings for all stages of the discharge process was collected over a 4 week period in Nov/Dec 2017, before implementation of the PIP. (Timings included the time from when the patient was highlighted for discharge through to dispensing and completion of the prescription using the satellite Pharmacy service). Data was collected again in April/May 2018 after implementation. Qualitative data obtained from standardised face to face interviews with staff on the implementation ward, took place in March 2018, with post data collection in September 2018. Interviews were audio recorded. Transcribed interview data was thematically analysed using NVIVO software. This study required and received ethics approval LJMU REF: 18/PBS/002.

Results
A reduction in the overall time it took to complete the discharge. Improved patient safety with the number and severity of errors reduced. An overall reduction of 91.6% and no grade 5[(1)] interventions were recorded post implementation. Eight main themes emerged from Qualitative data: Description of discharge process, Patient specific issues, Staffing issues, Systems and paperwork, Communication, Pharmacy and the Pharmacist Independent Prescriber, Social work and transport and Ideas for development of the discharge process. Qualitative data highlighted areas for improvement. Staff opinions on the discharge process improved after implementation and staff noted a more streamlined process, with improved patient flow.

Conclusion
Implementation of the PIP writing the DMA has positively impacted the discharge service with a reduction in discharge processing time, beneficial safety outcomes for the patient and improved flow. This concurs with a recent publication by Biggs et al[(2)]. It was acknowledged by staff, that while the process had improved post implementation, the same challenging factors exist within the NHS and the discharge process as a whole is reliant on multiple processes working together. Further research is needed in this area across other clinical areas and other NHS Trusts. In order to affect change, a review of Trust workflow systems and processes is needed in relation to the discharge process in line with NHS advice[(3)].

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43. Impact of a new Sore Throat Test and Treat service on antibiotic provision

Efthymia (Efi) Mantzourani[1], Rebecca Cannings-John[2], Harry Ahmed[2], Kerry Hood[2], Andrew Evans[3], Cheryl Way[1], Emma Williams[1], [1]NHS Wales Informatics Service, Cardiff, [2]Centre for Trials Research, Cardiff University, Cardiff, [3]Welsh Government, Cardiff

Background
Around 60-78% of patients who consult their GP for acute sore throat in the UK receive an antibiotic prescription[1]. Antibiotic prescribing is partly driven by a desire to prevent suppurative complications in sore throats caused by Group A beta-haemolytic streptococcus (GABHS)[2]. Throat swabs can help distinguish between bacterial and viral sore throats and guide prescribing, but delays in bacteriology results limit their use in GP practices.
A new Sore Throat Test and Treat service (STTT) is being piloted in Wales, as part of the common ailment scheme (CAS) sore throat service, which currently only enables symptomatic treatment. Under STTT, patients with acute sore throat self-presenting to one of the 53 participating community pharmacies are stratified on their likelihood of having GABHS using FeverPAIN or CENTOR clinical scoring. For FeverPAIN >3 or CENTOR >2 an immediate Point of Care Test (POCT) is offered. Pharmacists can supply antibiotics to patients with a positive test result, based on predefined dosing schemes.

Objectives
To explore service outcomes for the first five months of STTT. In particular, to calculate: -
- Percentage of consultations who met the criteria for POCT and subsequent POCT result
- Percentage of patients who were referred to a different healthcare professional
- Overall antibiotic supply during the first five months of STTT

Method
Secondary analysis of data for STTT consultations taking place in community pharmacies in Wales between 15th November 2018 (date the service went live) and 31st March 2019, obtained from the Choose Pharmacy application, an integrated application supporting delivery of services in Wales. Data comprised of clinical information as entered by community pharmacists during the sore throat consultations. Analysis was carried out using Microsoft Excel® to obtain descriptive statistics.
This study did not require ethics approval.

Results
Out of 1725 patients who had an STTT consultation, 1239 (71.8%) met the clinical scoring criteria and had a subsequent POCT. Pharmacists referred 170 patients (9.9%) to other healthcare professionals, namely GPs (n=167) and dentist (n=3), when undertaking the clinical assessment.
Of the patients who received POCT, 250 (20.2%) had a positive result. Pharmacists referred 4 of these patients due to them feeling systemic unwell or when a recurrent infection was reported; a further 6 patients decided to self-care. A total of 340 patients were supplied with antibiotics (19.7% of total).

Conclusions
Screening of patients before POCT identified population that are asymptomatic GABHS carriers but do not have GABHS infection; POCT positively identified presence of GABHS in remaining patients and reduced inappropriate antibiotic prescribing. Even though it was not possible to consider the effect of seasonal variations in the incidence of bacterial sore throats, the overall antibiotic supply of ~1 in 5 with STTT is significantly lower to the figures reported as resulted from consultations with GPs; results further support the NICE Innovation briefing that concluded that POCT in addition to clinical scoring systems increases diagnostic confidence of a suspected GABHS infection as opposed to carriage of the bacteria[3], in line with principles of antibiotic stewardship. Future work will explore changes in pattern of use as the service becomes normalised and local GP prescribing data pre- and post- service introduction.

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44. Improving the safe transfer off variable-rate intravenous insulin infusions

Lorna Masson, Clare Crowley, Cate Leon, Oxford University Hospitals NHS Foundation Trust, Oxford

Context
Variable-rate intravenous insulin infusions (VRIII) are used to maintain glycaemic control for surgical patients with diabetes missing two or more meals. Both nationally and locally the safe transfer from VRIII to regular subcutaneous insulin requires improvement[1]. Locally, Trust guidelines and training are in place to ensure safe transitions. The project was undertaken on two elective orthopaedic wards at a large, acute teaching hospital where VRIIIs are commonly required. Ethics approval was not required.

Problem
Issues with transition off VRIIIs have been identified by audits, incident reports and informally by staff. Safe transition is essential for high quality diabetes care. Accurate documentation provides assurance that this has occurred and supports future glycaemic management.

Assessment of problem
Scoping and analysis was done by mapping the process from recovery to the ward with stakeholders. Information gathered was used to develop a driver diagram of potential interventions. Key stakeholders were the medicines safety team, nursing staff from wards and theatres recovery, diabetes specialist nurses (DSN) and electronic patient record (EPR) nurse educators. Orthopaedic nurses felt there were no issues with VRIII transition, but information about subcutaneous insulin was needed.
Baseline data was collected retrospectively from EPR and following each intervention between May and December 2018, until 10 data points were achieved for each cycle. This showed wide variation in documentation of key information with no indication of when VRIIIs were being discontinued. A gap in knowledge and education around documentation was identified.

Strategy for Change
Interventions were developed collaboratively with stakeholders, introduced and tested using Plan, Do, Study, Act cycles.

Intervention
Intervention one was to display a poster about subcutaneous insulin in the clinical area to address a knowledge gap perceived by nursing staff. The second intervention involved delivering teaching sessions at nursing handovers to ensure discontinuation of VRIII was documented.

Measurement for improvement
A scoring system was developed to measure safety of VRIII transition documentation. Points were given, subtracted or neutral for documentation of: decision to stop; time stopped; independent check of rate change to zero; meal and other diabetes medicines given one hour before stopped. There was a maximum score of 6 and a minimum of -3. These were plotted on a run chart.

Effects of changes
There was no difference in median score from baseline after intervention one. The range of scores suggested variation in the way staff members document VRIII discontinuation. Teaching sessions were shown to have an impact on completeness of documentation. During the sessions, nurses suggested reasons for the problems in documenting the stop times, such as staffing, time pressures and queried need for the mandated independent check of rate change to zero.

Conclusions
Overall the project did result in some improvement in VRIII documentation; however significant areas for improvement were identified. Trying to implement change was difficult when the staff did not recognise the importance of documentation. A limitation of the study was the small sample size, but this was sufficient to highlight issues. Feedback from nurses has provided insight around future training needs.

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45. Qualitative study into the experiences of hospital clinical pharmacists with relation to suboptimal pharmaceutical care

Amanda McLean[1,3], Derek Stewart[2], Scott Cunningham[3], Caroline Souter[1], Elaine Rankine[1], Vibhu Paudyal[4], 1. NHS Lothian, Edinburgh. 2. Qatar University, Doha. 3. Robert Gordon University, Aberdeen. 4. University of Birmingham, Birmingham

Introduction and Background
Hospital clinical pharmacists (HCPs) deliver patient focussed clinical pharmacy services through applying the philosophy of pharmaceutical care. Quality assurance of this complex process is challenging and there is a paucity of evidence for its benefits. HCPs regularly report prescribing type errors, but patient safety issues and prescribing errors persist perhaps due to suboptimal pharmaceutical care. This concept needs further consideration and this study aimed to explore how suboptimal pharmaceutical care was perceived and experienced by HCPs across hospitals in an NHS region..

Objectives
To explore using focus groups the concept of optimal and suboptimal pharmaceutical care.
To understand what HCPs perceive to be suboptimal pharmaceutical care in the context of their own practice.
To map the output to the Theoretical Domains Framework (TDF) [1], to understand the behavioural determinants involved.

Method
Five focus groups were held with a convenience sample of 20 HCPs. This elicited examples of what suboptimal pharmaceutical care meant to participants. These findings fed into individual one to one semi-structured interviews with 10 HCPs purposively sampled from the focus group

participants. The results from the interviews were analysed using the TDF for initial themes and further themes elicited by an inductive process. This study did not require ethics approval.

Results
Applying TDF to the interview data, all 14 domains were mapped in analysis, with the majority being grouped into social and professional role and identity, behavioural regulation and skills. Exemplar quotes included: *I think within pharmacy we're maybe not as good as sharing our negative experiences and that would've been helpful* (social and professional role and identity); *certainly after that I was incredibly careful when I was checking* (behavioural regulation); *I suppose self-reporting is very difficult. That you have to blame yourself kind of* (skills).

Conclusion
The use of the TDF enabled the output of the interviews to be categorised into useful initial themes that can be mapped to behaviour change techniques to develop a change in approach to suboptimal pharmaceutical care and better understand its impact. The study was limited due to the small sample size. Future work will look at how the wider HCP community experience suboptimal PC. Locally work is ongoing to improve practices for identifying and acting on suboptimal pharmaceutical care, for example through shared learning.

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46. Can pharmacy technicians decrease medication discrepancies at admission? A proof of concept study

David McRae, Hannah Lee, Hannah Thompson, Amanda Halloway, Sasha Nickson (Pharmacy Department), Dr Vikas Lodhi, (Consultant Acute Medicine), Prince Charles Hospital, Cwm Taf Morgannwg University Health Board, Merthyr Tydfil

Abstract previously published elsewhere. Please refer to poster on display.

47. Ward based activity comparison of non-pharmacist pharmacy staff in 7 NHS Trusts

Jessica Shami[1,2,3], Gavin Miller[1], 1. King's College Hospital NHS Foundation Trust, 2. University College London, 3. University of Hong Kong

Background
Non-Pharmacist Pharmacy Staff (NPPS), includes Medicines Management Pharmacy Technicians (MMPTs) and Medicines Management Pharmacy Assistants (MMPAs), undertake a range of ward based activities to support hospital pharmacists. However, the NHS has no specific role delineation for NPPS ward-based activities[1]. It is not evident whether activities undertaken by MMPTs and MMPAs are delivered consistently between different UK NHS Trusts and whether the amount of time taken performing these activities are comparable.

Objectives
To determine the nature and number of ward based activities undertaken by NPPS, as well as the time spent on these activities in 7 different NHS trusts.

Method
Multi-centered descriptive service evaluation was conducted in 7 NHS Trusts, incorporating 13 different hospitals, from North, Central, and South England based on convenience sampling. A standardised data collection tool was developed and piloted. All NPPS who visited wards collected data over 7 consecutive days in May 2017 documenting the time spent on the wards and the activities undertaken. The results for MMPTs and MMPAs were analysed per Trust, and the number of activities per 10 occupied beds were calculated and compared. Kruskal Wallis H nonparametric test was used to assess the difference between Trusts. Bonferroni correction was used to adjust p-values for multiple test hypothesis and a p-value < 0.05 was considered statistically significant.

This study did not require ethics approval.

Results
158 NPPS participated in the study seeing 12,270 patients over the 7 consecutive days. The number of MMPTs involved ranged from 11 to 53 per hospital, with 68% being Agenda for Change band 5 MMPTs (ranging from band 4 to band 7). All MMPAs were Agenda for Change band 3 ranging from 0 (3 hospitals) to 11 per hospital. MMPTs spent an average of 62 minutes for every 10-occupied beds, checking 1.9 allergy status, taking 1.9 drug histories, checking 2.6 patient own drugs (PODs) and undertaking 1.8 bedside lockers, ordering 2.4 items, and 3.7 other activities. MMPAs spent an average of 48 minutes for every 10-occupied beds, ordering 1.2 items, undertaking 1.3 locker checks, transferring 1.1 medicines to other wards or back to pharmacy, 0.9 ward based dispensing and 1.0 fridge, CD and stock cupboard checks, and 0.58 other activities.
There was significant variation between trusts in the amount of activities performed by MMPTs, with POD checks either the highest or second highest activity undertaken in each hospital.

Conclusions
This study has identified the average number of activities and time spent on wards by MMPTs and MMPAs. Most of the MMPTs were band 5 staff and of the 7 hospitals included in this study, 3 did not employ any MMPAs.
This study offers the first detailed comparison on the types of activities undertaken by ward-based MMPTs and MMPAs in different hospitals around the UK, supporting the utilisation of NPPS to improve patient care efficiently across UK hospitals. A larger study is underway to allow services to be benchmarked.

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48. Supporting the Foundation Journey with a Foundation Pharmacist Teacher Practitioner Foundation Rotation

Anjola Oladipo[1], Angela Macadam[1], Alice Conway[1,& 2], [1]School of Pharmacy and Biomolecular Science University of Brighton, [2]Brighton and Sussex University Hospital Trust

Background

Newly qualified pharmacists traditionally embark on training programmes in multiple fields of practice within secondary care to equip them for responsibilities of a registered practitioner.

These programmes vary nationwide yet aim to meet competencies stated in the Royal Pharmaceutical Society (RPS) Foundation Pharmacy Framework (FPF). The FP training programme at Brighton and Sussex University Hospitals (BSUH) features a 4 month innovative teacher practitioner rotation, established in partnership with the School of Pharmacy and Biomolecular Science University of Brighton (PABS). Joining an experience teacher practitioner team to facilitate and supervise undergraduate clinical placements, FPs are offered the opportunity to complete the Regional Practice Supervisor (PS) course. We report on the value of this rotation.

Objectives

To evaluate:

Views of participants on the benefits and challenges of the rotation

How the rotation supports FP skill development

Areas of the rotation in need of development

Student perceptions of placements

Method

This study did not require ethical approval. Semi-structured interviews were conducted with FPs who had undertaken the rotation from August 2016 and February 2019. Data collected had been manually coded and thematic analyses used to identify common themes.

Third and fourth year pharmacy students undertaking placements at BSUH between 2018/19 academic year completed the 13 statement questionnaire established by the PABS used to evaluate all placements. The statements were anchored by extreme descriptors four-point Likert scale, (1 = definitely agree and 4 = definitely disagree).

Results

Of 9 eligible FPSs 7 (78%) undertook semi structured interviews. The four main themes identified were i) shadowing the current FP by the incoming FP was effective rotational preparation, ii) the PS course was perceived as great benefit for the rotation and iii) future development, opportunities for FP clinical skill development via the student tasks were underutilised, iv) positive correlation between clinical lecturer role and achievement of RPS Foundation Framework attributes including recognises limitations of self and others, organisation, effective clinical skills teamwork and education and training.

136 (97%) of 141 eligible students comprising of 3rd years and 4th years completed the questionnaire and proved an overall positive placement experience with an average response for strongly agree or agree of 90% for each statement. Statements referring to FP reported above average responses: "I received adequate direction from the FP(96%) "The assigned FP made me feel welcome," (98.5%) and "The placement aided my professional development" (100%).

Conclusion

Skills developed through this rotation supported the FP progression across the RPS foundation framework. We aim to establish a formal system for ward pharmacists to refer suitable patients to the FPs for student placement tasks that aligns with service provision and support clinical learning for both the FP and students. Shadowing and the PS course are an important contributory factor to the positive experience by the FP and the students. This model enhances FP learning and could be replicated elsewhere. Student evaluation informs on the ability of the FP to undertake this role. Study limitations include small participant numbers undertaking the semi structured interviews.

49. A Review of Infliximab Biosimilar to Biosimilar Switch: Remsima® to Flixabi®

Rhona O'Neill, Sukhpreet Singh, Dr Raphael Luber, Guy's and St Thomas's NHS Foundation Trust, London

Background

Biological medicines are currently the largest cost in the NHS medicines budget. NHS England aim to save up to £300m by 2021 by making biosimilar medicines more quickly available through a new commissioning framework. These savings should enable more patients to have access to other life-saving and life-enhancing treatments.

In 2016, Lambeth Clinical Commissioning Group (CCG) and the gastroenterology directorate (GD) at Guy's and St Thomas's NHS Foundation Trust (GSTFT) switched all Inflammatory Bowel Disease (IBD) patients from infliximab originator Remicade® to biosimilar Remsima®. The success of this switch along with the emergence of more biosimilars with UK licensing, making the market more competitive, was incentive for a biosimilar to biosimilar switch to be considered. From April 2019, all patients were prescribed Flixabi® for the treatment of IBD at GSTFT.

Objectives

100% of IBD patients at GSTFT to switch from infliximab biosimilar Remsima® to infliximab biosimilar Flixabi® by August 2019. To obtain feedback from patients on the switch process using a patient survey.

Method

A letter explaining the switch along with a frequently asked question (FAQ) document was sent to each patient currently prescribed infliximab Remsima®. Receipt of the letter was implied consent. This study did not require ethics approval.

The following data was collected for each patient: current dose (mg/kg), frequency (Q), weight (kg), calculated dose (mg), number of 100mg vials per dose, cost per dose per patient for Remsima® and Flixabi®, predicted saving and whether this is the patients first or second switch.

There were no alterations made to the previous infusion times. Once the infusion was complete the switch from Remsima® to Flixabi® was recorded on the patient's electronic health record.

A patient satisfaction survey was given to all patients on a subsequent infusion to ascertain whether patients were satisfied with the level of information provided prior to the switch; the overall switch process; and if they would continue to receive written notification of similar switches.

Results

100% (n = 227) of IBD patients were successfully switched from Remsima® to Flixabi® by August 2019. No adverse events were reported and there was no resistance to the switch from patients. 47% (n= 107) of patients have already switched from infliximab originator Remicade® to biosimilar Remsima®. It is the first switch for 53% (n = 120).

66% (n = 136) patients have responded to the survey. Of these, 88% (n = 120) were satisfied with the level of information provided and with the overall switch process. 12 patients did not receive a letter and 4 patients were unsatisfied with the information provided. 98% (n = 133) patients would like to continue to receive a written notification of future switches.

Conclusions
Based on the above results, switching between best value biosimilars can be done with minimal impact to overall patient experience. However, patients should still receive formal notification of any switches in their therapy. There was no adverse impact or resistance to switching based on whether or not it was a first or second switch.

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50. Evaluating medication prescribing errors on discharge letters at a UK renal unit

Amy Page, Maria Martinez, Ryan Hamilton and Margaret Robinson, University Hospitals of Leicester NHS Trust, Leicester

Background
Polypharmacy is common in patients with renal disease. This patient cohort is at greater risk of prescribing errors and consequent potential harm from medicines[1]. The provision of poor-quality discharge information about medicines can lead to medication errors, associated adverse events and hospital readmissions[2]. Recent incident reports and anecdotal evidence highlighted a series of medicine errors on discharge letters from the renal in-patient wards at a tertiary renal centre.

Objectives
To evaluate the prevalence, nature and severity of prescribing errors on renal discharge letters.

Method
All discharge letters generated using the PROTON™ computer system and screened by pharmacists from renal wards at an NHS Trust were collected over a three-week period in February 2019. Prescribing errors identified by pharmacists were retrospectively recorded and categorised by type and severity[3]. Errors were reviewed by two senior renal pharmacists with the severity of errors agreed by consensus. This study did not require ethics approval.

Results
83 discharge letters were evaluated containing 1128 prescribed items. One or more prescribing errors were identified in 81% of discharge letters and the mean error rate was 19.1 errors per 100 prescribed items.
All discharge letters were written by junior doctors. FY1 doctors made more prescribing errors than FY2 doctors, and they made 68% of serious errors and 60% of significant errors identified. This suggests that experience gained through foundation training enabled junior doctors to be safer and more accurate prescribers. System-related factors were common with 32% (n=69) of errors related to functionality limitations of the PROTON™ computer system, including unavailability of some medicines on the system and restrictions in dose specifications.
The most common types of errors were *medicines omitted, medicines prescribed when no longer required, and wrong frequency*. 13% of errors were serious, 57% significant and 30% minor. A large proportion of serious errors involved high-risk medicines including insulin (18%), antimicrobials (14%), and anticoagulants (14%).
This study is limited as no discharge letters written by more senior prescribers were encountered during the study period. This study also only included prescribing errors identified on letters reviewed by pharmacists. It is conceivable that discharge letters not screened by pharmacists will include errors that may be not be detected.

Conclusion
This study demonstrates that a significant proportion of discharge letters from renal wards contain prescribing errors, many being serious or significant in nature and potentially putting patients at risk of harm. Junior doctors should be targeted for education and training to improve the quality and safety of prescribing at discharge. Further work is also needed to resolve limitations within, and reduce errors induced by, the PROTON™ prescribing system.

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51. Supporting newly qualified pharmacists - the role of an 'app' information source

Lydia Rygol[1], Jonathon Palmer[2], John Smart[1], Audrey Haddon[2].
[1]University of Brighton, Brighton, [2] East Sussex Healthcare Trust, Eastbourne District General Hospital, Eastbourne

Background
It has been reported that many recently qualified pharmacists lack confidence in their clinical decision making abilities[1] and this has the potential to impede their contribution to the healthcare team. Having access to an 'app' that can be used to supply relevant information has been shown to have a role in supporting the learning and practice of newly qualified doctors[2].

Objectives
The aim of this study was to explore the initial experiences encountered by, and supporting resources available to, junior hospital pharmacists in two district general hospitals, along with an evaluation of a supporting pharmacy app, 'The Helpful Pharmacy Handbook', that was developed with a group of foundation pharmacists at East Sussex Healthcare Trust (ESHT) to provide a tool to support their practice.

Methods
Pre-registration and foundation pharmacists (NHS Agenda for Change (AfC) bands 5, 6 and 7) from both ESHT hospitals were given an anonymous questionnaire to evaluate their experiences of hospital pharmacy and the introduction of the 'The Helpful Pharmacy Handbook'. A focus group building on the questionnaire responses was undertaken at one hospital with five AfC band 6 pharmacists and two pre-registration pharmacists who had completed the survey. One-to-one interviews with two AfC band 6 and 7, pharmacists were also completed at both hospitals. Both methods explored initial experiences of hospital pharmacy, coupled with their views on 'The Helpful Pharmacy Handbook'. Key themes were then identified.

Results

All 12 pharmacists asked responded to the questionnaire. Foundation pharmacists' initial experiences were enhanced by a reliable colleague support system but gaps in the induction program, clinical hierarchy and the need for further pharmacy app promotion were issues raised in the questionnaire and developed in the focus groups and interviews. The app was found to predominantly benefit the pre-registration pharmacists; the more senior pharmacists used it less as it did not fully meet their need for appropriate clinical information and pharmacy guidelines. Finally, a smartphone app was considered the most effective delivery system for such information.

Conclusions

Embedded frequent progress reviews within the induction program and inclusion of the pharmacist in the ward uniform information chart could help to build junior pharmacists' professional confidence and experience of hospital practice. 'The Helpful Pharmacy Handbook' had a positive impact on pre-registration pharmacists' practice. However, app streamlining into clinical specialties and the presence of Trust-specific pharmacy guidelines (which were described as arduous to locate on the Trust intranet) could potentially improve app usage amongst senior pharmacists. Finally, further app promotion was a key theme in order to improve overall usage. The app will therefore be modified to make it useful for all pharmacists practice and evaluated in further work.

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52. Standardisation of electronic documentation for intravenous insulin infusions

Nathan Potter, Cate Leon, Clare Crowley, Oxford University Hospitals NHS Foundation Trust, Oxford

Context

Diabetes is a common condition. Inpatients may require variable-rate intravenous insulin infusions (VRIII) to treat hyperglycaemia. The safe and appropriate use of VRIII requires improvement both locally and nationally[1]. Electronic prescribing and electronic patient records are recommended to improve inpatient diabetes care. The study was undertaken in an adult emergency assessment unit of a large, multi-site acute teaching hospital. Ethics approval was not required.

Problem

VRIIIs require frequent monitoring and adjustment to achieve effective glycaemic control and avoid patient harm. Historically, this was prompted by documenting on locally designed bespoke paper proformas. These have been replaced by an electronic prescribing, monitoring and administration (ePMA) system. There were local safety concerns about VRIII documentation which warranted investigation.

Assessment of problem

Stakeholder engagement, observation and process mapping revealed VRIII practice issues and areas for improvement. Stakeholders included medical, nursing, pharmacy staff; inpatient diabetes team; managers and ePMA teams.
It was discovered that different sections within ePMA were used to record infusion rates and that identifying when VRIII's were stopped was problematic. Unfamiliarity with the correct processes for documentation was a contributary factor.
A driver diagram detailing potential interventions, scored for achievability and impact, guided selected interventions.
Scoring tools were developed to grade the quality, accuracy and location of VRIII documentation within ePMA. Baseline data were collected, entered into a pre-piloted Excel spreadsheet and analysed (December 2017 - May 2018).

Interventions

Interventions aimed to standardise electronic documentation:

1. "Espresso" teaching sessions: quick, opportunistic ward-based teaching for nurses describing how to document rate-changes on ePMA.
2. VRIII Administration "Hints and Tips Guide": shared with staff and attached to the ward ePMA computers.

Strategy for change

Interventions were developed and tested using plan, do, study, act cycles. Stakeholders were actively involved throughout. Each intervention was performed over two weeks, during June 2018 and October 2018. Data were collected and analysed following each intervention.

Measurement for improvement

1. Increase in VRIII documentation score by 50% for:
   a. quality (out of 8)
   b. accuracy (% of infusion time)
2. All infusion rates are recorded in the agreed location of ePMA.

Effects of changes

The targets for improving VRIII documentation quality and accuracy were exceeded. All rate-changes were recorded in the recommended location on ePMA. Changes resulted in a clearer representation of patient's VRIII requirements, enabling accurate assessment of insulin use with implications for ongoing management.
Although 100% of VRIII stop times were documented, only 65% were recorded using the agreed method. Staff expressed reluctance to document the infusion rate as zero.

Conclusions

Some improvements previously achieved through the VRIII paper proformas were lost with transition to ePMA. Standardising ePMA practice in this project increased the quality and acuracy of VRIII documentation. It is imperative that the implementation of ePMA for VRIII is supported by adequate training for front-line users which remains readily accessible.
Further work is required to encourage correct documentation of zero-rate when stopping VRIII.

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53. Pharmacist Recruitment to the Multisectorial East Sussex Better Together HEE Vocational Training Scheme

Conway A[1], Purdy S[1], Furner R[1], Attkinson J[2], Blythin K[3], Callaghan E[4], Hale J[1], Reygate K[5], [1]Pharmacy Department, East Sussex Healthcare NHS Trust. Eastbourne, [2]Sussex Partnership Trust Brighton, [3]Sussex Community Trust Eastbourne, [4]NHS Eastbourne Hailsham and Seaford CCG Eastbourne, [5]Pharmacy Health Education England London, Kent, Surrey and Sussex Crawley

Background

East Sussex Better Together Foundation to Advanced HEE Vocational Training Scheme (ESBTVTS) is a multisector vocational pilot, for pharmacists registered at least one year, covering 6 speciality rotations across 4 NHS patient care organisations. Pharmacists recruited need the potential to support service needs for all 4 partners. Recruitment methodology was needed to reflect this and identify suitable candidates.

Objectives

Create and execute robust recruitment processes that:
aligns to values' based recruitment ethos
reflects recruitment practice for early years pharmacist posts
ensures selection considers partner organisations priorities, service needs and mandatory recruitment requirements
identifies applicant main characteristics
provides future recommendations

Method

For logistical management the employing organisation was East Sussex Hospital Trust
(ESHT). A job description and person specification was developed from an ESHT band 7 role with speciality roles/ responsibilities and essential/desirable criteria additions.
A literature search was completed reviewing recruitment methodology.
ESHT advertised posts for 2 weeks through nhs.jobs, interviews scheduled 10 days after.
A low shortlisting threshold was applied in parallel to national recruitment of pre-registration trainee pharmacists[1], removing discrimination against candidates with no prior job application training skills.
Four 15 minute manned and one unmanned interview stations were designed and validated against the person specification including a focus on specific partner mandatory questions, and review of candidate's GPhC revalidation record.
Stations were attempted in the same order followed by formative elements of the 2018 Regional HEE Foundation Doctors Prescribing Assessment, which was not pivotal in the final selection process.
Data related to current practice sector, year of pharmacy degree completion and post graduate qualifications was collected from application forms.
Post interview informal feedback was received from the panel and candidates recruitment experience evaluated. Ethics was not required.

Results

Thirteen applications received for 4 positions and all shortlisted. Applicants workplace was acute Trusts (7), prison (1), community (4) and bank in both community and private hospital (1). Years since completion of pharmacy degree ranged from 1yr -12yrs (mean of 7yrs). Six were currently undertaking or had completed a pharmacy post graduate qualification.
Seven applicants attended interviews held over 2 days to support applicant's availability.
Offers were prioritised based on performance across stations. All interviewees had developmental feedback.
Candidates agreed the interview was a valuable learning experience and would have liked more time to prepare.
The panel felt it was useful approach and highlighted the importance for this to be a joint process with investment of time and resources from all partners with effort rewarded.
Study limitations were low candidate number attending interviews despite alternative dates offered.

Conclusion

VTS posts appear attractive to pharmacists working in all sectors with varying experience levels. Multiple mini interviews support values' based recruitment and specific service needs.
Candidates appreciate longer lead times to interview.
Benefits operating a collaborative recruitment centre could be applied to future innovative and portfolio posts.
Evaluation gave guidance to retain this interview process, with further refinement of candidates' experience.

References

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54. Quantifying medicines risk associated with hospital admission: a novel 'doses in error' methodology

Simran Rai, Clare Bryan, Ho Suet Chin, Silouanos Christodoulou, Andrew Curnick, Sabrina Dahlab, Koutsodimos Konstantinos, Celine Le Roux, Samantha Lippett, Michael Cross, Brighton & Sussex University Hospitals NHS Trust, Brighton & Haywards Heath

Background

Prescribers make 8.9 errors per 100 medication orders most often at the time of patients' admission to hospital[1]. Trusts are expected to adhere to the NICE quality statement of undertaking medicines reconciliation (MR) within 24 hours of admission to an acute setting[2]. The NHS Safety Thermometer reports a National median of 74.5% compliance[3]. Both organisations have differing definitions of MR and neither defines actual risk. We aimed to develop a novel methodology to measure actual risk associated with hospital admission.

Objectives

1. To quantify the number of 'doses in error' prior to and post MR by a pharmacist.
2. To describe the type and potential risks of 'doses in error'.
3. To measure resolution time of unintentional discrepancies.

Method

Pharmacists collected data for a maximum of ten newly admitted patients per ward per day, up to 72 hours post admission over seven days in December 2018.
Parameters included time from admission to pharmacist MR, number of unintentional discrepancies, doses/omissions in error, potential discrepancy severity risk[4] (independently validated), discrepancies involving a critical medicine (local list), time to resolution of discrepancies and if a pharmacist non-medical prescriber (NMP) resolved the discrepancy themselves.
A one tailed paired t-test was used to analyse the difference in doses in error prior to and post MR.

This study did not require ethics approval.

Results
Data was collected for 398 patients of which 168 (43.2%) had at least one unintentional discrepancy between their prescribed medicines and medication history. MR was completed within 24 hours for 235 (60.4%) patients. The number of doses prescribed and administered in error prior to MR was 112 with a further 305 doses omitted resulting in an error rate of 0.23 per regular medication prescribed. Post MR the error rate reduced to 0.07 [relative risk reduction = 0.7, $p<0.05$]. Discrepancies were classified as minor (83.4%), moderate (11.7%), major (4.9%) and catastrophic (0%). Critical medicines were implicated in 14.7% of all discrepancies.
Pharmacists NMPs resolved 48.2% of discrepancies taking an average time of 15 minutes, compared to non-NMPs averaging 434 minutes.
Limitations include the short period of data collection, which excluded non-pharmacy serviced wards and does not fully represent the pharmacy service provided to the Trust throughout the year. Unintentional discrepancies were followed up for resolution to a maximum of 72 hours.

Conclusions
A methodology to measure number of doses in error was successfully piloted in an acute hospital setting. The number of doses in error is significantly reduced following a pharmacist MR. Use of pharmacist NMPs effectively reduces the time to resolution of unintentional discrepancies on hospital admission.

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55. Multidisciplinary (MDT) polypharmacy reviews of housebound frail older patients in South West Edinburgh

Karen Reid, Lead Integrated Care Pharmacist, Sue Perkins, Quality Improvement Facilitator, NHS Lothian, Edinburgh

This study did not require ethics approval.

Context
Caring for patients with multi-morbidities and polypharmacy is an increasing challenge. Up to 11% of unplanned hospital admissions are attributable to harm from medicines and over 70% of these are due to older patients on multiple medicines. There are significant opportunities to reduce this burden by timely and effective interventions [1 and 2]. Managing medications in older patients can be complicated by the physiologic effects of aging and the prevalence of co-morbidities. Polypharmacy reviews can help reduce tablet burden and harm from medicines in older patients [2]. The project idea is in line with Scottish government strategy [3,4]

Problem
Older housebound patients find it challenging to access services and do not have equity of access to polypharmacy review. All South West Edinburgh GP practices were invited to participate in annual polypharmacy reviews of frail older patients by a multidisciplinary team (MDT) to address complex medication regimes, co-morbidities and diverse health needs. Patients targeted were housebound, aged over 75, with more than 10 medicines on repeat prescription. The MDT included a Consultant Geriatrician, GP, and a primary care pharmacist. The reviews aimed to rationalise prescribing, reduce the risk of harm from medication and minimise waste.

Intervention
Clinical system searches identified housebound patients aged over 75 with >10 medicines on repeat. The pharmacist carried out an initial polypharmacy review and home visit to obtain up to date observations for patients and discuss the patient's views on their medication and health. The pharmacist, GP and Consultant then held a multi-disciplinary review at the surgery to agree medication changes and appropriate follow up.

Measurement of improvement and effects of change
In the six month project period 169 housebound patients, across 7 GP practices, had an MDT review. 162 medicines were stopped (40% of which were high risk) 113 dose/formulation changes made, 20 medicines started and six patients followed up by the Consultant at the day hospital. The equivalent annual figure for savings was £163.28 per patient and £27,308 in total. GPs, pharmacists and the Consultant involved established effective working relationships, sharing learning about a joint patient caseload and each other's roles.

Conclusions
This project established an effective MDT and person-centred process for polypharmacy reviews for frail, older housebound patients, with positive healthcare professional, patient and carer feedback. Future plans including monitoring the impact of this intervention on hospital admissions.

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4. Achieving Excellence in Pharmaceutical Care: A Strategy for Scotland. August 2017. Scottish Government.

56. Lessons learnt from switching practice settings within a multi-sector Foundation Pharmacist programme

Katie Reygate, Health Education England London and South East Pharmacy, Crawley, Jennifer Guffie and Rahul Singal, South East London Integrated Care System, London

Background
National drivers are steering towards a common Foundation Pharmacist (FP) programme for all newly qualified pharmacists[1], enabling development of an effective transferable workforce to deliver patient-centred care across an integrated care system. To test viability of a future national programme, Health Education England (HEE) commissioned the South East London FP Vocational Training Scheme (VTS). Of 11 newly qualified FPs recruited to the programme, 6 completed their preregistration training in community (CFP) and 5 in hospital (HFP). Spending the first 6 months of the VTS in their original practice setting, they were required to switch to the alternate setting for a period of 6 months.
To assist this transition HEE funded a second pharmacist, for the equivalent of 6 weeks full time in community pharmacy to support HFPs. In hospital, the existing practice supervisors (PS) supported CFPs.

Objective
To successfully switch FPs from one practice setting to another. Success was defined as the FP safely and confidently delivering patient centred service autonomously.
This evaluation investigated what resource was required to support FPs in this transition and the FPs' perception of the effectiveness of support received.

Method
Electronic surveys were sent to all FPs from week 8-17 of the rotation. The survey was not piloted.

This study did not require ethics approval.

Results
Survey responses were received from 10 of 11 (90%) FPs; 5 CFP and 5 HFP.
Hospital to Community transition: HFPs undertook up to 21 hours of pre-requisite work, in their own time, to ensure they were accredited to deliver services. 100% HFPs felt this work should be evenly distributed throughout the previous rotation. 60% HFPs felt confident to work autonomously within 4 weeks. All HFPs stated the support received by a second pharmacist was needed, but those with regular practice experience as an undergraduate, suggested this could be reduced. No CFPs had an induction plan on arrival.
Community to Hospital transition: CFPs had no pre-requisite work which they felt would be beneficial. 60% CFPs felt ready to work autonomously within 4 weeks. 80% of CFPs had an induction plan on arrival and a named PS who supported them. 60% of CFPs felt the support prepared them for service delivery.
All FPs were working autonomously by the end of 8 weeks.

Conclusions
All FPs transitioned from one practice setting to another within 8 weeks, with 60% providing service autonomously by the end of the 4th week. Within this time both a PS in hospital and the second pharmacist in community were needed, but duration should be adapted to individual FP needs.
The pre-requisite training requirements and induction plans for both settings need to be robustly planned and focused on preparing FPs for service delivery.
A limitation of this study is that did not investigate the FPs ability to deliver service targets within the induction and the six-month placement, as it was not included in the success criteria. Further studies are required.

References

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57. An Audit of Anticoagulation and Filter Life in Continuous Renal Replacement Therapy

Elizabeth Ridsdill Smith, Jenna Thondee, Bryan O'Farrell- Royal Free London NHS Foundation Trust, London

Background
Continuous renal replacement therapy (CRRT) is widely used in intensive care in patients who are critically unwell with acute kidney injury; metabolic derangement and fluid overload complications[1].
CRRT requires anticoagulation to prevent clotting in the extracorporeal system and early loss of the hemofilter set. Premature filter expiry is a risk to patient safety and has cost implications in both filter sets and nursing time.
CRRT filter sets are licensed for use up to 72 hours. However, a previous audit of filter life in Royal Free Hospital (2017) discovered 88-91% of filters expired before 72 hours. Anticoagulation dosing was often conservative and varied between consultants. A new guideline was created to reduce variation and optimise dosing.
The Royal Free Hospital is a tertiary liver centre, and the Trust's anticoagulation policy for CRRT reflects the needs of these patients. Heparin is given first line in patients with low bleeding risk, and epoprostenol in moderate risk patients; high bleeding risk contraindicates anticoagulation[2]. This is in line with Intensive Care Society recommendations[3].

Objectives
- To assess compliance and outcomes with the CRRT anticoagulation guidelines.
- To identify opportunities to improve the guideline.

Method
A retrospective audit of 19 patients (124 filters) treated with CRRT on ICU between July and October 2018. Patient's daily charts were obtained for data collection. This study did not require ethics approval.

Results
Between 2017 and 2018 there was not a significant improvement in filter life.
Of the 124 filters included in the audit, 3% (6) lasted to 72 hours. The mean filter life was 22.1 hours, however, filters used for medical patients had a worse average filter life (18.7 hours), compared to those used for surgical patients (31.7 hours).
In line with hospital guidelines, APTT test results meant that anticoagulation was contraindicated in 54 of 124 filters.
Anticoagulation doses were often not increased from the starting dose, despite clots or high circuit pressures, contradictory to the guideline.

Conclusions
The audit highlighted the importance of regular review of anticoagulation therapy for patients on CRRT.
There is capacity to alter the guideline, alongside specialist teams, to allow patients to receive anticoagulation where it would ordinarily be contraindicated. It would be beneficial to re-audit this area in future, to ensure any changes provide benefit to patient safety and filter life.
Several studies have documented the benefits of citrate anticoagulation, in future there is scope to consider this, particularly in medical patients, who had a particularly poor filter life.

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58. Key Performance Indicators for Antimicrobial Stewardship: establishment of a measuring and monitoring system

Marie Ronan[1], Rose Cafferkey[1], Shomik Sibartie[2], Vilasini Vikneswaramoorthy[2],
[1] Pharmacy Department, [2] Microbiology Department, Mayo University Hospital, Ireland

This study did not require ethics approval.

Background

Antimicrobial Stewardship (AMS) is a continuing and organised effort to optimise the use of antimicrobials through a variety of structures and interventions [(1)]. AMS programmes have the potential to reduce inappropriate antimicrobial use by optimising the usage of antimicrobials, thus potentially resulting in reductions in rates of antimicrobial resistance [(2)].

Measurement of the effectiveness of AMS activities is a key component of on-going quality improvement and patient safety initiatives [(3)]. In AMS programs, this usually includes measuring antimicrobial use, auditing the quality of prescribing and monitoring process and outcome indicators via a set of Key Performance Indicators (KPIs) [(4)].

The AMS Team in this model 3 hospital have designed and developed a novel and innovative measurement system using Microsoft Excel to simultaneously audit antimicrobial prescribing and measure KPIs on a quarterly basis.

Aim

To determine if the AMS team are having a positive impact on the prescribing of antimicrobials in a model 3 hospital.

Objectives

To determine if antimicrobials are being prescribed in accordance with local policy and hospital antimicrobial guidelines.

To determine if the documentation of the prescribing of antimicrobials is as per hospital policy.

To identify areas where quality improvement initiatives can be implemented that will optimise the prescribing of antimicrobials.

Methods

AMS team meetings were held to discuss what KPIs would be measured on a quarterly basis. National Recommendations for Implementation of Key Performance Indicators for Antimicrobial Stewardship in Acute Hospitals in Ireland [(3)] and a "Start Smart Then Focus" Antibiotic Care Bundle [(5)] have been developed by the HSE and the Royal College of Physicians in Ireland.

Using these recommendations an encrypted Microsoft Excel spread sheet and workbook were designed. Members of the AMS team visit every ward in the hospital each quarter to record and input data into the excel spread sheet. The data is then automatically displayed in table and graph formats. The KPI data is reported at quarterly meetings of the AMS Committee.

Results

Recording of KPIs each quarter identifies antimicrobial prescribing trends and measures compliance with both hospital and national guidelines within the hospital. It also identifies areas where quality improvement initiatives are required.

Q2 2018 onwards shows improvements in surgical choice prophylaxis and duration. A clinical pharmacist was assigned to the orthopaedic ward mid Q1 2018 and continues to practice there demonstrating the positive impact that clinical pharmacy services have on AMS. Compliance with the antimicrobial restricted use (excluding meropenem) guidelines showed 100% from Q2 2018 onwards as the pharmacy dispensary highlighted all requisitions for these antimicrobials to the AMS pharmacists.

Documentation has been identified as area where improvements are required. A new sticker has been developed and has been introduced in the hospital aiming to improve documentation. The KPI results are distributed to all consultants on a quarterly basis which also contributes to improvements in KPI measurements.

Conclusions

Measuring KPIs makes an AMS service more effective by identifying areas where quality improvement initiatives are required and a more focused AMS approach is needed. This leads to safer and better prescribing of antimicrobials leading to better patient outcomes.

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59. Audit of continuous infusion prescribing and smart pump utilisation in adult intensive care

Ailish McKenna and Ian Rowlands, Pharmacy Department, Barts Health NHS Trust, London

Background

Continuous intravenous infusions (CIVI) are commonly used in intensive care units (ICU). Medicines involved are frequently high-risk agents, such as inotropes, sedatives or vasopressors. A study reported that 15% of handwritten prescriptions in UK critical care units contained at least one error[1]. The combination of high-risk drugs with potential high levels of prescription error provides cause for concern. Smart infusion pumps with inbuilt drug libraries are a potential method to reduce medication error. An audit was conducted to assess rate and type of prescription error in CIVI's, and smart pump drug library utilisation for administration of CIVI's, across multiple adult ICU's of a large NHS Trust that utilised paper-based prescribing.

Objectives

- To assess the error rate and type of error in CIVI prescribing
- To identify the number and nature of Pharmacist interventions in CIVI prescribing
- To assess utilisation of smart pump drug libraries

Method
The active prescription charts for all ICU patients on a single day were audited. All current and discontinued CIVI prescriptions were assessed for legality (prescriptions signed, dated, and legible) and accuracy (prescriptions having a suitable concentration, diluent, and dose or rate). Clinical appropriateness of drugs or doses for individual patients or disease states was not assessed. The number and nature of Pharmacist interventions, defined as an amendments or alterations of CIVI prescriptions, were assessed. Errors and interventions were not graded for potential impact on patient care. For CIVI's being administered at time of audit, infusion pumps were checked as to whether the pump drug library or a generic drug setting was being utilised. All prescriptions were cross-referenced with the drug library to identify potential library updates. This audit did not require ethics approval.

Results
A total of 314 CIVI's were prescribed for 76 patients audited, with 47% of prescriptions containing at least one error. The most common errors were lack of date (32%), and errors in prescribing of dose or rate (16%). Common dose or rate errors included no dose specified and incorrect units; the most commonly implicated CIVI's with dosing errors were propofol (n=9), noradrenaline (n=8), fentanyl (n=7) and vasopressin (n=5). Pharmacists made interventions in 15% of prescriptions; the most common interventions were to add dose or rate where none was prescribed (n=11) or changing the units of a prescription (n=8). Of active CIVI's, 78% were being administered utilising the pump library. Of the 22% of CIVI's being administered as a generic drug, half could have been administered using the inbuilt library. Several drugs were identified as potential updates to the drug library.

Conclusions
Errors were common in ICU CIVI prescriptions and pharmacists frequently made interventions to correct dosing errors. Use of electronic prescribing for CIVI's would potentially reduce the observed error rate. Smart pump drug library utilisation could be improved, and libraries require regular update to ensure they reflect changes in drug use practice.

References
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60. Impact of multi-disciplinary involvement to improve smoking cessation in the acute admissions unit (AMU)

Ms Ravijyot Saggu and Dr Naseem Mushtaq, University College Hospital, London

This study did not require ethics committee approval.

Context
Smoking is a risky, costly behaviour. Cessation as 'treatment' can lead to lower drug doses, fewer complications/re-admissions, higher survival rates, better wound healing and decreased infections[1]. Persuading smokers to abstain is challenging.
Annually, nearly half a million smokers are admitted to secondary care[2]. AMUs are high patient turnover areas, presenting an ideal opportunity to treat and provide behavioural support to smokers.
We sought to improve the smoking cessation model in AMU, University College London Hospital.

Problem
One part-time smoking advisor was in post (plus information display board) to support cessation. Local 2018 data showed low rates of nicotine replacement therapy (NRT) prescribing and community cessation referrals, indicating in-patients were receiving sub-optimal care and smoking CQUIN targets unmet.

Assessment of problem and analysis of causes
Root cause analysis/data review (mainly) identified the "lone professional" approach ineffective; staff feedback identified a lack of awareness of good cessation practice.

Intervention
A quality improvement approach was adopted to develop a more collective cessation model. Proposals included:
- Joint pharmacy/smoking advisor working
- Further stakeholder engagement
- Identification of smoking champions
- Improved training (Drs/Pharmacy) to increase referrals/prescribing
- Health promotion with other AMU disciplines

Strategy for change
From January 2019, Pharmacist involvement in the project, led to a structured Plan-Do-Study-Act cycle to test interventions:
- Establish champions promoting cessation (January)
- Launch newly developed visual prescribing guide (February)
- Monthly training (optimal prescription/administration of NRT products, 'Very Brief Advice')
- Monthly project review (pharmacist and smoking advisor)

Objective: to achieve a 25% increase in number of cessation referrals and NRT prescriptions, within 3 months.

Measurement for improvement
Electronic in-patient prescriptions, smoking referrals, training feedback forms were collated/reviewed (Excel/'LifeQI' platform) to monitor progress. By March 2019 the new model resulted in 325% uplift in smoking referrals. The number of prescriptions created/patients prescribed NRT increased by 205% and 208% respectively (marked improvement from 2018 data).

Effects of changes
Cessation prescribing/referral rates increased (acknowledging quality not assessed or which single intervention caused this). These contributed to patient wellbeing/achieving CQUIN targets.
Doctors and pharmacy staff reported increased empowerment to discuss cessation during consultation, initiate NRT and make onward referrals (which may have increased cessation rates).

Conclusion
A multi-disciplinary, quality improvement approach is key to enable patients to quit smoking. Through smoking champions, frequent training and more collaborative working, staff can support patients to be healthier.
The project was undertaken pre-implementation of organisation wide electronic health record (presenting challenges for modifying approach/future improvement). Training feedback (quantitative/qualitative) generated suggestions for this (e.g. order sets), informing more focused delivery.

Unanticipated, it became apparent certain cohorts (e.g. unsafe swallow) may require tailored treatment/specialist input. Ongoing training/surveillance, engagement of outstanding disciplines and roll-out to other wards is planned.
Our project follows national guidance, encouraging patients to quit smoking, demonstrating a model that is effective in acute care.

References
1. Office for national statistics. Adult smoking habits in the UK:2017; July 2018
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61. Implementation of a pharmacist led multidisciplinary antimicrobial stewardship programme at a specialist hospital

Sainz de Vicuna H, Sumaria S, Curtis C, The National Hospital for Neurology and Neurosurgery, London

Context, problem, assessment of problem
NICE guideline [NG15] recommends the development of antimicrobial stewardship (AMS) programmes which should include a clinical microbiologist and a pharmacist as core members[1].
Failure to treat neurosurgical infections can lead to further surgical intervention, posing additional risks to the patient. It is therefore imperative to prescribe and administer antibiotics correctly to combat the infection. Nevertheless, inconsistent documentation of treatment plans (incorrect indication, duration) and inappropriate cessation were identified. This was amplified by an inconsistent approach to reviewing antimicrobial therapy by various clinicians (doctors/ pharmacists) depending on degree of experience.

Intervention, strategy for change
The aim was to improve antimicrobial stewardship by implementing a simple but highly effective intervention, incorporating accurate documentation and communication. The objectives were to:
1) Establish a pharmacist led weekly multidisciplinary AMS round.
2) Ensure microbiology review of all the patients on antimicrobials, documenting original start date and planned duration (stopping inappropriate antimicrobials or avoiding inappropriate cessation) and reviewing laboratory results.
3) Set an effective documentation and communication strategy with teams.
Set location and time was agreed and various members of the multidisciplinary team were invited to participate to promote stewardship. Pharmacists were provided additional training for data collection and Excel was utilised to collate and analyse the information. Patients were reviewed with the microbiologist at the round and the recommendations recorded on the spreadsheet. An email was sent to clinical teams which contained concise information from the Excel document and additional advice. A record of the AMS round review was documented in the patient's notes.

Measurement of improvement
Impact was measured 8 weeks after implementation:
1) Between April 2018 and May 2019, a total of 50 AMS rounds were led.
2) We reviewed 959 antimicrobials, resulting in 100% of the microbiology results reviewed with original start date and stop date documented. Retrospective 8 weeks audit (170 antimicrobial regimes) found that an intervention was made to 1 in 3 of every antimicrobial reviewed (53 of 170) where duration was updated in 48% (25 of 53), inappropriate cessation was avoided in 8% (4 of 53) and 5% of the regimes were ceased as inadequate (3 of 53).
3) 9 in 10 of the recommendations were actioned; 83% (44 of 53) within 24 hours of the email being sent.

Effect of changes, conclusions
We have successfully implemented a sustainable AMS programme with limited resource and received positive feedback by the wider multidisciplinary team. Pharmacists have gained greater confidence in challenging inappropriate prescriptions as well as being a recognised valued member of the AMS. However, we could further reduce patient's risks, side effects, cost and resistance of antimicrobials by achieving 100% of the recommendations actioned without delay. The plan to take this further includes developing the skills of pharmacists enabling them to be independent prescribers and increasing the rounds to twice weekly.
Limitations of this project include having no baseline data. This study did not require ethics approval.

Reference
1. National Institute for Health and Care Excellence. NICE impact: Antimicrobial resistance. London; November 2018.

62. Appropriateness of oral co-amoxiclav outpatient prescriptions from the Emergency Department

Riya Savjani[1], Christie Fung[2], Vivienne Weston[1], Christopher Gough[1], Tim Hills[1],
1. Nottingham University Hospitals NHS Trust; 2. University of Nottingham

Background
Deaths relating to antimicrobial resistance (AMR) are predicted to rise from an estimated 700,000 to 10 million each year globally by 2050 if no action is taken[1].
Co-amoxiclav is a broad spectrum antibiotic in the "watch" group of the modified WHO AWaRe categories from NHS Improvement England. A 2018-19 CQUIN target[2] was to increase the proportion of "access" group antibiotics by ≥3% compared with "watch" and "reserve". Furthermore, the importance of this has been detailed in the 5 year action plan for tackling AMR 2019-24. Co-amoxiclav should be limited in order to minimise the spread and emergence of AMR thereby improving long term patient outcomes.
Annual antibiotic audit is recommended in the "Start smart then focus antimicrobial stewardship toolkit"[3] to promote safe and appropriate use of antimicrobials. However at Nottingham University Hospitals (NUH) this does not include outpatient prescribing in the Emergency Department (ED).

Objective
To determine if co-amoxiclav is being used according to NUH guidelines by auditing against the following standard:
95% of oral co-amoxiclav outpatient prescriptions should be in line with antibiotic guidelines or based on documented microbiology advice or with clinically valid rationale.
This standard is used for all NUH antimicrobial audits.

Method
The audit took place in October 2018. Patients that attended adult or paediatric ED between 27th July and 27th September 2018 who were issued oral co-amoxiclav on an outpatient prescription were identified using the electronic pharmacy dispensing system (Ascribe).

108 prescriptions were identified and reviewed by an antimicrobial pharmacist and/or consultant microbiologist using clinical information (e.g. indication, clinical signs and symptoms) documented on the ED electronic notes database (Medway). Appropriateness was determined according to local guidelines if available and/or clinical judgement.

This study did not require ethics approval.

Results
48% of oral co-amoxiclav prescriptions were deemed appropriate. The main 3 indications for co-amoxiclav were human/animal bites, lacerations and respiratory infections.
100% of bites were appropriately treated with co-amoxiclav. However, 31% of respiratory infections and 34% of lacerations were treated with co-amoxiclav appropriately. 5 (of 108) cases were excluded due to lack of information about indication.
Trust guidelines were available for the treatment of animal/human bites and respiratory infections; however, no guideline exists for the treatment of lacerations.

Conclusions
Action is required to improve the appropriateness of oral co-amoxiclav outpatient prescriptions from the ED at NUH in order to meet Trust standards, improve antimicrobial stewardship and long-term patient outcomes around AMR.
Documentation of clinical information may have been lacking in some cases which could have led to poorer results and decreased validity.
Actions identified:

1. Write and publish a local guideline for the antibiotic treatment/prophylaxis of lacerations in ED
2. Provide teaching/training materials to prescribers in ED about the correct antibiotic treatment for respiratory infections
3. Re-audit in one year after above actions completed

References

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2. NHS England CQUIN 18-19 [online, accessed 13/03/2019].
3. PHE (Public Health England) (2011) Start Smart then Focus: antimicrobial stewardship toolkit for English hospitals [online, accessed 13/03/2019]

63. Empowering patients to self-administer their medication in hospital: improving the self-administration scheme

Roya Shemirani, Royal Free London NHS Foundation Trust, London

Context
On admission to hospital, patient medication care is withdrawn regardless of capability and instead, nurses administer medication. The Royal Free London is one of the UK's largest Trusts where currently there is a self-administration scheme which is only employed at patient request. This quality improvement project aimed to improve the scheme on the cardiac ward by 8th February 2019 to empower patients, enforce better counselling and resolve medication issues before discharge. This study did not require ethics approval.

Problem
Most eligible patients would prefer to self-administer medication in hospital and self-administration increases understanding of their medication[1]. Patients should be counselled on prescription changes in real-time, yet this rarely occurs due to time constraints and on discharge they are expected to manage their medication at home.

Assessment of problem
Feedback was obtained from patients and staff continuously. Incident forms relating to medication administration were analysed. Run charts were created to identify trends in process measures over time.

Intervention
Week 1: 100% of patients were assessed to self-administer. Whilst this increased awareness of the project, it increased nursing workload so was revised.
Week 2-4: The original assessment form was updated to be shorter and succinct.
Week 5-9: A self-administration drug chart sticker was created which improved awareness and streamlined the scheme.
Week 10-12: A ward-based dispensing service was introduced. Pharmacists could dispense medication and promptly counsel patients.

Strategy for change
The project team included pharmacists, nurses and doctors who met on a weekly basis.
Data was collected over 12 weeks. Any member of the multi-disciplinary team could identify a suitable patient to self-administer using the assessment form. Nurses confirmed each medication administration and endorsed 'self' on the drug chart.

Measurement for improvement
Process measures were the number of patients self-administering per week and the nursing time saved per drug round and per day.

Effects of changes
32 patients self-administered during the PDSA cycles. Nurses saved ~10 minutes per patient per drug round and 33 minutes per day. Self-administration prevented missed doses and delays in drug administration. There were no complaints or incidents disclosed suggestive of communication failures. Although formal data was not collected, the Trust saved ~£1087.44 from a patient who brought in her 'high cost drugs' when readmitted.
63% (n=20) of patients felt they knew as much about their medication as they did pre-admission being well-versed in their regimen. 34% (n=11) knew more due to greater counselling. One patient was more confused because her nurse administered her controlled drugs.

Conclusions
The project saved nursing administration time, allowing them time for other tasks. Patients felt empowered to continue taking ownership of their medication. Unanticipated consequences were saved dispensing time and costs. The multidisciplinary team pro-actively asked patients families to bring in medication from home which reduced medication wastage.
The next PDSA cycle is to implement key-free lockers with pin codes only known by the patient and nurse.

References

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64. The impact of pharmacist independent prescribers on prescribing in a neurosurgical unit

Eleri Phillips, Jenny Sparrow and Ruth Bennett, The Walton Centre NHS Foundation Trust, Liverpool

This study did not require ethics approval.

Context
The Walton Centre is a 192-bedded specialist neurosciences hospital.

Problem
The Trust was concerned that a national reduction in foundation doctor training posts would impact negatively on medical workload and rota commitments. This could, in turn, result in a reduction in quality of care, patient experience, and increase the number of prescribing errors, jeopardising patient safety.

Assessment of problem and analysis of causes
A review of the skill mix and roles of professionals involved in patient care was conducted. Consideration was given to which of the traditional medic responsibilities could equally, or better, be delivered by other healthcare professionals.

Intervention
One of the review outcomes was to train two existing senior clinical pharmacists to prescribe, and employ two WTE pharmacist independent prescribers (PIPs), to support the neurosurgical teams. Pharmacist technician time was redirected from medicines history acquisition at ward level to pre-operative assessment clinic (POAC). The aims were to improve prescribing accuracy and reduce junior doctor workload.

Strategy for change
It took several months to form and establish the expanded pharmacy team. Work was undertaken with the surgical division and the Drugs and Therapeutics committee to determine the remit of these PIPs, the first to be employed by the Trust.

Measurement for improvement
Audits were conducted pre- and post- implementation and new service activity was recorded. These demonstrated benefits including:

1. Division of prescribing workload; PIPs wrote 39% (1188) of all discharge prescriptions during 2017-18 and prescribed medication on admission for all elective patients admitted on the morning of surgery (mean 126/month).
2. Prescribing error rate reduction; PIPs demonstrated a prescribing accuracy rate of 99.8% (n=532) versus 89.5% for medical prescribers (n=2416)
3. Accuracy of medication data collated in POAC; 92% of histories collated by pharmacy technicians (n=29) were correct (compared to 17% for nurses)
4. Reduction in the time to complete the discharge prescription process; PIPs reduced the time to discharge prescription completion for urgent prescriptions by 45% (n=33)

Effects of changes
Point [1] above shows the extent to which PIPs have reduced junior doctor workload, consequently freeing time for other patient facing duties and specialty training. The low rate of PIP prescribing errors comparable to medical colleagues demonstrated in [2] improves patient safety. The presence of a PIP on daily surgical team ward rounds allows for prospective interventions to patient care, and ensures medicines optimisation is prioritised.
Anecdotally, the changes have been well received by patients and colleagues. They have also resulted in greater pharmacy integration into surgical teams, raised pharmacy's profile across the Trust, and increased PIP job satisfaction.
Balancing the demands of prescribing and ward round duties with other clinical and non-clinical roles can be challenging. With current staffing, there is limited resilience to maintain full service during periods of sickness/vacancies.

Conclusions
The service is now well established and has achieved its aims of reducing junior doctor workload and improving prescribing accuracy. A close working partnership with all stakeholders and careful fore planning was integral to successful implementation. Expressions of interest in further expansion of the pharmacy team have been received from the neurosurgical teams to allow PIP participation in more ward rounds.

65. Embedding Pharmacy Services In Patient Care Through Integration In National Health Care Standards

Anja St Clair Jones, Brighton and Sussex University Hospitals NHS Trust, Brighton & IBDUK Steering Group

Background: Care for patients with chronic diseases is best led by a specialist multidisciplinary team (MDT). In Inflammatory Bowel Disease (IBD) Specialist Pharmacy Services (SPS) are currently not recognised in the UK IBD standards 2013[1].
Pharmacy specialisation is developing rapidly and needs to be recognised at a national level. National service standards have to integrate SPS to ensure high quality patient care informing health policy makers when formulating national health care strategies.
We report on the incorporation of SPS into the IBD standards and e-benchmarking tool.

Objectives:
Define required quality and quantity of IBD SPS in IBD units
Integrate description SPS in the UK IBD standards
Define SPS description for the IBD e-benchmarking tool

Methods:
No ethical approval was required.
A multidisciplinary alliance of 17 organisations and patients (IBDUK) was convened to update the current IBD standards. To inform the development of medicines optimisation related standards. IBD units with developed SPS were surveyed through the UKCPA network to identified quantity and quality of advanced practice requesting information of service provision and the relevance of the Royal Pharmaceutical Society Framework for Advanced Practice (APF).
An e-Delphi consensus process was undertaken over 3 rounds by IBDUK to refine a set of evidence- and expert opinion-based recommendations for optimal service delivery across the patient journey with 80% agreement for statements to be retained.
The new standards identified informed the benchmarking tool to enable self-assessment supporting quality improvement and additional resources requests where needed. Descriptors were developed in 2 consensus workshops by IBDUK with expert pharmacy representation.

Results:
4 units, 2 teaching and 2 district hospitals with developed SPS were surveyed informing 4 relevant standards key to pharmacy leadership, medicines expert roles and MDT working for patient from diagnosis to long-term care. Proposed standards were submitted to the Delphi process and IBDUK agreed 59 standards in total. All 4 (7%) describing SPS were incorporated with 100% agreement.
IBDUK defined 0.6 WTE of MDT SPS per 250,000 population based on the pharmacy survey results. It was agreed to define high quality practice through the Royal Pharmaceutical Society Framework for Advanced Practice.
The benchmarking tool defined A-D descriptors for SPS, demonstrating A='excellent, proactive' to D='minimal, inadequate' care developed and agreed by IBDUK.

Conclusion:
IBDUK standards mandate units without SPS to develop specialist IBD pharmacy services supporting best patient care for the IBD cohort and advance expert pharmacy practice nationally.
SPS can make valuable contributions to patient care and needs to be embedded in all health care standards of chronic diseases enabling recognition and commissioning of expert pharmacy practice. IBDUK Standards 2019 for the first time embed and describe SPS as an integral part of the IBD MDT managing IBD patients.
Limitations: By identifying IBD SPS through the UKCPA relevant units may have been missed.

References:

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66. Capturing medication transfer and wastage in Wrexham Maelor's Emergency Department (ED)

Joanna Swan, Sheila Doyle, Betsi Cadwaladr University (BCU) Health Board, Wrexham

Background
Growing financial pressure on the NHS is increasing scrutiny in high cost areas e.g. medicines expenditure. Pharmacy recognised within ED, medication was often not transferred with patients to downstream wards/on discharge. Consequently 'lost' medications were omitted, and re-dispensed. This compromises patient safety and satisfaction, with additional cost implications to the NHS.[(1)]

Objective
To assess medication transfer and wastage within ED.
Standard: 100% of ED ordered medication will be transferred with patients to downstream wards or their ED lockers.

Method
This study did not require ethics approval. The audit excluded medication of deceased patients.
A five week pilot assessed audit feasibility and tested the data collection form. Following minor amendments, data was collected for 12 weeks from December 2018 to February 2019. Daily ED locker checks identified medication not transferred with patients, whom were traced using the hospital's electronic patient record. Medication was then reunited with patients on downstream wards.
If discharged, patient's own drugs (PODs) were destroyed and ordered medication returned to stock.

The number of ED ordered medications was recorded daily, to calculate the standard:

$$100\% - \frac{\text{number of ordered medicines not transferred}}{\text{total number of ordered medicines}}$$

The 100% standard was set to comply with BCU's mandatory ED transfer checklist.
Medication not transferred was assessed using the NPSA risk assessment tool.[(2)] 'Red' critical medication had their corresponding prescription charts reviewed to identify omitted doses (not given by time of next scheduled dose).[(2)] This excluded stopped or withheld medication. Results were verified by the ED pharmacist.
Cost analysis for all PODs was calculated using the Drug Tariff.

Results
317 medications were ordered by ED. 49% (n=155) of these were transferred with patients and 51% (n=162) remained on ED.
22 'red' critical medicines were not transferred. 41% (n=9) were subsequently omitted. Examples include filgrastim, anticoagulants and sodium valproate.
627 PODs were found on ED. Destruction of PODs totalled £2,205.83. However, £1,905.16 was saved as a result of auditors tracing and transferring medication to admitted patients.
Amongst medication; glasses, hearing aids, and keys were found and transferred where possible. A high proportion of 'lost' medication was subsequently re-dispensed by pharmacy.
On observation, controlled drugs storage was a concern with safe custody and recording requirements not being consistently met.

Conclusions
The audit standard was not achieved. Results may have been influenced by the lengthy dispensary turnaround time and winter pressures.
Significant cost savings could be made by improving medicines management in the busy ED environment.
Failure to administer 'red' critical medicines can significantly impact patients, including prolonging hospital stay and catastrophic results.[(2)] In an increasingly austere environment with an escalating patient burden, this is a key area for further investigation and improvement.
To conclude, expansion of the ED pharmacy service could facilitate cost-effective medicines management, adherence to controlled drug legislation and improve patient safety.

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2. UK Medicines Information. NPSA Rapid Response Report: Reducing Harm from omitted and delayed medicines in hospital. http://www.ukmi.nhs.uk/filestore/ukmiaps/RRR09-UKMItool.pdf [Accessed 22 February 2019].

67. Assessing the impact of self medication on patient and staff experiences

Thurlow L, Nurmahi C, University Hospitals Southampton, Southampton

Context

This work was conducted on postnatal wards at a teaching hospital. The self-medication project was run collaboratively by a pharmacist, medicines management technician and midwifery team. This study did not require ethics approval.

Problem

Previous patient feedback indicates that a key negative inpatient experience is poor availability and sometimes long waits for analgesia, especially if required outside designated drug round times. Patients also self-administer regular medication, sometimes unbeknown to clinical staff.

Assessment of problem

Complaints about pain relief on postnatal wards are a recurring theme; around 50% of women mention this as a negative experience of the wards. Many women may miss the designated drug rounds for numerous reasons e.g. attending feeding support classes or visiting babies on the neonatal unit.

A formal self-medication process allows women to have access to medication when needed.[1] A preliminary survey of the patient group found that 81% of women would be happy to self-administer analgesia; 41% stated it would have improved their stay in hospital.

Intervention

A self-medication scheme was introduced on the postnatal wards for a 1 month trial period. The impact on the patient and staff group was evaluated.

Strategy for change

The positive response from the preliminary survey allowed further exploration of this option. A self-medication policy suitable for use in maternity services was submitted and approved at local governance level. Midwife training on self-medication also took place during this time. The midwifery staff expressed concern about the additional workload that this may incur, so additional support from a medicines management technician was acquired during the pilot period.

Measurement for improvement

Questionnaires were issued to both the staff and the women taking part in self-medication, to gauge their experience. The process of self-medication was also timed for workload, resulting from consenting women to the scheme, dispensing of relevant medications and counselling of dosage.

Effects of changes

Data obtained from the questionnaires confirmed that all participating women were happy to self-medicate both their regular medications and analgesia on the postnatal ward. All women either strongly agreed or agreed with the statement; 'I feel that being able to self-administer my medicines during this stay improved my experience of the ward'. The time taken for the whole self medication process ranged from 5 to 20 minutes per patient. Drug round times were also taken and at best, having most women self medicating, an average of 30 minutes of midwifery time was saved due to shortened medication rounds. This was with the pharmacy team being solely responsible for patient self- medication set up.

General staff opinion, gained via the questionnaires, was that it was a positive change for patients, however many staff felt that without the technician support it would not be a sustainable service due to time constraints.

Conclusions

The SAM scheme was well received but a comprehensive service is unsustainable without technician support; ongoing funding is being sought. A partial service has continued with midwives targeting women whom they feel benefit most, usually those admitted for a prolonged hospital stay.

References

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68. Collaborating with patients to facilitate improved management of Pernicious Anaemia

Nicola Ward, Leicester School of Pharmacy, De Montfort University, Leicester,
Martyn Hooper, Pernicious Anaemia Society, Bridgend

Context

The Pernicious Anaemia Society (PAS) was formed in 2005 to support people with Pernicious Anaemia (PA), and to improve diagnosis and treatment of PA by collaborating with health care professionals and researchers. Challenges in effectively managing symptoms with the current hydroxocobalamin treatment schedule are noted, so the author collaborated with the Society to facilitate change and facilitate more effective symptom management.

Problem

Previous research indicated that 64% of surveyed PAS members were dissatisfied with their current treatment, with 20% rating their medical care as "very poor"[1]. Numerous anecdotal reports from PAS members indicated many experienced a return of symptoms before their next maintenance dose was due; impacting their quality of life. Whilst some GPs would prescribe doses more frequently than the British National Formulary (BNF) recommended 3-monthly, many would not- resulting in inconsistency and inequity of treatment. These issues were one of the main reasons for individuals contacting the PAS for guidance.

Assessment of problem

Our survey of PAS members showed that 92% experienced a return of symptoms before their next injection was due. 51% of patients were receiving their maintenance doses at a frequency consistent with the BNF recommendations, 27% more frequently, and 22% less frequently. 44% of patients who perceived their treatment was inadequate purchased additional supplementation, after refusal of their GP to give their maintenance dose more frequently. Some of these patients were purchasing parenteral products on-line to self-administer, which raises safety concerns.

Intervention

A comprehensive review of the literature was undertaken to establish the evidence base for the current dosing schedule in the BNF. This highlighted that the treatment regimen has subtly evolved since the 1960s. A review of key sources failed to identify conclusive evidence that would have necessitated the changes in the recommended treatment regimen that occurred in 1983, 1998 and 2000. A disparity between the licensed dosing schedules in the Summaries of Product Characteristics and the doses in the BNF was also noted.

A summary of the literature review and patient experience data collected through our survey work was submitted to the BNF editors for clinical review. This resulted in a change to the recommended dosing schedule for hydroxocobalamin in January 2019 from every three months to every two to three months.

Effects of changes

It is too early to determine the long-term impact of these changes on patient quality of life. To date the PAS has received numerous calls from patients noting their thanks that there is now acknowledgement of the importance of individualising care according to patient need. A follow-up study is planned to establish the impact of these new guidelines on effective symptom management and to determine to what extent prescribers are utilising this more flexible dosing schedule.

Conclusions

There are significant benefits when pharmacists utilise their expertise and work together with patient-led organisations to facilitate positive changes for patients on a national level.

References

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69. A national Renal Medicines Management Technician (MMT) workforce review

Kate Webb[1], Sofia Sharma[2] and Ruth Bednall[1],
[1] University Hospitals of North Midlands NHS Trust, Stoke-on-Trent, [2] Keele University, Keele

Background

In 2018, the Royal Stoke workforce calculator (RSPWC) was validated nationally.[1] The RSPWC identifies clinical pharmacy staffing levels in acute hospital settings. Also, in 2018, a pilot was conducted to adapt the RSPWC for use to a specialist Nephrology ward. Results from this single site pilot, on a 28 bedded Nephrology ward, with a length of stay of 5.1 days, demonstrated that 1.12 whole time equivalent (wte) MMT are required to cover the area.

Although clinical pharmacist requirements for Nephrology were described in 2002,[2] there was no information provided about staffing levels for MMTs.

Objective

This service evaluation explores the current national staffing levels for Nephrology MMT's and the roles MMT's are undertaking. This data was also compared to the data within the RSPWC Nephrology pilot.

Method

A questionnaire was developed and emailed to members of the UK Renal Pharmacy Group, in December 2018. Lead pharmacists for each Nephrology centre were asked to complete the questionnaire. The questionnaire consisted of 3 sections; general information, renal technician workforce data and renal technician roles. This service evaluation did not require ethics approval.

Results

10 questionnaires were completed and returned. 9 trusts had a nephrology ward with the number of in-patient beds ranging from 17 to 77. The Trust without an in-patient Nephrology ward or Renal MMT workforce was removed from further data analysis, so that the data was not skewed.

7 trusts reported having an MMT (Band 5) working on their in-patient Nephrology ward. MMTs were found to be completing a variety of roles including medicines reconciliation, ordering / dispensing medication, ordering ward stock medication, returning medications to pharmacy, completing medicines management audits, patient counselling and checking the suitability of patients own medications. MMTs worked on the Nephrology in-patient ward between 0.2 wte and 0.75 wte.

Conclusion

This service evaluation established that on average 0.34 wte MMT's were working on Nephrology In-patient areas. This is significantly less than the 1.12 wte MMT that was recommended in the RSPWC Nephrology ward pilot.

Although the study was not looking at Pharmacists wte on Nephrology in-patient areas, this information was collected within the questionnaire's general information section. On average 1.84 wte Pharmacists were found to be working on Nephrology in-patient areas, whereas the RSPWC Nephrology pilot identified a requirement for 1.71 wte. This may suggest that in practice nationally more pharmacist time is spent on Nephrology in-patient wards and less technician time. To confirm or refute this, further work needs to be done.

References

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70. A survey of Patient Reported Experience Measures (PREM) from a tertiary referral Tolvaptan clinic

Kate Webb and Dr Dominic de Takats, University Hospitals of North Midlands NHS Trust, Stoke-on-Trent

Background

Following the implementation of the National Institute for Health and Care Excellence (NICE) guidance on Tolvaptan[1] the University Hospital of North Midlands (UHNM) created a tertiary referral Tolvaptan clinic. Patients are referred into the bespoke clinic following assessment of eligibility at the bimonthly Tolvaptan multidisciplinary meeting.

The Trust takes part in the annual Kidney PREM survey. It aims to help renal teams understand how patients feel about their experience of care.[2] PREM is a questionnaire consisting of 39 questions in 14 sections. All questions are answered on a scale of 1 to 7, where 1 is negative and 7 is positive. The clinic is a new service and has been running since August 2016. The lead nephrologist and renal pharmacist were aware that the clinic design was bespoke, with the pharmacist working independently reviewing patients, monitoring blood tests and co-ordinating supplies of medications. They therefore wanted to gain feedback on how patients viewed the clinic.

Objective

This service evaluation aimed to understand how patients feel about their experience of care in the Tolvaptan clinic and how this compares to the experience of other patients who visit renal services (Peritoneal dialysis, Haemodialysis, Transplant and Pre-dialysis) at the UHNM.

Method
This service evaluation did not require ethics approval. All patients in the Tolvaptan clinic were written to in July 2018 and invited to take part in the PREM survey. Patients were given the option of sending their data directly to the renal registry or posting it back to the nephrology secretaries to be photocopied and then forwarded to the registry. Results from the Tolvaptan clinic were analysed internally. Results from other UHNM renal areas were analysed by the registry and the results were published in January 2019.

Results
Eleven patients (79% response rate) returned their questionnaires to the renal secretaries. Nine patients, 81.82%, stated that their overall experience of the service provided by the Tolvaptan service was the best it could be (score of 7). This compares to renal trust data, for Peritoneal dialysis, Haemodialysis, Transplant and Pre-dialysis services, of 56.83%. Ten patients, 90.91%, said that they felt that their time was used well by attending the Tolvaptan clinic, compared to renal trust data of 62.23%.

Conclusion
This service evaluation has demonstrated that although the Tolvaptan clinic is bespoke, PREM feedback is similar, if not better, to the experience of nephrology patients who attend other renal services at the Trust.
The authors acknowledge that comparing data to Peritoneal dialysis, Haemodialysis, Transplant and Pre-dialysis services offered within the Trust is a limitation to this study. However due to the way PREM data is reported, the authors accepted this limitation.
Further patient experience feedback needs to be conducted to give continual reassurance that patients are happy with the Tolvaptan clinic. Future work should also aim to compare this service to other Tolvaptan clinics that run nationally.

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71. Patient safety and experience improvements with Medicines Management Technician supporting medicines administration

Winstanley S, Wirral University Teaching Hospital NHS Foundation Trust, Wirral

Context
This specialist role was implemented on two general medicine wards in the Trust. Trust leads were consulted and supportive of the original pilot to improve patient care through multi-disciplinary working.

Problem
National data demonstrates a high number of vacant nursing posts across the NHS, as of September 2017 this accounted for up to 40% whole time equivalent in all staff groups in our Trust. This shortfall of nurses has increased the daily workload of staff resulting in;

- Regular interruptions to nurses on medicines rounds increasing total time taken to complete
- A reduction in nursing time to directly care for patients
- An increase in missed or delayed doses
- Time constraints resulting in patients not given the opportunity to ask questions about their medicines

Intervention
The Trust agreed to pilot a Medicine Management Technician (MMT) to support nursing staff by administering oral and inhaled medicines to patients. They were also able to perform the second check for intravenous medicines (IV) and medication counselling at discharge. The MMT completed competency assessments and ward based observations prior to implementation. With additional MMT support in medicines administration we were able to free the nursing staff to concentrate on clinical tasks specific to their role.

Effects of Changes
The MMT role of supporting nurses on the medicine administration rounds demonstrated;

- 47% reduction in total number of interruptions during the round
- Average 56% (50minutes) reduction in nurse involvement on the round
- 100% of nurses rated the support of the MMT invaluable with a positive impact in improving patient care
- 100% of nurses were able to undertake other clinical duties during the MMT supported rounds e.g. attending crash call, discussions with families
- Unavailable medicines were ordered and given within 30 minutes by the MMT compared to 12 hours average on the nurse only medicines round
- 100% of patients administered medicines by the MMT were given the opportunity to ask questions about their medicines during the round and at discharge
- Patient feedback figures showed 87% were extremely satisfied with the service and 13% very satisfied

Funding was approved for two permanent MMTs to support the nursing teams with the view to expand this service across the Trust. It was identified that although the MMT assists in second checking IV medicines this does not remove the requirement of a nurse in medicines administration.

Conclusions
A model ward was chosen to ensure engagement in the project however the full impact of the MMT role would have been greater on a standard ward. As we are currently filling vacant nursing posts this could potentially change if there were to be an increase in nursing colleagues. The implementation of an MMT with an understanding of medicines ensures the right patient receives the right medicine at the right time and is an innovative use of multidisciplinary resources.

References

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72. An Audit to Determine Accuracy and Safety of Prescribing Apixaban and Rivaroxaban

Laura H Young, Jessica Purkiss, North Tees and Hartlepool NHS Foundation Trust, Stockton-on -Tees

Background

NICE[1-4] approval for use of Direct Oral Anticoagulant drugs (DOACs) in thromboprophylaxis instigated an increase in use. Patients were commenced on or switched to DOACs from traditional anticoagulants such as warfarin. Use of formulary DOACs increased by over £38,000 in 3 years (2015-2018). Concerns regarding correct DOACs prescribing in line with varying creatinine clearance have been raised. This has been reflected in error reporting via the trust's Datix system.

Objectives

To identify the percentage of DOAC prescribing meeting guideline adherence.
The standards set for this audit were:

Standard 1: 100% of Apixaban prescriptions meet the prescribing guidelines as per Summary Product Characteristics (SPC)
Standard 2: 100% of Rivaroxaban prescriptions meet the prescribing guidelines as per SPC
Standard 3: 100% of patients have data recorded to be able to calculate creatinine clearance (weight, age, serum creatinine)

Method

Data for 90 patients was collected over the two-week period by pharmacy staff screening drug charts across 20 wards. Criteria for inclusion were age over 18 years; a current inpatient in the trust; and prescribed apixaban or rivaroxaban. Interventions needed were made by pharmacists at ward level documented and data recorded.

Results

Of the 90 patients, 28 were prescribed rivaroxaban and 62 apixaban. The main indication was atrial fibrillation (61.19%), other indications were, recurrent deep vein thrombosis and pulmonary embolism (15.6%). 23.3% had no indication recorded. Standard 1 had 85.58% compliance and standard 2, 93.33%. All 19 prescriptions needing intervention were followed up by a pharmacist. Standard 3 had 90% compliance, with weight being the main data missing. Percentage of prescriptions requiring interventions was 21%. For apixaban out of a total of 62 prescriptions, 13 interventions were made, 23% of these were on new prescriptions. For rivaroxaban, out of a total of 28 prescriptions the 6 interventions made were all on pre-existing medication. For both DOACs, newly initiated patients accounted for only 15.8% of the interventions made.

Conclusion

Results show that the majority of DOAC prescriptions in the two-week period met standards, but education is needed across the trust to ensure DOACs are always correctly prescribed. It raised the need to highlight the importance of recording weight on admission as not just new prescriptions, but pre-existing prescriptions needed intervention. The importance of all DOACs doses being reviewed during an inpatient stay was raised by this audit.

References:

1. National Institute for Health and Care Excellence (2012) Rivaroxaban for the prevention of stroke and systemic embolism in people with atrial fibrillation (TA256)
2. National Institute for Health and Care Excellence (2012) Rivaroxaban for the treatment of deep vein thrombosis and prevention of recurrent deep vein thrombosis and pulmonary embolism ((TA261)
3. National Institute for Health and Care Excellence (2013) Apixaban for preventing stroke and systemic embolism in people with nonvalvular atrial fibrillation (TA275)
4. National Institute for Health and Care Excellence (2012) Apixaban for the prevention of venous thromboembolism after total hip or knee replacement in adults (TA245)

Regional Pre-Registration Pharmacists Project Winners 2019

73. Evaluating the use of patient controlled analgesia (PCA) at University Hospital Southampton (UHS) NHS Foundation Trust

Sarah Alzetani[1], Claire Sheikh[1], Anna Walton[2], [1]Pharmacy Department, [2]Anaesthetics Department, University Hospital Southampton NHS Foundation Trust, Southampton

Background

Patient controlled analgesia (PCA) refers to a programmable pump (commonly initiated by anaesthetists) that allows patients to self-administer small doses of opioid analgesia intravenously as required. There are no formally recognised PCA guidelines at UHS. Morphine is generally recommended as the first-line[1] analgesic unless patients have:

- An allergy/sensitivity to morphine
- Impaired renal function (an estimated glomerular filtration rate (eGFR) < 60 ml/min)

The acute pain team (APT) have raised concerns around an increase in first line use of fentanyl PCA. At UHS, morphine PCA uses pre-filled syringes. Fentanyl and other opioids such as oxycodone require preparation on the wards and replacement every 24 hours[2]. This has an implication on nursing time and introduces a clinical risk to patients considering the safety of injectables[2] as well as medication errors.

Objectives

To gather baseline data on PCA prescribing at UHS and quantify first-line use of morphine versus other opioids using the following standard:

- 100% of morphine PCA is prescribed first-line for patients without a documented allergy/sensitivity to morphine and/or an eGFR < 60ml/min.

Method

This project utilised a restrospective secondary data collection method. Ethics approval was not required. Using reports from electronic prescribing systems, JAC and Metavision, a database of PCA prescribed at UHS over a 3-week period from 24th Sept-13th Oct 2018 was generated. Paediatric patients were excluded. Data was analysed (in Excel®) using descriptive statistics.

Results

Of the 171 first-line PCA prescriptions analysed, 98 (57%) were written down for fentanyl, 57 (33%) for morphine, 15 (9%) for oxycodone and 1 for morphine with ketamine. The same initial standard doses were recorded for each type of analgesic.
Of the 113 first-line PCA prescriptions written down for either fentanyl or oxycodone, 100 (88%) were associated with patients with no documented allergy/sensitivity to morphine and/or an eGFR < 60ml/min. According to the standard, this population could have therefore received morphine first-line.

Conclusions

Currently, morphine is not prescribed first line at UHS for PCA. Fentanyl is the most commonly prescribed PCA despite patients often not having a recorded allergy/sensitivity to morphine and/or impaired renal function (eGFR < 60 ml/min). Results of this audit were presented at the UHS anaesthetists education day on the 28th June 2019. This propagated good discussion among the anaesthetists and the following recommendations were agreed with input from the APT and pharmacy:

a) To improve the level of adherence to current UHS recommendations, there is a need for formal PCA guidelines.
b) To improve safety, save nursing time and reduce medication wastage, consideration should be given to purchasing pre-filled syringes for fentanyl PCA.

References

1. Acute Pain Team. Patient Controlled Analgesia Workbook. 4th ed. University Hospital Southampton NHS Foundation Trust; 2016. (Accessed 1st January 2019)
2. National Patient Safety Agency. Promoting safer use of injectable medicines. London: NPSA. 2007 (Accessed 1st February 2019)

74. Documentation of Antimicrobial Allergies at the Royal Berkshire Hospital

Amani Naima, Christiana Ogunmodede and Emma Geoghegan, Royal Berkshire Hospital, Reading

Background

Reporting and documenting patient's allergies plays a vital role in the choice of treatment and medicines optimisation, particularly with antimicrobials. The current trust's guidelines state that 100% of all patients should have their allergy status documented on their electronic prescribing record (EPR), including details such as the name, strength and formulation of the allergen, nature and date of reaction. This audit is similar to that conducted by Guys and St Thomas Hospital conducted in 2011 which focuses on improving allergy documentation[1].

Objectives

The aim of the audit was to determine if there is a robust documentation of antimicrobial allergies in the trust and to improve the quality of antimicrobial allergy documentation. This was to be measured against the trust policy: Management of penicillin allergies CL 991. This was to be achieved by analysing the allergy documentation of 50 patients on medical and surgical wards between 05/11/2018-08/11/2018. This study did not require ethics approval.

Method

Initially, the aim of the audit was to measure the standards only against penicillin allergies. A pilot was conducted over the period of a week on an acute medical ward. This determined that it would be more feasible to look at all antimicrobial allergies as the sample size was too small. The inclusion criteria involved all patients with any antimicrobial allergy recorded on EPR that presented on an acute medical or surgical ward within the specified time frame, which included 53 patients. Each patient was interviewed to recall the date the allergy occurred and the name, formulation, strength, nature and severity. This information was then recorded and compared against information on EPR and their Summary Care Records. A total of 74 allergies were recorded. The gathered data was recorded onto Excel. Several graphs were thereby generated and data was interpreted by comparing the results in percentages against the policy.

Results

This audit demonstrated that the guidelines on documenting allergies were not met. Although 88%of all allergies had been recorded, only 81% had their name stated and only 3% included formulations. Furthermore, only 20% of reactions were recorded, 3% of allergens had a strength recorded and only 2% had recorded the date of the reaction.

Conclusion

The current policy on documenting allergies is not being met. A potential measure to overcome this issue includes educating all professionals involved in documenting allergies on the importance of correct documentation. This is particularly important as incorrect allergy documentation could result in the use of more scarce and protected antimicrobials thereby increasing resistance. This could be achieved by conducting a study session on allergies including what defines an allergy versus adverse drug reactions or side effects and the implications of incorrect documentation on drug choice, particularly with the limited choice of antimicrobials. Additionally, the information could be communicated by emailing all healthcare professionals with a summary of this audit, including statistics and findings.

References

1. McKenzie, C., Hatton, K., Barrett, N. *Improving the accuracy and timeliness of medication allergy documentation in the intensive care unit*. The Pharmaceutical Journal 2011;287:578.

75. Can pharmacists 'write' discharge documents in addition to their regular ward role?

Eliana Basini-Gazzi, Sarah Griffiths, Pharmacy Department, Prince Charles Hospital, Cwm Taf Morgannwg University Health Board, Merthyr Tydfil

Background

A pilot was carried out at our district general hospital to determine whether an independent prescribing pharmacist (henceforth, the pharmacist completing and 'signing off' both the clinical summary and discharge prescription sections of the local electronic discharge advise letter (eDAL) (without involvement of a medical prescriber)) on one ward improved the timeliness of medicines supply at discharge. The present audit was carried out to establish whether local clinical pharmacy standards, for timeliness of clinical verification of newly prescribed medicines and supply of non-stock medicines, could be met during the pilot when the pharmacist was also carrying out the new additional tasks.

Objective

- To determine the percentage of newly prescribed items or dose changes clinically verified by the ward Pharmacist.

Methods

This study did not require ethics approval. Drug charts were assessed daily for 3 weeks in October.
Week 1: Control group: Traditional ward pharmacy service carried out by pharmacist 1.
Week 2: Intervention group: Pharmacist 1 writing eDALs and attempting to carry out the traditional ward pharmacy service. An extra pharmacist (pharmacist 2) was on standby to offer support for any traditional ward pharmacy service activities, that were unable to be carried out by pharmacist 1 (pharmacist 2's clinical verifications were recorded).
Week 3: Intervention group: Pharmacist 1 writing eDALs and carrying out the traditional ward pharmacy service with no extra pharmacist support.
On a data collection form designed specifically for the purpose, medication charts were audited daily to identify:

- the total number of 'new' medication items prescribed
- the number which had been clinically verified
- the number of medicines which had been documented as not being administered by nursing staff with explanation code '5'; 'medication not available on ward'

The number of eDALs written, new patients to the ward and re-written charts were also recorded.

Results

(where n= number of drugs prescribed on audited charts).
In week 1 where a single pharmacist (1) carried out a traditional ward pharmacy service, 72%(n=382) of medications were clinically verified. In week 2 where pharmacist 1 attempted a traditional ward pharmacy service in addition to writing DALs, with pharmacist 2 for support, 84%(n=325) of medications were clinically verified. In week 3 where pharmacist 1 carried out a traditional ward pharmacy service and wrote DALs with no pharmacist 2 for support, 50% (n=400) of medications were clinically checked.
There were only 2 administration code 5's throughout the 3 week period, both were identified and resolved by pharmacist 1.

Conclusion

The decrease in the proportion of medicines clinically verified during the ward visit in week three suggests that it is not possible for a pharmacist to absorb discharge prescription completion into a ward visit and maintain local clinical pharmacy standards. Future work should seek to identify the most appropriate skill mix of pharmacy team members to carry out traditional ward activities and enhanced roles, such as described above, without compromising local ward pharmacy standards.

76. An Audit of the Prophylactic Use of Filgrastim in Patients Receiving R-CHOP for Non-Hodgkin's Lymphoma

Sherief El- Shakankery, under the supervision of Sumantha Gabriel and Emma Groves,
Royal Victoria Infirmary, Queen Victoria Road, Newcastle-upon-Tyne

This study did not require ethics approval

Background

Chemotherapy-induced febrile neutropenia (FN) is a serious side effect and major risk factor for infection as well as a dose-limiting toxicity. One method of reducing the incidence of febrile neutropenia is using granulocyte stimulating factor (G-CSF).
Patients ≥65 years with Non-Hodgkin's Lymphoma (NHL) receiving R-CHOP chemotherapy are thought to have a 24-47% risk of FN [(1)]. It is recommended these patients receive G-CSF as primary prophylaxis. NUTH is unique in prescribing Filgrastim on days 7, 11 and 14 of treatment as primary prophylaxis for this cohort. The regional standard is to continue G-CSF injections until neutrophil count has recovered to > 1.0 x 10^9/L on two consecutive days (min. 5 days) [(2)].

Objectives

To audit prophylactic G-CSF prescribing against Trust guidelines for patients 65 years or older with NHL receiving R-CHOP chemotherapy. We also assessed the frequency of hospital admissions for FN in patients receiving curative R-CHOP for NHL. Lastly we developed a survey to collect clinician opinions of NUTH G-CSF guidelines.

Method

Patients with NHL over 65 who received 'R-CHOP' at NUTH between 01/06/2017 – 31/01/2018 were identified using our electronic chemotherapy prescribing system. Electronic medical records were used to extract patient, chemotherapy and hospital admission details. The prescriber survey was conducted using 'SurveyMonkey'.

Results

30 patients with an average age of 73, cumulatively received 138 cycles of R-CHOP during the defined time period. 91.3% (126/138) of G-CSF prescriptions co-prescribed with chemotherapy were in accordance with trust policy. G-CSF on day 7, 11 and 14 corresponded with 8 hospital neutropenic admissions and 0 non-neutropenic. Comparatively 8.7% (12/138) of G-CSF prescriptions were for ≥5 days and corresponded with 5 hospital admissions with FN and 1 non-neutropenic. The average length of admission due to FN was 6 days which if prevented could save around '£2,310 a week' [(3).] 17 chemotherapy prescriptions were dose reduced, of which 82.4% (14/17) were co-presided with the novel regime. There were no deaths as a result of neutropenic sepsis in this cohort.
Four consultants and three registrars completed the prescriber survey. All stated that the day 7, 11 and 14 regime 'offers the best balance of efficacy and side effects'. Other reasons included; 'following trust policy', 'it is built into Chemocare', 'advice from senior staff' and 'local experience of use'.

Conclusion

Cycles receiving the NuTH GCSF regime resulted in FN admission at a rate of 6.35% (8/126) a reduction of FN admission of 17.63 – 40.65 % compared to no prophylaxis (NuTH). However, more comprehensive data and direct comparison to alternate regimes is needed to determine the efficacy of the 7, 11,14 regime. This project will be presented at a clinical governance meeting resulting in a review of trust guidelines.

References

1. Newcastle-upon-Tyne Hospitals, (2018) Guidelines for use of GCSF, Revision 2.01, NCCC cancer Services and Clinical Haematology, Last accessed 02/09/19, Available via NuTH Intranet (Internal Guideline).
2. Age UK. (2017). Four million hospital bed days lost since 2011 due to problems securing social care. Last accessed 16/04/2019. Available: https://www.ageuk.org.uk/latest-press/articles/2017/october/four-million-hospital-bed-days-lost-since-2011-due-to-problems-securing-social-care/.
3. NCA (2016). Guideline for the use of granulocyte-colony stimulating factor (G-CSF) in adult oncology and haematology patients, Last accessed 02/09/19, Available: http://www.northerncanceralliance.nhs.uk/wp-content/uploads/2018/11/GCSF-Guidelines-Northern-Cancer-Alliance-January-2018-v1.5.pdf .