

## Awards and Poster Presentations

Poster Number	UKCPA Awards (Poster) Section The following papers won awards during 2018	Page
1	<b>Biogen Multiple Sclerosis Award 2018</b> <b>The Role of a Pharmacist in the Multidisciplinary Team and The Use of Pharmacist Non-Medical Prescribing in Multiple Sclerosis</b> <u>Wong, E</u> , Singh-Curry, Dr. V, Chelsea and Westminster NHS Foundation Trust, London	5
2	<b>Bowmed Ibisqus Antimicrobial Management Award 2018</b> <b>Evaluation of antimicrobial stewardship ward rounds led by junior members of the healthcare team</b> <u>Ryan Hamilton</u> <sup>1</sup> , Benedict Rogers <sup>2</sup> , <sup>1</sup> Pharmacy Department, <sup>2</sup> Department of Infectious Diseases and Tropical Medicine, University Hospitals of Leicester NHS Trust	6
3	<b>UKCPA Patient Safety Award 2018</b> <b>Proving the patient safety benefits of a multi-skilled Pharmacy Team to the Emergency Department</b> <u>Heald V</u> , Kaba S and Kwok J (Lead Pharmacists for Acute Medicine and Emergency Department) Lancashire Teaching Hospitals NHS Foundation Trust, Preston	7

### UKCPA/PRUK Clinical Research Grants

The following papers successfully secured UKCPA/PRUK research funding

4	<b>Development of an Emergency Department Pharmacist Practitioner service specification</b> <u>Daniel Greenwood</u> , Douglas Steinke, Sandra Martin, Mary P Tully, University of Manchester, Division of Pharmacy and Optometry, Manchester	8
5	<b>Multidisciplinary prevention of Medication Related Osteonecrosis of the Jaw</b> <u>Andrew Sturrock</u> MSc, Principal Lecturer – Master of Pharmacy Programme Leader <sup>1</sup> , Professor Philip M. Preshaw PhD, Professor of Periodontology and Consultant in Restorative Dentistry <sup>2</sup> , Dr Catherine Hayes PhD, Reader in Health Professions Pedagogic Practice & Visiting Professor of Higher Education <sup>1</sup> , Professor Scott Wilkes PhD, Head, School of Medicine and Professor of General Practice and Primary Care <sup>1</sup> , <sup>1</sup> Faculty of Health Sciences and Wellbeing, The Sciences Complex, University of Sunderland, <sup>2</sup> Centre for Oral Health Research and Institute of Cellular Medicine, Newcastle University, Newcastle upon Tyne	9

### Poster Presentations

Title and authors details

6	<b>Audit Assessing Adherence to Micronutrient Monitoring Recommendations for Home Parenteral Nutrition Regimens</b> <u>Muhammad Ali</u> , St George's Hospital NHS Foundation Trust, London	10
7	<b>Tackling Heart Failure through Adherence and Medication Reviews – The Impact of Pharmacist Support</b> Mari Fairfax <sup>1</sup> , <u>Rogsana Ara</u> <sup>1</sup> , Gayle Campbell <sup>1</sup> , Clare Thomson <sup>1</sup> , <sup>1</sup> Guy's and St Thomas' NHS Foundation Trust	10
8	<b>Medicines Optimisation in Heart Failure – How has it changed over two years?</b> <u>Rogsana Ara</u> <sup>1</sup> , Clare Thomson <sup>1</sup> , Gayle Campbell <sup>1</sup> , Mari Fairfax <sup>1</sup> , <sup>1</sup> Guy's and St Thomas' NHS Foundation Trust, London	11
9	<b>Antimicrobial prescribing for respiratory infections on an acute medical assessment unit</b> Mary E. Bolland <sup>1</sup> , <u>Stuart E. Bond</u> <sup>2</sup> , Kathryn M. Ashton <sup>2</sup> , and Graham M. Smith <sup>3</sup> . <sup>1</sup> Acute Assessment Unit, <sup>2</sup> Pharmacy Department, <sup>3</sup> Respiratory Medicine, Pinderfields Hospital, Wakefield	11
10	<b>Improvements to adult inpatient gentamicin prescribing: the role of the antimicrobial pharmacist</b> Rachael A. Hinchliffe, Awais Mobeen, Kathryn M. Ashton, and <u>Stuart E. Bond</u> , Pharmacy Department, Pinderfields Hospital, Wakefield	12
11	<b>Implementation of falls-related medication reviews (MR): A Quality Improvement project (QIP)</b> <u>Alexandra Cardoso</u> , Whittington Hospital, London	13
12	<b>Safer use of intravenous morphine sulphate in Theatres</b> Jennifer Flatman, <u>Gillian Cavell</u> , Pharmacy Department, King's College Hospital NHS Foundation Trust, London	13
13	<b>Collaboration between South East Acute Trusts to develop a Preregistration Pharmacist Training Programme</b> <u>Conway A</u> , Savickas V, Brighton and Sussex University Hospital NHS Trust; Purdy S, Haddon A, Eastbourne Sussex Healthcare NHS Trust; Buckler A, Lelliott L, Surrey and Sussex Healthcare NHS Trust	14
14	<b>Pharmacy-led prescribing of natalizumab in MS patients improves the quality of monitoring and overall safety</b> <u>Dorsey-Campbell R</u> , Quinn T, Felongco T, Delacruz D, Walters P, Scalfari A, Singh-Curry V, Malik O, Nicholas R, Imperial College Healthcare NHS Trust, London	15
15	<b>Identification of the unmet medication needs of first time post MI patients</b> <u>Kirsty Dove</u> , Mid Yorkshire Hospital Trust, Wakefield	15
16	<b>Healthcare experiences of people with hip osteoarthritis: a meta-ethnographic analysis of qualitative studies</b> <u>George Elgallab</u> <sup>a</sup> , Tania Jones <sup>a</sup> , Gemma Donovan <sup>a</sup> , <sup>a</sup> University of Sunderland, Sunderland	16
17	<b>Service Evaluation: Integration of Clinical Pharmacist into Community Care Teams</b> <u>Hannah Fletcher</u> and Sara Moore, Harrogate and District NHS Foundation Trust, Harrogate	16
18	<b>Appropriateness of the Intravenous (IV) Antibiotic Clinical Review</b> <u>Dominique Hall</u> and Tori Young, Wirral University Teaching Hospitals	17

Poster Number	Title and authors details	Page
19	<b>Pharmacists working in Emergency Departments reduce medication related delays and improve the safety of medicines and patient care</b> Ryan Hamilton, Sarah Hackney, Rishi Gupta, & David Kearney, Pharmacy Department, University Hospitals of Leicester NHS Trust	17
20	<b>Evaluating the use of the RPS antibiotic checklist by Community pharmacists</b> Atiqah Liaqat, Hava Nasar, Mariam Qasim, Aida Shiraz, <u>Gill Hawksworth</u> , Saima Afzal, Sarah Frank, University of Huddersfield. Philip Howard, NHS Improvement Patient Safety Team, London	18
21	<b>An audit of Compliance with Trust Medicines Reconciliation Guidelines</b> Coupe J and <u>Herring C</u> , Wirral University Teaching Hospitals NHS Trust	18
22	<b>Exploring patients' perception of the term allergy via semi-structured interviews</b> Rebecca Walton, University College London School of Pharmacy, Ian Wong, Centre for Medicines Optimisation Research and Education, University College London School of Pharmacy, <u>Yogini Jani</u> , Centre for Medicines Optimisation Research and Education, UCLH NHS Foundation Trust, London	19
23	<b>An evaluation of the impact of HIV medicines switches on patient outcomes</b> Mr. Tsz Ho Wong, University College London School of Pharmacy, Miss. Sheena Castelino, Pharmacy department, HIV & Sexual Health, Guy's Hospital, Guy's & St Thomas' NHS Foundation Trust, London, <u>Dr. Yogini Jani</u> , Centre for Medicines Optimisation Research & Education, UCLH NHS Foundation Trust and University College London School of Pharmacy	20
24	<b>Electronic Discharge Summary process for Pharmacy: recovery of a failed implementation</b> Cooper R, <u>Jones N</u> , University Hospitals Bristol NHS Foundation Trust, Bristol	20
25	<b>Digital Clinical Prioritisation Dashboards for safe and effective patient prioritisation and handover (acuity)</b> Cooper, R, <u>Jones, N</u> , University Hospitals Bristol NHS Foundation Trust, Bristol	21
26	<b>Increase knowledge of disease modifying therapy in multiple sclerosis amongst clinicians and pharmacists</b> <u>Janeme Lam</u> & Yesim Karapinar, Northampton General Hospital	21
27	<b>Reducing Meropenem consumption at Northampton General Hospital (NGH) using electronic prescribing</b> <u>Jessica Masaun</u> , Kiran Dhillon, Lauren Ramm, Northampton General Hospital, Northampton	22
28	<b>Pharmacist medication reviews: audit to determine compliance with devised standard for frequency</b> Naiomi Morris, Sasha Bettell-Higgins, <u>David McRae</u> , Pharmacy Department, Prince Charles Hospital, Cwm Taf University Health Board, Merthyr Tydfi	23
29	<b>Comparison of errors made on discharge prescriptions written by doctors and pharmacists</b> <u>Miller G</u> , Whitehead D, Limbau A, Easmin S, King's College Hospital NHS Foundation Trust	23
30	<b>An audit on the effectiveness of the Green Bag Scheme</b> Mistry N, Patel A., Royal National Orthopaedic Hospital (RNOH), Stanmore	24
31	<b>Pharmacist prescribing of discharge medications in elderly care: a pilot study</b> <u>Sarah Mitchell-Gears</u> and Rania Ishak, Pharmacy Department, Pinderfields Hospital, Wakefield	24
32	<b>Introduction of Paracetamol dose banding for adult inpatients to improve patient safety</b> Briggs, P, Deady, P, <u>Mitchell-Gears, S</u> , Mid Yorkshire Hospitals NHS Trust	25
33	<b>An Evaluation of a Clinical Pharmacist Medication Review Service in Primary Care</b> <u>Eoin Moroney</u> , Kevin Pickavance, David Russell, Stacey Nelson, Marie Neville, Sephora Shaw, Edel Marshall, Neveen Sorial. Brighton and Hove Clinical Commissioning Group (BHCCG) part of the Central Sussex and East Surrey Commissioning Alliance	26
34	<b>Reduction in hypnotic initiation in older patients using e-prescribing and targeted feedback</b> <sup>1</sup> C.Alice Osborne, <sup>2</sup> Kelly Fisher, <sup>1</sup> Luke Elliott, <sup>1</sup> Jaymi Mistry, <sup>1</sup> Emma Ritchie, <sup>3</sup> Bryn Williams, <sup>1</sup> Pharmacy, <sup>2</sup> Nursing <sup>3</sup> Informatics, Guys and St Thomas NHS Foundation Trust, London	26
35	<b>Improving medication management for liver transplant patients – Introducing a pharmacist to outpatient clinics</b> <u>Lindsay Smith</u> and Alison Orr, Kings College Hospital NHS Foundation Trust, Denmark Hill	27
36	<b>Measuring compliance with Start Smart – Then Focus guidance on antimicrobial prophylaxis administration</b> <u>Basirat Osinaike</u> , East Sussex Healthcare NHS Trust, Hastings	27
37	<b>Evaluating patients' understanding of medication on a medium secure forensic ward</b> <u>Sabeeha Patel</u> & Loren Bailey; South London & Maudsley NHS Foundation Trust, London	28
38	<b>Quality of Allergy Documentation- Audit results in a Mental Health and Community Trust.</b> Ogo Echem Clinical Pharmacist, <u>Jonathan Peters</u> Antimicrobial Pharmacist, Gillian Ritchie Audit Pharmacist, Southern Health NHS Foundation Trust, Hampshire	29
39	<b>Patients' perception of a Gentamicin Information-Leaflet to improve reporting of side-effects</b> <u>Rasul A</u> <sup>1</sup> , Stewart L <sup>1</sup> , Robb F <sup>1</sup> and Akram G <sup>2</sup> , <sup>1</sup> Pharmacy Department, Queen Elizabeth University Hospital, NHS Greater Glasgow and Clyde. Glasgow, <sup>2</sup> Strathclyde Institute of Pharmacy & Biomedical Sciences. University of Strathclyde. Glasgow	29
40	<b>Development of a Virtual Biologics Clinic for Inflammatory Bowel Disease</b> <u>Helen Richards MPharm</u> ; Dr Gary Constable MB BS MSc FHEA FRCP, Princess of Wales Hospital. Abertawe Bro-Morgannwg University Health Board	30
41	<b>Integrating a patient-centred pharmacy review process into Transfer to assess pathways</b> <u>Natalie Robinson</u> and Raniah Kouzali, Stockport NHS Foundation Trust	31

Poster Number	Title and authors details	Page
42	<b>Pharmacy technician-led use of intravenous to oral switch criteria for antimicrobials</b> Lauren Sanderson, Jinnan F. Azeez, Kathryn M. Ashton, Rachael Hinchliffe, Jade Lee-Milner, and Stuart E. Bond, Pharmacy Department, Pinderfields Hospital, Wakefield	31
43	<b>Effect of near-patient dispensing trolleys on discharge prescription turn-around time</b> Sarah V. Chohan, <u>Lauren Sanderson</u> , Pharmacy Department, Mid Yorkshire Hospitals NHS Trust, Wakefield	32
44	<b>Pharmacist prescribing quality and breadth in e-hospital critical and transplant care teams</b> <u>Aris Saoulidis</u> , Rotational Pharmacist, Brit Cadman, Consultant Pharmacist Critical Care, Sarah Pacey, Chief Pharmacist, Inpatient Pharmacy, Cambridge University Hospitals NHS Foundation Trust	33
45	<b>Audit on second check processes for intravenous injectable medications during nurse administration rounds</b> Emily Hampton, UCLH NHS Foundation Trust, London, Elise Thys, KU Leuven, Belgium, Yogini Jani and <u>Neha Shah</u> , Centre for Medicines Optimisation Research and Education, UCLH NHS Foundation Trust, London	33
46	<b>Developing drug libraries for smart infusion pumps: exploring governance arrangements in other hospitals</b> Zahra Al-Hadi, University College London School of Pharmacy, London, <u>Neha Shah</u> & Yogini Jani, Centre for Medicines Optimisation Research and Education, UCLH NHS Foundation Trust, London	34
47	<b>Intravenous to oral switch of antimicrobial therapy in general surgical patients</b> <u>Zahra Shamshudin</u> , Stuart E Bond, Kathryn M Ashton, Jade Lee-Milner, Kelly-Marie Chesham, The Mid Yorkshire Hospitals NHS Trust, Pinderfields Hospital, Pharmacy department, Wakefield	34
48	<b>Puddles: The implementation of pharmacy huddles on surgical wards</b> <u>Zahra Shamshudin</u> , James Firth, Siobhan Conaghan, The Mid Yorkshire Hospitals NHS Trust, Wakefield	35
49	<b>Exploring how community pharmacists perceive multi-compartment compliance aids (MCAs): a survey</b> <u>Simkins, L.</u> & Brown, D., University of Portsmouth, Portlock, J., University of Sussex	36
50	<b>Are potassium solutions being prescribed and used correctly?</b> <u>Chin Wing Sonia Sin</u> , East Sussex Healthcare Trust, South East England	36
51	<b>Innovating standardised prescribing bundles to reduce error with high risk cardiac infusions</b> Emma Ormond <sup>1</sup> , Zen Mohammed <sup>1</sup> , Ian Towle <sup>1</sup> , <u>Pernille Sorensen</u> <sup>2</sup> , John Byrne <sup>2</sup> , Faheem Ahmad <sup>2</sup> , <sup>1</sup> University of Strathclyde, Glasgow, <sup>2</sup> Queen Elizabeth University Hospital, Glasgow	37
52	<b>Reducing missed doses due to medicine unavailability using a new workflow</b> Fergal Crowley, Kerry Haggerty, Anna Hill, Amna Hussain, Julie Morrison, Andrew Steele, Douglas Sutherland, Alison Mackie, <u>Caroline Souter</u> , NHS Lothian Pharmacy Service, Edinburgh	37
53	<b>UK and Zambian pharmacists: improving pharmacy practice, education and research by working together</b> Aubrey Kalungia <sup>1</sup> , Derick Munkombwe <sup>1</sup> , Samantha Lippett <sup>2</sup> , Megan Hockly <sup>2</sup> , Emma Foreman <sup>2</sup> , Alice Conway <sup>2</sup> , Sarah Marshall <sup>3</sup> , Claire May <sup>4</sup> , Stewart Gaspole <sup>4</sup> , Bugewa Apampa <sup>5</sup> , Mike Pettit <sup>5</sup> , Enock Chikatula <sup>6</sup> , Andrew Bambala <sup>6</sup> , David C Banda <sup>6</sup> , Victoria Rutter <sup>7</sup> , <u>Anja St.Clair Jones</u> <sup>2</sup> . 1. Department of Pharmacy, University of Zambia, Lusaka, Zambia, 2. Brighton & Sussex University Hospitals NHS Trust, Brighton, UK, 3. Brighton & Sussex Medical School, University of Sussex, UK, 4. School of Pharmacy & Biomolecular Sciences, University of Brighton, UK, 5. School of Pharmacy, University of Sussex, UK, 6. Pharmacy Department, University Teaching Hospitals, Lusaka, Zambia, 7. Commonwealth Pharmacists Association	38
54	<b>Adherence to rifaximin initiation and prescribing at King's College Hospital NHSFT</b> Connor Thompson, Sital Shah, King's College Hospital NHS Foundation Trust, London	39
55	<b>Exploring pharmacy students' perspectives of the roles of pharmacists in GP practices</b> Cassandra Perone, <u>Rebecca Hayley Venables</u> , School of Pharmacy, Keele University	40
56	<b>Improvements to oral antibiotic liquid supply beyond seven days at hospital discharge</b> Stuart E. Bond <sup>1</sup> , Tommaso Malavenda <sup>1</sup> , Kathryn M. Ashton <sup>1</sup> , <u>Nicola J. Walker</u> <sup>1</sup> , Justine Clark <sup>1</sup> , and Helen J. Chadwick <sup>2</sup> , 1. Pharmacy Department, Pinderfields Hospital, Wakefield, 2. Design and Print Unit, Pinderfields Hospital, Wakefield	40
57	<b>Barriers and drivers to advanced clinical practice (ACP) and consultant pharmacist roles</b> <u>J Warburton</u> and T Beswick, Health Education England, Bristol	41
58	<b>Does Role Progression of the Critical Care Pharmacy Technician Impact on Patient Care?</b> <u>Majella Warnock</u> , Linda Robinson, Grainne Reed, Altnagelvin Hospital, Western Health & Social Care Trust	41
59	<b>PRECISION FOR PHARMACY – Data Driven Staff Deployment to Optimise Patient Care</b> <u>Majella Warnock</u> , Eileen Gingell, Brendan Moore, Altnagelvin Hospital, Western Health & Social Care Trust	42
60	<b>A Clinical Audit Investigating Adherence to Amiodarone Monitoring Guidelines in Primary Care</b> Laura Heward <sup>1</sup> , Beth Phillips <sup>1</sup> , Kevin Pickavance <sup>2</sup> , <u>Alison Warren</u> <sup>2</sup> , <sup>1</sup> School of Pharmacy and Biomolecular Sciences, University of Brighton, <sup>2</sup> Brighton and Hove Clinical Commissioning Group (CCG)	42
61	<b>Methotrexate dosing in renal impairment – more awareness and action needed</b> <u>Wilcock M</u> <sup>1</sup> , Rutkowska A <sup>1</sup> , Jenkinson T <sup>1</sup> , Thomas D <sup>2</sup> , <sup>1</sup> Royal Cornwall Hospitals NHS Trust, Truro, <sup>2</sup> NHS Kernow Clinical Commissioning Group Prescribing Team	43
62	<b>Are inpatients receiving inhaler technique counselling?</b> Tadeh Tahmasi, <u>Alyson Winter</u> , Vimbai Simbi, Bedford Hospitals NHS Trust	44
63	<b>A Case for Medicines Management Assistants (MMAs)</b> George Osei-Barnieh, <u>Alyson Winter</u> , Bedford Hospitals NHS Trust	44
64	<b>The 3 year impact of a Pharmacy Technician in a Medicines Information Centre</b> Angelica Steward, Hannah Levene, <u>Esther Wong</u> , Chelsea and Westminster NHS Foundation Trust, London	45

Number	Title and authors details	Page
65	<b>Reliability and utility of an adapted hospital clinical pharmacy patient prioritisation tool</b> <u>Junel Ahmed</u> , Charlotte Bell, Raliat Onatade, Barts Health NHS Trust, London	46

#### Regional Pre-Registration Pharmacist Winners 2018

66	<b>An audit of paediatric parenteral nutrition</b> <u>Danielle Samantha Brown</u> (Pre-registration Pharmacist), Supervised by Natalia Iglesias (Advanced clinical pharmacist in paediatric and neonatal nutrition), Leeds Teaching Hospitals	46
67	<b>An Audit of Current Insulin Prescribing</b> <u>Ellen Hetherington</u> , University Hospitals Coventry and Warwickshire NHS Trust	47
68	<b>An audit to evaluate the quality of antipsychotic depot prescribing and monitoring</b> <u>Annabel Lane</u> , Christopher Jenkins. Cambridge and Peterborough Foundation Trust, Cambridge	47
69	<b>An audit to identify the reasons behind unintentionally omitted doses</b> <u>Ailsa MacRae</u> and Jane Neal (Audit Supervisor), Buckinghamshire Healthcare NHS Trust, Aylesbury	48
70	<b>An Audit Evaluating the Outcomes of Medicines Reconciliation</b> <u>Alysha Poole</u> , Weston General Hospital, Weston Super Mare	48
71	<b>Assessing the appropriateness of nefopam prescribing and reducing the usage within the Trust.</b> <u>Anthony Shoukry</u> , Northampton General Hospital (NGH), Northampton	49

#### Disclaimer

The abstracts contained in this handbook have been produced using author-supplied copy. The UK Clinical Pharmacy Association (UKCPA) and Pharmacy Management (PM) do not accept responsibility for any claims, instructions, methods or drug doses contained in the abstracts. The UKCPA and PM would recommend that these are verified independently.

**Biogen Multiple Sclerosis Award 2018**

**1. The Role of a Pharmacist in the Multidisciplinary Team and  
The Use of Pharmacist Non-Medical Prescribing in Multiple Sclerosis**

Wong, E, Singh-Curry, Dr. V, Chelsea and Westminster NHS Foundation Trust, London

**Introduction**

Multiple sclerosis (MS) is an acquired chronic immune-mediated inflammatory condition of the central nervous system, affecting both the brain and spinal cord. It affects approximately 100,000 people in the UK.<sup>1</sup> Disease modifying treatments (DMTs) reduce the frequency of relapses and the accumulation of lesions in the brain detectable by MRI scanning, and some studies suggest that they can slow disability progression and improve long term outcomes. Many national drivers for change has resulted in local MS services becoming increasingly overwhelmed by the workload associated with DMT provision.<sup>2</sup>

In response to the demand and working with the new establishment of a lead MS consultant, the current MS service underwent a redesign. Consultant, pharmacist and nurse led MS clinics are now held on the same day in order to facilitate true multidisciplinary team (MDT) working. Virtual clinics are also run by the pharmacist on a separate day.

Clearly defined roles and responsibilities were defined across the MS MDT. The pharmacist's face to face clinic/virtual consultations were allocated for counselling of patients of different DMTs, treatment initiation and follow up prescription management/blood monitoring. The pharmacist was a qualified non-medical prescriber (NMP).

**Aims/Objectives**

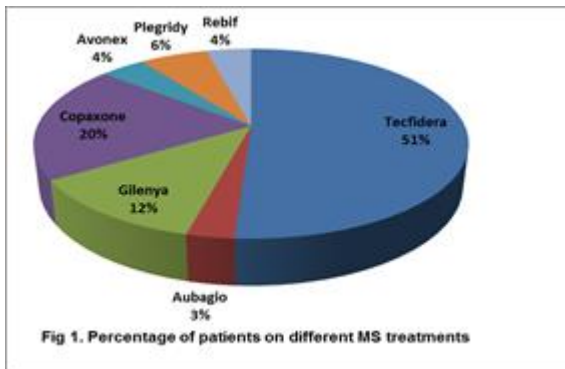
A review to explore the impact of a pharmacist NMP within the neurology MS MDT during a six month period between 1<sup>st</sup> Dec 2017 – 31<sup>st</sup> May 2018. Specifically to determine the:

- Number of patients seen by pharmacist NMP
- Number of patients on different DMTs
- Number of prescriptions written by pharmacist NMP
- Reasons for attendance to clinic/virtual appointments

**Method**

A retrospective service evaluation which did not require ethics approval was undertaken. A report of clinic/virtual appointments was generated by the information team and an in-house log of clinic/virtual appointments was retrieved over the defined six month period. Both reports were analysed to determine the number of patients on DMTs, number of patients seen by the pharmacist NMP and reasons for attendance to appointments were documented.

**Results**



A total of 67 patients were seen by the pharmacist NMP during the review period with 161 clinic/virtual consultations undertaken for DMT provision, therefore, approximately 2.4 consultations per patient per 6 month period. A breakdown of the number of patients on the range of DMTs is displayed in Fig 1. A total of 143 prescriptions were written during the audited period. Table 1 shows the reasons for attendance to clinic/virtual consultations.

Reason for attendance	Number	% of reason for attendance
Prescription renewal/blood monitoring	121	75%
Pre-initiation of treatment: Counselling	22	14%
Treatment initiation	15	9%
Other	3	2%

**Discussion**

The role of a pharmacist in the MS MDT has been extremely valuable as seen in the results of the number of patients (67 patients) seen during the review period. The pathway for each DMT stipulates that each patient will have contact (clinic/virtual consultations) with a member of the MS MDT every 3 months with the exception of Aubagio where the patient will have contact with a member of the MS MDT every 2 months. During the 6 month review period, we would expect each patient to have had approximately 2 consultations – our results show that each patient had approximately 2.4 consultations. This structured pathway for MS patients allows for tighter DMT monitoring controls, improved adherence to treatment whilst providing patients with enhanced patient care and experience.

A total of 143 prescriptions were written by the pharmacist NMP either for initiation of DMT or prescription renewals for continuation of therapy. The generation of prescriptions and blood monitoring forms releases workload pressure from the consultant, the only other member of the MS MDT who is a prescriber. Workload is therefore spread across the MDT.

There were 22 patients who attended face to face clinic appointments for counselling of different DMTs. There are dedicated clinic slots for new MS diagnosed patients that the pharmacist will use to counsel on treatment options. Pharmacists, as medicines experts are able to counsel patients about different treatment options, monitoring before/when on treatment and potential side effects.

**Conclusion**

With the increasing number of DMTs becoming available and the increasing number of MS diagnosis, the demand for treatment continues to pose a demand on NHS MS services. A pharmacist is a great resource to utilise where they can play an important and vital role within the MS MDT having

the capability in caring for patients with long term conditions ensuring compliance, adherence and to monitor for safety and efficacy of treatment. Opportunities for pharmacist NMP to counsel patients pre-treatment and to utilise the prescribing qualification is very well established at the CWHT.

## References

1. National Institute for Health and Care Excellence (2014), *Multiple sclerosis in adults: management* (NICE Guideline 186). Available at: <https://www.nice.org.uk/guidance/cg186/resources/multiple-sclerosis-in-adults-management-pdf-35109816059077> [Accessed 04.06.18].
2. Mynors, G, Roberts, M, Bowers, A, Multiple Sclerosis Trust (Nov 2016), Improving the efficiency of disease modifying drug provision. Available at: <https://www.mstrust.org.uk/health-professionals/health-professional-resources/evidence-and-evaluation/improving-efficiency-dmd> [Accessed 04.06.18].

## Bowmed Ibisqus Antimicrobial Management Award 2018

### 2. Evaluation of antimicrobial stewardship ward rounds led by junior members of the healthcare team

Ryan Hamilton<sup>1</sup>, Benedict Rogers<sup>2</sup>, <sup>1</sup> Pharmacy Department, <sup>2</sup> Department of Infectious Diseases and Tropical Medicine, University Hospitals of Leicester NHS Trust

## Introduction

Antimicrobial resistance (AMR) poses a significant threat to human health. A paucity of novel agents has resulted in antimicrobial stewardship (AMS) programmes being central to slowing down the development of further resistance<sup>[1]</sup>. It is recognised that AMS can improve patient outcomes, reduce harms, and shorten length of hospital stay<sup>[2]</sup>. Previously reported AMS ward rounds and antibiotic review initiatives have utilised consultant microbiologists or consultant ID physicians with or without specialist antimicrobial pharmacist (AMP) involvement<sup>[2]</sup>. However, there is sparse evidence regarding the impact of AMS ward rounds led by more junior members of staff.

## Aims & Objectives

This project aims to evaluate the impact of AMS ward rounds, led by junior staff, on antimicrobial prescribing and patient care by determining:

- The number of contributions and recommendations made to patient care
- The types of contributions and recommendations made
- The uptake of these recommendations by ward clinicians
- Changes in treatment duration (TD), length of stay (LOS), and readmission rate (RR, all cause within 28 days).

## Methods

A band 7 AMP developed a programme of AMS ward rounds on the acute medical unit at Leicester Royal Infirmary, attended by a band 7 AMP and an Infectious Diseases registrar (ST3-5), to review patients clinically and holistically. Patients were identified using the electronic prescribing system and those on ultra-broad (e.g. meropenem) and high-risk (e.g. vancomycin) agents were prioritised for review. Patient details and recommendations were recorded on standardised forms for each patient seen between 28/6/17–28/7/17 and followed-up to determine if recommendations were followed and the impact on TD, LOS, and RR. Activity data was recorded between 29/7/17–24/11/17 to determine average number of patients seen, drugs reviewed, and recommendations made. The data were stored and analysed in Microsoft Excel. Ethics approval was not required for this evaluation project.

## Results & Discussion

During 52 ward rounds (lasting on average 60-minutes) 172 patients were seen (median 3 per visit, range 1-6) of which 45 were prescribed two agents and 3 were prescribed three antimicrobials. Eighty-seven per cent of patients received at least one recommendation regarding their care (median 2, SD±1.4, Range 0-6).

A total of 339 individual recommendations were made (figure 1). The most common agents reviewed were meropenem (38%) and co-amoxiclav (32%). Changing treatment in line with guidance was recommended in 45% of patients receiving meropenem and 18% receiving co-amoxiclav. It was also advised that 17% of meropenem and 8% of co-amoxiclav prescriptions could be stopped demonstrating the potential to reduce overprescribing of broad spectrum antimicrobials and improve adherence to guidelines early into hospital admission, which can reduce selection pressures and the risk of *C. difficile*. Early parenteral to enteral switch was recommended in 11.6% of patients, which has the potential to reduce length of stay and risks associated with IV drug administration.

Nine per cent of recommendations were categorised as *other*, which included advice to obtain imaging, referring to other specialities and services, and stopping medicines that interact with the antimicrobial therapy or the infection. Although all contributions supported AMS, 41.2% were sub-categorised as also supporting medicines optimisation<sup>[3]</sup>, which has not been reported in other studies.

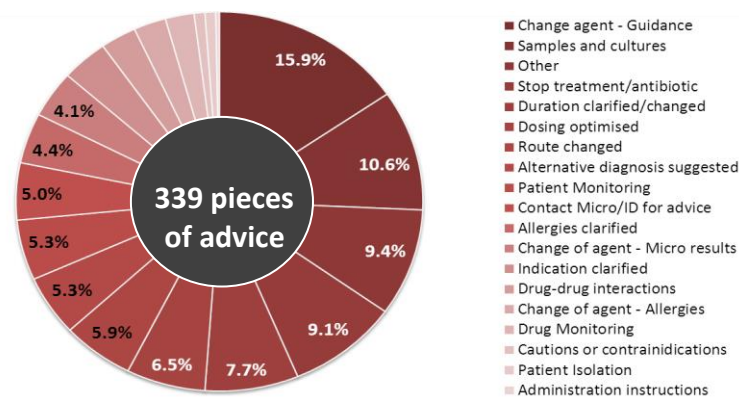


Figure 1. Proportion of contributions and recommendations (n=339) by category, listed in order of highest to lowest proportion.

Eighty-five patients could be followed up to determine uptake and impact of recommendations. Ward clinicians changed treatment in line with recommendations in 70.6% of instances. It is likely that proactive completion of recommendations on the AMS ward round will drive earlier optimisation of care. There was no difference in TD (median 5 days) if recommendations were followed, versus those that were not. The median LOS was 12-hours shorter for patients whose treatment was changed in line with recommendations (6 days vs. 6.5 days). RR for those who received treatment in line with recommendations was 21.7%, compared to 24.0% for those whose treatment was not in line. Although the sample size is small, these trends are promising and compliment research showing AMS benefits the whole healthcare economy<sup>[4]</sup>.

## Conclusion

AMS ward rounds led by junior members of staff provide valuable specialist input and advice regarding patient care and can optimise antimicrobial therapy earlier on admission. There was a trend towards shorter length of stay and reduced re-admission rates. Follow-up of larger cohorts,

accounting for confounders (age, frailty, sepsis, etc), is needed to fully determine the effects of these ward rounds on patient outcomes and the wider healthcare system.

## References

1. World Health Organization, Global action plan on antimicrobial resistance, 2015, p1-28
2. Davey P, Marwick CA, Scott CL, et al., Interventions to improve antibiotic prescribing practices for hospital inpatients, Cochrane Database of Systematic Reviews, 2017, p1-368
3. Royal Pharmaceutical Society, Medicines Optimisation, 2013, p1-13
4. van den Bosch CM, Hulscher ME, Akkermans RP, et al., Appropriate antibiotic use reduces length of hospital stay. Journal of Antimicrobial Chemotherapy, 2016, 72, 923-32

### UKCPA Patient Safety Award 2018

#### 3. Proving the patient safety benefits of a multi-skilled Pharmacy Team to the Emergency Department

Heald V, Kaba S and Kwok J (Lead Pharmacists for Acute Medicine and Emergency Department) Lancashire Teaching Hospitals NHS Foundation Trust, Preston

## Background

The project was implemented in a large, busy emergency department (ED) in the North West of England. The pilot was carried out during the winter months at ED's busiest time. Pressure on EDs is well-documented and prescribing errors on admission has been studied <sup>(1)</sup>. Use of prescribing Pharmacists has been explored in ED <sup>(2)</sup> and acute medicine <sup>(3)</sup> with a variety of roles considered including prescribing on admission and discharge. Prescribing clinical pharmacists are recommended in the Carter Report <sup>(4)</sup> which considered inefficiencies in NHS acute hospitals and recommends that 80% of Trusts' Pharmacist resource is utilised for direct medicines optimisation activities, governance and safety remits. The pilot embraced the ethos of the report optimising the use of clinical pharmacists to improve patient safety. Ethics approval was not required for the project.

## Objectives

1/ Prove the impact of a prescribing Pharmacist alongside a Pharmacy Team in ED and establish the most effective skill mix for Pharmacy teams in ED. 2/ Understand impact on key patient safety markers including missed doses, unintentionally omitted medication, prescribing errors and transfer of patients own medication (POMs). 3/ Understand the impact of a service on medicines reconciliation targets in the trust.

## Method

Baseline data was gathered prior to implementation of the service using identical data collection forms to the main pilot.

Between 8<sup>th</sup> January and 20<sup>th</sup> April 18, pharmacy services were provided to ED between 5pm-7.30pm on weekdays. The teams were made up of a combination of Pharmacist Independent Prescribers (IP), Clinical Pharmacists (CP) and Pharmacy Technicians (PT). The shifts were filled using 5 different skill mixes; [IP], [CP], [IP+PT], [CP+PT] or [IP+CP+PT].

Teams performed medication histories, reconciliation and prescribing for patients who were to be admitted. A data collection form capturing any prescribing errors and pharmacy interventions was completed for each patient. A separate form documenting tasks undertaken and time taken to perform "clinical interventions" was completed by each pharmacy staff member. Patients who became inpatients were reviewed by ward pharmacists the following day who recorded their interventions, any prescribing discrepancies and whether POMs were transferred. Data from the forms was inputted onto Excel and analysed in comparison to the baseline data.

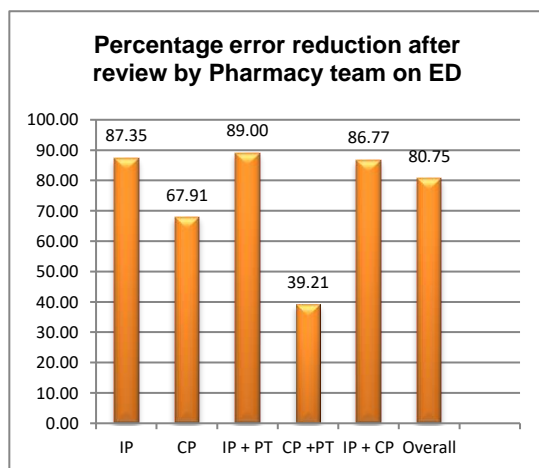
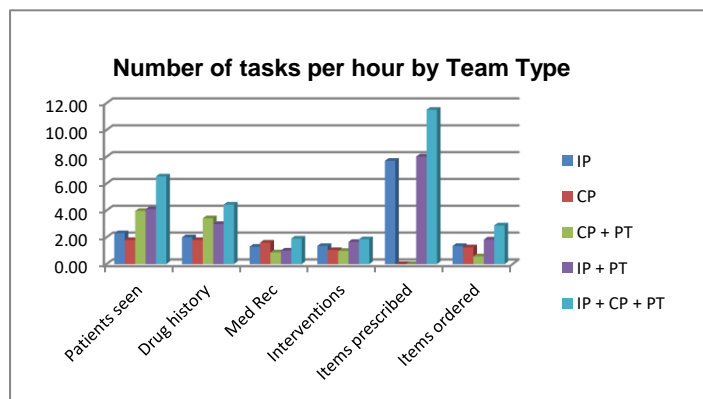
## Results

Compared to baseline, there was a reduction of: 80% of incorrect doses, 66% of unintentionally omitted medicines, 50% of missed doses for prescribed medications and 71% of discrepancies found on clinical review. There was a 50% increase in POMs transferred to the ward. On the admission wards, medicines reconciliation rates within 24 hours improved on weekdays from 77.9% to 96.43%.

## Discussion

Graph 1 opposite and the results above highlight the significant reduction in error rates. If a patient was seen by PT, IP and then CP a 100% error reduction was observed. Error reduction at this stage may directly impact on length of stay in hospital <sup>(5)</sup>; further research would be of interest. Results demonstrate the largest error reduction when an IP is involved. The presence of an IP to prescribe inpatient medications significantly reduces error rates. The IP's ability to resolve and prevent prescribing errors in comparison to a CP means they are integral to an ED pharmacy service.

Graph 2 below highlights prescribing activity was at its peak when a team of IP/CP and PT worked together.



Improvement of weekday medicines reconciliation targets was clear; acute medical areas showed an increase from 77.9% to 96.43%, exceeding national targets.

Results showed that the time taken at ward level for clinical check of an inpatient chart reduced by 5.7 minutes if the patient had been seen in ED; subsequently freeing up ward pharmacists to focus on medicines optimisation and discharge planning. The 50% increase of POMs being transferred meant a pharmacy presence was enough to promote a culture change within ED and could provide a financial saving of £3,556 per year for the Trust

due to redispensing avoidance; increasing to £17,069 if a 12 hour/day shift was implemented. We conclude that an IP should be included in an ED Pharmacy team. These results suggest the ideal ED pharmacy team skill-mix should include an IP, CP and PT to ensure the greatest reduction in medication errors on admission to hospital.

#### References

1. Dornan, T., Ashcroft, D., Heathfield, H., Lewis, P., Miles, J., Taylor, D. & Wass, V. (2009). An in depth investigation into causes of prescribing errors by foundation trainees in relation to their medical education. EQUIP study. London: General Medical Council, 1-215.
2. Health Education England. Pharmacists in Emergency Departments a commissioned study by Health Education England. Executive Summary. 30th June 2015
3. Physick A, Smolski K, Mann, S, Price G. Pharmacy innovation at discharge – impact of pharmacist non-medical prescribing on quality and streamlining processes. Journal of Medicines Optimisation Vol 2; Issue 1. March 2016
4. Department of Health. Operational productivity and performance in English NHS acute hospitals: Unwarranted variations. 11 June 2015. Updated 5 February 2016
5. Cadman B, Wright D, Bale A, Barton G, Desborough J, Hammad E et al. Pharmacist provided medicines reconciliation within 24 hours of admission and on discharge: a randomized controlled pilot study. BMJ Open 2017.

#### UKCPA-PRUK Clinical Research Grant

#### 4. Development of an Emergency Department Pharmacist Practitioner service specification

Daniel Greenwood, Douglas Steinke, Sandra Martin, Mary P Tully

University of Manchester, Division of Pharmacy and Optometry, Manchester

#### Background

Emergency Department Pharmacist Practitioners (EDPPs) undertake both 'traditional' clinical pharmacy work e.g. checking prescriptions for their clinical appropriateness, and 'practitioner' work e.g. perform clinical examinations and diagnose. A recent study found large variation in the extent and type of care provided<sup>1</sup>. Whilst variation allows services to be tailored to local needs, it is important that care meets the minimum standards expected of a quality healthcare system. These are safe, effective, patient-centred, timely, efficient and equitable<sup>2</sup>.

#### Objectives

To develop an EDPP service specification, primarily to support providers with delivery of high quality services.

#### Method

Development involved patients, EDPPs and other ED healthcare professionals and was guided by the Institute of Medicine's quality domains<sup>2</sup>. A convenience sample of 6 EDPPs, with varied roles, were recruited to an expert panel held in March 2017. Using an adapted Nominal Group Technique, participants suggested ideas as to what constitutes high quality EDPP care. These were grouped into themes and rated twice on a 9-point Likert scale (9=absolutely used). Themes with strong group support (median final rating of 7-9) and a high level of agreement achieved consensus. Semi-structured recorded telephone interviews were undertaken with 8 patients who had been cared for by EDPPs as to their expectations of the service. Template analysis of transcripts identified additional themes that were mapped to each domain. The specification was iteratively drafted by adding patient themes to those agreed by EDPPs. Finally, a multidisciplinary expert panel of healthcare professionals and researchers reviewed and refined the service specification. Health Research Authority ethics approval was obtained.

#### Results

EDPPs developed 36 themes with consensus achieved for 25. Additional themes from the patient interviews concerned the communication and behaviour of EDPPs rather than specific clinical activities undertaken. Whilst patients were happy to be cared for by an EDPP working within their competence, for certain conditions (e.g. major trauma) they wanted a doctor as their main care provider. An evidence-based EDPP service specification of 52 criteria grouped into 4 categories was produced: direct patient care (29); other activities (including indirect patient care) (10); general approach (10); and service structures (3). Some criteria, which require specific clinical training, are indicated as optional to accommodate some local variation of service.

#### Conclusions

As the product of both patient and expert input, EDs could align existing or newly developed services to the specification. The designation of some criteria as optional should support implementation. Whether or not the specification can support provision of high quality services is yet to be investigated. Future research should aim to evaluate the quality of EDPP services actually delivered compared with the specification. Further, patient *outcomes* should be measured to conclude the quality impact of EDPP services.

#### References

1. Greenwood D, Tully M, Martin S, Steinke D. Emergency Department Pharmacist Practitioners: A new role in the NHS. Research in Social and Administrative Pharmacy 2018;14(8):e30.
2. Institute of Medicine Committee on Quality of Health Care in America. Crossing the Quality Chasm: A New Health System for the 21<sup>st</sup> Century. Washington (DC): National Academies Press; 2001.



**5. Multidisciplinary prevention of Medication Related Osteonecrosis of the Jaw**

Andrew Sturrock MSc, Principal Lecturer – Master of Pharmacy Programme Leader<sup>1</sup>, Professor Philip M. Preshaw PhD, Professor of Periodontology and Consultant in Restorative Dentistry<sup>2</sup>, Dr Catherine Hayes PhD, Reader in Health Professions Pedagogic Practice & Visiting Professor of Higher Education<sup>1</sup>, Professor Scott Wilkes PhD, Head, School of Medicine and Professor of General Practice and Primary Care<sup>1</sup>, <sup>1</sup>Faculty of Health Sciences and Wellbeing, The Sciences Complex, University of Sunderland, <sup>2</sup>Centre for Oral Health Research and Institute of Cellular Medicine, Newcastle University, Newcastle upon Tyne

**Background**

Medication related osteonecrosis of the jaw (MRONJ), is a rare adverse effect of anti-resorptive or anti-angiogenic drug therapy that can cause significant morbidity; commonly prescribed drugs, such as bisphosphonates, used to treat a variety of cancers and osteoporosis have been associated with MRONJ <sup>(1)</sup>. A multidisciplinary approach to the promotion and prioritisation of preventative strategies to ensure patients are dentally fit prior to the prescription of implicated medications is recommended; current evidence suggests that patients have limited knowledge relating to MRONJ and that preventative strategies are rarely implemented <sup>(2,3,4)</sup>.

**Objective**

To explore the impact of MRONJ on quality of life and to explore the attitudes and perceptions of patients towards the multidisciplinary approach to the prevention of the condition.

**Method**

Using a Grounded Theory approach and integrating a process of constant comparison in the iterative enrichment of data sets, semi-structured interviews were undertaken, transcribed and analysed using Ritchie and Spencer's (2002) Framework Analysis<sup>(7)</sup>. 23 patients; 6 patients with MRONJ, 13 patients prescribed a bisphosphonate and 4 patients with osteoporosis not currently prescribed any medication were recruited from primary care general medical practices and secondary care dental services in England. Salient themes were identified and related back to extant literature in the field.

**Results**

Five salient and inter-related themes emerged: (1) quality of life, indicating the physical, psychological and social impact of MRONJ; (2) limited knowledge, indicating limited awareness of the condition, risk factors and preventative strategies; (3) patient specific, referring to the complexity of patients, polypharmacy, prioritising aspects of care and personal responsibility; (4) inter-professional management, indicating a perceived organisational hierarchy, professional roles and responsibilities, articulation of risk and communication; (5) wider context, indicating potential demands on NHS resources, and barriers to dental care.

**Conclusions**

MRONJ has a significant impact on quality of life yet appropriate preventative education is not apparent. Effective inter-professional patient education and prevention to mitigate against the risk of developing MRONJ is required.

**Ethics:** This study required and received ethics approval.

**References:**

1. Scottish Dental Clinical Effectiveness Programme. Oral Health Management of Patients at Risk of Medication-related Osteonecrosis of the Jaw. Dental Clinical Guidance. Dundee: Scottish Dental Clinical Effectiveness Programme 2017. Available at <http://www.sdcep.org.uk/wp-content/uploads/2017/04/SDCEP-Oral-Health-Management-of-Patients-at-Risk-of-MRONJ-Guidance-full.pdf> Accessed 02/04/2018.
2. Sturrock A, Preshaw P, Hayes C, Wilkes S. Attitudes and perceptions of GPs and community pharmacists towards their role in the prevention of bisphosphonate-related osteonecrosis of the jaw: a qualitative study in the North East of England. *BMJ Open* 2017;7:e016047. doi: 10.1136/bmjopen-2017-016047.
3. Masson D, O'Callaghan E, Seager M. The knowledge and attitudes of North Wales healthcare professionals to bisphosphonate associated osteochemonecrosis of the jaws. *J Disab Oral Health* 2009;10:175-183.
4. Bauer J, Beck N, Kiefer J, et al. Awareness and education of patients receiving bisphosphonates, *J Craniomaxillofac Surg* 2012;40:277-282.
5. Ritchie J, Spencer L. Qualitative data analysis for applied policy research. In: Humberman M, Miles M, eds. *The qualitative researcher's companion*. Thousand Oaks: Sage 2002:305-329.

**6. Audit Assessing Adherence to Micronutrient Monitoring Recommendations for Home Parenteral Nutrition Regimens**

Muhammad Ali, St George's Hospital NHS Foundation Trust, London

**Background**

Home parenteral nutrition (HPN) provides sustenance to patients with chronic conditions that prevent adequate oral or enteral nutritional intake. Since micronutrient deficiency and toxicity can lead to various pathological manifestations, ESPEN (European Society for Clinical Nutrition and Metabolism) advise monitoring vitamins and trace elements every 6 months for HPN patients<sup>1</sup>. Significant changes in zinc, selenium, vitamin A and D results in patients with raised C-reactive protein (CRP) have been reported<sup>2</sup>, thus CRP must be considered when determining validity of these results.

**Objectives**

Measure adherence to the following micronutrient monitoring standards:

1. 100% of HPN patients have trace elements (copper, zinc, manganese and selenium) monitored 6 monthly
2. 100% of HPN patients have vitamin A, D and E monitored 6 monthly
3. 100% of HPN patients have vitamin B12 and B9 monitored 6 monthly
4. 100% of available zinc, selenium, vitamin A or vitamin D results also have a CRP level taken at the same time.

**Method**

Retrospective audit including 32 patients on HPN between 07/05/2017 and 06/05/2018. These dates were selected to measure adherence to standards in the past 12 months as this was when the nutrition team agreed to implement micronutrient monitoring. After a data collection tool was designed and piloted, a pathology database was used to gather data. Date of trace element (manganese, zinc, copper and selenium), vitamin (A, D, E, B12 and B9) and CRP results, within 07/05/2017 and 06/05/2018, was recorded and then analysed using Microsoft Excel®. This audit did not require ethics approval.

**Results**

Between 07/05/2017 and 06/05/2018:

1. 6.3% of patients had trace elements monitored 6 monthly (n=2/32)
2. 3.1% of patients had vitamins A, D and E monitored 6 monthly (n=1/32)
3. 0% of patients had vitamin B12 and B9 monitored 6 monthly
4. 83.3% of available zinc, selenium, vitamin A and D results had a CRP level taken at the same time (n=10/12)

**Conclusions**

Standards for monitoring micronutrients in HPN patients were not met and immediate action is required to prevent harm due to deficiency or toxicity. Incomplete micronutrient blood profiles, lack of 6 monthly monitoring and blood sampling errors were causes of failure to meet standards. Results and recommendations were discussed during a multi-disciplinary nutrition team meeting, where an action plan was established. A protocol to prevent sampling errors will be produced in collaboration with biochemists. Expensive zinc and selenium assays will be withheld if CRP is unavailable or elevated. Micronutrient monitoring is now integrated into outpatient HPN clinics. An electronic HPN pathology profile, containing all required blood tests, was created to prevent incomplete profiles. A re-audit will take place in 1 year.

**References**

1. Staun, M. *et al.* ESPEN Guidelines on Parenteral Nutrition: home parenteral nutrition (HPN) in adult patients. *Clinical Nutrition* 2009;28(4):467-479 [https://www.clinicalnutritionjournal.com/article/S0261-5614\(09\)00079-X/fulltext](https://www.clinicalnutritionjournal.com/article/S0261-5614(09)00079-X/fulltext) (accessed 19/05/2018).
2. Duncan, A. Talwar, D. McMillan, DC. Stefanowicz, F. and O'Reilly, DS. Quantitative data on the magnitude of the systemic inflammatory response and its effect on micronutrient status based on plasma measurements. *The American Journal of Clinical Nutrition* 2012;95(1):64-71 <https://academic.oup.com/ajcn/article/95/1/64/4576685> (accessed 19/05/2018).

**7. Tackling Heart Failure through Adherence and Medication Reviews – The Impact of Pharmacist Support**

Mari Fairfax<sup>1</sup>, Roqsana Ara<sup>1</sup>, Gayle Campbell<sup>1</sup>, Clare Thomson<sup>1</sup>, <sup>1</sup>Guy's and St Thomas' NHS Foundation Trust, London

**Background**

Heart failure (HF) is a complex clinical syndrome<sup>1</sup>. Medications form the basis of treatment and adherence to regimens is crucial as untreated HF has a one year mortality of greater than 30%<sup>2</sup>. Wide variability in rates of adherence has been shown among HF patients (40-60%<sup>3</sup>), but it is clear non-adherence increases the risk of mortality and hospitalisations. At Guy's and St Thomas' NHS Foundation Trust, a team of three HF specialist pharmacists have a key role in supporting patients in local boroughs by conducting comprehensive medication and adherence reviews in clinic and at patient's homes.

**Objectives**

To compare the number and type of referrals received and the number and type of interventions made to patient care over two years.

**Method**

This study was a retrospective analysis of referrals received by the HF pharmacists and interventions made. Referrals received were divided into those for adherence and those for medication reviews or education. The types of interventions made were categorised into 8 domains: logistical, behavioural, educational, emotional, cognitive, social, condition-related and treatment-related<sup>4</sup>. Data from 2016/17 and 2017/18 were compared. This study did not require ethics approval.

**Results**

In 2017/18, 81 referrals were received by the HF pharmacists, an increase of 52% from 2016/17 where 39 referrals were received. Referrals for adherence remained constant with 19 in 2016/17 and 23 in 2017/18. Referrals for medication reviews and education increased from 7 in 2016/17 to 32 in 2017/18. The number of patients who did not receive pharmacist input following referral remained similar at 33% (n=13) in 2016/17 and 32% (n=26) in 2017/18. Reasons for this included, patients declining pharmacist input and being unable to contact the patient. The HF pharmacists made 98 documented interventions in 2016/17, averaging 3.7 interventions per patient. In 2017/18 the number of documented interventions was 219 (an increase of 123%), with an average of 3.9 interventions per patient. 'Educational' interventions were most common; 37% (n=36) in 2016/17 and 54% (n=119) in 2017/18.

## Conclusions

The increase in referrals over two years demonstrates the perceived value of pharmacist interventions by the wider HF team. Given the high number of patients who did not engage despite referral, a new service leaflet explaining the role of all HF team members has been developed. Patient satisfaction questionnaire will be introduced to obtain qualitative data on the service.

A licensed adherence tool has been secured for use across King's Health Partners and will be implemented moving forward to allow formal evaluation of the impact of pharmacist interventions.

## References

1. Yancy, CW et al. 2013 ACCF/AHA guideline for the management of heart failure: a report of the American College of Cardiology Foundation/American Heart Association Task Force on practice guidelines. *Circulation* 2013;128:1810-2852
2. Levy, D et al. Long-term trends in the incidence of and survival with heart failure. *New England Journal of Medicine* 2002;347:1397-1402
3. Wu JR, Moser DK, Lennie TA, Burkhart PV. Medication adherence in patients who have heart failure: a review of the literature. *Nursing Clinics of North America* 2008;43:133-153
4. Forsyth, P et al. Chest Heart and Stroke Scotland: Pharmacy intervention improves medicine adherence in patients with heart failure. *NHS Greater Glasgow and Clyde*. 2015.

## 8. Medicines Optimisation in Heart Failure – How has it changed over two years?

Roqsana Ara<sup>1</sup>, Clare Thomson<sup>1</sup>, Gayle Campbell<sup>1</sup>, Mari Fairfax<sup>1</sup>, <sup>1</sup>Guy's and St Thomas' NHS Foundation Trust, London

### Background

All patients with heart failure with reduced ejection fraction (HFrEF) should be on evidence-based therapy. Angiotensin-converting enzyme inhibitors (ACEI) or angiotensin-II receptor blockers (ARB) and beta-blockers (BB) are the mainstay of treatment. Evidence suggests that optimal doses of these reduce mortality and prevent hospitalisations<sup>1</sup>.

The integrated heart failure (HF) service involves a multidisciplinary team of 21 including, consultants, nurses and pharmacists. The team works closely across primary and secondary care. A key benefit means local patients requiring further optimisation of their medicines can be referred to the community HF team on discharge from hospital. Together the team aims to ensure patients receive evidence-based medicines at optimal doses.

### Objectives

To compare the numbers of patients prescribed optimal ACEI/ARB and BB doses on discharge, from hospital or community HF service, over 2-years.

### Method

A retrospective analysis of patients coded with HFrEF admitted to hospital between January–March 2016 and January–March 2017 was undertaken by the HF pharmacy team. Patients referred to the community team were followed up over 6-months. Data was collected by pharmacy students using electronic patient records, across two hospitals; St Thomas' Hospital and King's College Hospital. Data included, medicines prescribed on admission and discharge, readmission, mortality, blood results and, blood pressure and pulse. The data from 2016 and 2017 were compared. This study did not require ethics approval.

### Results

There were 148 HFrEF patients admitted to hospital between January–March 2016 and 104 patients between January–March 2017. On discharge from hospital, there was an increase in patients prescribed optimal dose of ACEI/ARB in 2017 compared to 2016 (27% vs. 21%), whilst patients on optimal BB dose almost doubled (33% in 2017 vs. 17% in 2016).

In 2016, from a possible 96 local patients, 40% (n=38) were referred to the community service. This increased in 2017, where from a possible 48 local patients, 56% (n=27) were referred. At 6-months follow-up, there were less patients on optimal ACEI/ARB dose in 2017 compared to 2016 (29% vs. 35%). Patients on optimal BB dose remained similar (29% in 2017 vs. 28% in 2016). Mortality rates in primary care reduced from 18% in 2016 to 11% in 2017. Readmission rates also slightly reduced from 39% in 2016 to 37% in 2017.

### Conclusions

Limited improvements in medicines optimisation has demonstrated reductions in mortality and readmission rates of HFrEF patients within local boroughs. These are attributed to better models of working, virtual clinics, regular nurse caseload reviews and education sessions delivered across care sectors. Dose titrations were hindered by co-morbidities e.g. renal impairment or hypotension. Other factors include, patients not attending appointments. This study would be improved if adherence was reviewed; a known barrier to titrations<sup>2</sup>.

Ongoing developments are in progress including, enhanced register reviews, adherence reviews and delivering more education to primary care and patients.

### References

1. Yancy, CW et al. 2013 ACCF/AHA guideline for the management of heart failure: a report of the American College of Cardiology Foundation/American Heart Association Task Force on practice guidelines. *Circulation* 2013;128:1810-2852
2. Wu JR, Moser DK, Lennie TA, Burkhart PV. Medication adherence in patients who have heart failure: a review of the literature. *Nursing Clinics of North America* 2008;43:133-153

## 9. Antimicrobial prescribing for respiratory infections on an acute medical assessment unit

Mary E. Bolland<sup>1</sup>, Stuart E. Bond<sup>2</sup>, Kathryn M. Ashton<sup>2</sup>, and Graham M. Smith<sup>3</sup>. <sup>1</sup>Acute Assessment Unit, <sup>2</sup>Pharmacy Department, <sup>3</sup>Respiratory Medicine, Pinderfields Hospital, Wakefield

This study did not require ethics approval.

### Background

Respiratory infections, including community-acquired pneumonia, place a large burden on hospital antimicrobial use in the United Kingdom<sup>1</sup>. One of the principles for overcoming antimicrobial resistance is to optimise existing antimicrobials through antimicrobial stewardship<sup>2</sup>. This includes audit and timely feedback of local prescribing behaviour.

### Objective

To improve antimicrobial guideline adherence for respiratory infections using educational interventions.

## Methods

A prospective pre-post intervention study of prescription charts and medical notes was undertaken over 4 weeks from December 2017 to January 2018, and again in March 2018. Included patients were admitted under the respiratory team in the acute assessment unit. A standardised tool was used to record appropriateness of antimicrobial prescribing and documented plan on review. Antimicrobial choice was compared against hospital guidelines (including CURB-65 severity score<sup>3</sup>) and culture results or microbiology advice. Results were distributed via the departmental governance meeting, an email to all junior doctors and relevant consultants as well as printed posters. Interventions included doctor education through oral presentations, peer review and amendment of hospital guidelines to include specific respiratory sepsis guidance.

## Results

A total of 70 patients were reviewed (35 patients pre-intervention, 58 prescriptions; 35 patients post-intervention, 55 prescriptions). The most common diagnosis was community-acquired pneumonia (CAP; 14 pre- and 22 post-intervention). Other diagnoses were lower respiratory tract infection (LRTI), an indication for antimicrobial treatment not specifically covered by local respiratory guidelines), infective exacerbation of chronic obstructive pulmonary disease (COPD), infective exacerbation of asthma, aspiration pneumonia, infective exacerbation of bronchiectasis and non-infective exacerbation of COPD.

Adherence to hospital guidelines increased from 21/58 (36%) to 36/55 (65%;  $p=0.002$ ) antimicrobial prescriptions following the intervention. Adherence to guidelines following consultant review also increased from 29/58 (50%) to 33/55 (61%) prescriptions, although the result was not statistically significant. Where antimicrobial prescription varied from local guidelines, reasons given included: chest sepsis, multilobar consolidation, hypoxaemia, and immunocompromise. Diagnosis of LRTI decreased from 10 cases pre- to 1 case post-intervention. In the pre-intervention sample, 4/10 LRTI cases had consolidation on chest x-ray and 7/10 LRTI cases were treated as for CAP. There were no significant changes to documentation of indication and stop/review date post-intervention.

## Conclusions

This project demonstrated an improvement in adherence to guidelines following an educational intervention consisting of oral presentations, changes to guidelines, an email update and peer review of cases. A post-intervention decrease in the use of the non-specific term LRTI as a diagnosis was associated with an increase in CAP diagnoses. The study was limited to pre-post methodology and a single acute clinical location; further assessment of interventions is recommended following a longer duration of hospital stay and in a greater number of patients.

## References

1. Chalmers J. *et al.* Community-acquired pneumonia in the United Kingdom: a call to action. *Pneumonia* 2017; 9:15. DOI: 10.1186/s41479-017-0039-9
2. British Society of Antimicrobial Chemotherapy. BSAC: Practical Guide to antimicrobial stewardship in hospitals. <http://bsac.org.uk/wp-content/uploads/2013/07/Stewardship-Booklet-Practical-Guide-to-Antimicrobial-Stewardship-in-Hospitals.pdf> (accessed 9th May 2018).
3. Lim WS. *et al.* Defining community acquired pneumonia severity on presentation to hospital: an international derivation and validation study. *Thorax* 2003; 58:377-382

**10. Improvements to adult inpatient gentamicin prescribing: the role of the antimicrobial pharmacist**  
Rachael A. Hinchliffe, Awais Mobeen, Kathryn M. Ashton, and Stuart E. Bond, Pharmacy Department, Pinderfields Hospital, Wakefield

This study did not require ethics approval.

## Background

Gentamicin is a Gram-negative antimicrobial with a low therapeutic index, classified as an essential medicine by the WHO<sup>1</sup>. Inappropriate use can lead to vestibular and renal toxicity, under-treatment of infection and antimicrobial resistance. The Yorkshire Hartford Gentamicin regimen was implemented at Mid Yorkshire NHS Trust in 2011 to improve gentamicin prescribing. Subsequent audits have identified inappropriate prescribing of gentamicin. Antimicrobial stewardship (AMS) interventions in hospital have increased adherence to antimicrobial prescribing policies<sup>2</sup>.

## Objective

To demonstrate improved gentamicin prescribing in adults according to local guidelines through educational interventions combined with audit and timely feedback.

## Methods

In an 800 bed associated teaching hospital, pre-intervention data were collected by the antimicrobial pharmacist between the 1<sup>st</sup> November 2017 and 26<sup>th</sup> January 2018. Patients with gentamicin levels were identified from laboratory software and followed up on the ward for clinical details. The standardised piloted data collection form included: indication, dose, appropriate dose prescribed, timing of levels, and subsequent dose. General Surgery and Urology were the highest users from preliminary results so were targeted for intervention. Data collection was not limited to these specialities. Interventions included: oral presentations to General Surgery and Urology, teaching to FY1 doctors, identification of patients receiving gentamicin during the pharmacy team huddle, and feedback on ward rounds. Inappropriate indications or doses received routine AMS intervention. Following interventions a second audit was completed between the 21<sup>st</sup> and 25<sup>th</sup> of May 2018 to measure improvements in prescribing. The shorter second data collection period was made possible due additional pre-registration pharmacist resource. The project was supported by independent pharmacist prescribing where necessary. A Chi-square test was used to compare proportions.

## Results

In total, 49 patients were audited; 25 pre-intervention (22 for abdominal infections, 3 for urinary infections) and 24 post-intervention (23 abdominal, 1 urinary). The two groups were similar for age, sex and reason for admission. The proportion of patients receiving an appropriate initial dose of gentamicin increased from 13/25 patients (54%) to 19/24 patients (79%,  $p=0.046$ ). Reasons for inappropriate dosing included the use of actual bodyweight rather than ideal bodyweight resulting in overdose ( $n=6$ ) and incorrect use of the male/female dosing table ( $n=3$ ). The proportion of patients who had a level taken appropriately remained similar (19 patients, 76%, vs 18 patients, 75%). The proportion of patients that had the subsequent dose of gentamicin prescribed appropriately increased from 9/25 patients (36%) to 20 patients (83%;  $p<0.01$ ).

## Conclusions

This project demonstrated an improvement in gentamicin prescribing following a series of pharmacist-led education and training sessions, presentations at governance group meetings and one to one training. The sample was limited to those patients who had levels taken. Identification by ward pharmacy staff of patients receiving initial doses of gentamicin would improve this process.

## References

1. World Health Organisation. World Health Organisation Essential Medicines. [http://www.who.int/topics/essential\\_medicines/en/](http://www.who.int/topics/essential_medicines/en/) (accessed 6<sup>th</sup> June 2018).
2. Davey P *et al.* Interventions to improve antibiotic prescribing practices for hospital inpatients. *Cochrane Library* 2017; DOI: 10.1002/14651858.CD003543.pub4

## 11. Implementation of falls-related medication reviews (MR): A Quality Improvement project (QIP)

Alexandra Cardoso, Whittington Hospital, London

### Context

A 33 bed Gastroenterology ward, known to have the highest number of falls reported in the hospital.

The Adult Inpatient Falls Group (AIFG) is a multidisciplinary team without pharmacy input until recently. A QI group was created consisting of senior pharmacists, nurses and medical teams for the ward. No ethical approval required.

### Problem

Pharmacists were not doing MR in light of reducing the risk of falls highlighting an area for improvement. Evidence based practice suggests MR may reduce the risk of falls as part of a multifactorial intervention.

### Assessment of problem and analysis of causes

A baseline audit was conducted to check compliance with Falls Risk Assessment and Care Plan (FRACP) and if further training was required. A poster was produced, allowing agency nurses to be aware of the STOPfalls campaign.

A process map identified that the MR step was not taking place.

### Intervention

The aim was to implement MR for 100% of patients identified at high risk of falls on the ward, contributing for falls risk reduction.

### Strategy for change

Three Plan-Do-Study-Act (PDSA) cycles were implemented over 3 months; PDSA 1 involved starting MR by gathering past medical history (PMHx), drug history (DHx), patient's consent and engagement; PDSA 2, collaborative work and research on falls was conducted to find suitable tool. PDSA 3 included implementation of the tool, collection of data from the MR twice a week for 3 weeks.

The QI group discussed the results and suggestions for improvement were implemented.

### Measurement for improvement

Baseline data showed no MR taking place.

Process measures:

a) time per MR

b) MR done per day

The time per MR was also as balancing measure, ensuring that the QIP implementation was safe.

After PDSA 1, where one MR took 2h:40m, there was a review of the process ; For PDSA 2 a MR tool was chosen to increase efficiency. During PDSA 3, the average time per review decreased (1h:05m) and the average number of MR per week increased.

### Effects of changes

PDSA 1 was challenging; obtaining PMHx and DHx was extensive; the hardest part was making recommendations without having a tool for guidance. PDSA 2 ensured that MR were done timely and systematically by obtaining a MR tool.

During PDSA 3, MR numbers increased. For the project to be sustainable all rotational pharmacists will need to receive training and continue the PDSA cycles on their wards.

### Conclusions

The aim was to implement MR for 100% of patients at high risk of falls within 3 months. This was shown to be very ambitious within this timeline. There is also a need to improve the MR tool according to feedback.

When fully implemented, MR will have a positive safety and financial impact reducing the number of medicines prescribed, and number and length of hospitalisations.

### References

1. Marvin, V. et al. Deprescribing medicines in the acute setting to reduce risk of falls. *European Journal of Hospital Pharmacy*. 2017; 24:10-15.

## 12. Safer use of intravenous morphine sulphate in Theatres

Jennifer Flatman, Gillian Cavell, Pharmacy Department, King's College Hospital NHS Foundation Trust, London

### Context

Morphine sulphate is a strong opioid widely used in secondary care for post-operative pain relief. The most common presentation of morphine sulphate for intravenous injection is a 10mg/ml ampoule.

A licensed ready-to-use (RTU) presentation containing morphine sulphate 10mg/10ml ampoules was recently launched. Use of this new presentation in theatre settings where IV morphine is administered reduces the risk of error and saves time in getting analgesia to the patient.

### Problem

Solutions containing 10mg/ml morphine sulphate need dilution to a 1mg/ml (10mg/10ml) concentration prior to intravenous bolus administration. Dilution of injectable medicines increases the risk of error and should be avoided where possible [1]. The risk score for the dilution of 10mg/ml morphine sulphate to 10mg/10ml is 3. This risk score is reduced to 2 using a RTU formulation.

As morphine sulphate 10mg/10ml ampoules are more expensive than morphine sulphate 10mg/ml ampoules their advantages and disadvantages in terms of acceptability and cost need to be carefully considered. The main issue of using both of these products is the risk of confusion. A case for using the 10mg/10ml ampoules was approved by the Trust Drugs and Therapeutics Committee subject to a proposed cost pressure not being exceeded.

### Intervention

The new formulation was promoted to staff working in the Day Surgery Unit.

Monthly morphine usage and expenditure data were obtained from the Pharmacy stock control system.

Acceptability was assessed by measuring increased usage. No requests to revert to 10mg/ml ampoules were received.

The new formulation was then promoted to Main Theatres. Usage and cost were further monitored to determine the impact.

### Effect of changes

Between April 2017 and May 2018, usage of morphine sulphate 10mg/10ml increased from zero to approximately 1000 ampoules/month in Day Surgery Unit and Main Theatres and morphine sulphate 10mg/ml usage has decreased from 800 ampoules/month to 10 ampoules/month.

The cost of morphine 10mg ampoules in Day Surgery Unit and Main Theatres increased from an average of £160/month in 2016 to approximately £600/month in 2017/18; an annual increase of £5280. This is less than initially predicted.

### Conclusions

The introduction of RTU morphine in Day Surgery and Theatres has had a positive impact on practice without being a burden on overall drug expenditure. The main objective, to reduce the risk of error during preparation and administration, has so far been achieved, shown by the lack of adverse incident reports.

The advantages of using this product in terms of accuracy and convenience in syringe preparation, releasing nursing time in a high demand setting and complying with national guidance for safe use of injectable medicines outweigh the small financial impact of purchasing a RTU product. It is expected that as usage of this product increases across the NHS, the overall cost will decrease.

The data for usage and expenditure were presented to the relevant Trust committees and approved for continued use. The product will be promoted to theatre-settings and Emergency Departments Trust-wide.

### References

1. National Patient Safety Agency. Patient Safety Alert 20. Promoting safer use of injectable medicines. London 2007. Available at: <http://webarchive.nationalarchives.gov.uk/20171030131058/http://www.nrls.npsa.nhs.uk/resources/type/alerts/?entryid45=59812&p=3>

## 13. Collaboration between South East Acute Trusts to develop a Preregistration Pharmacist Training Programme

Conway A, Savickas V, Brighton and Sussex University Hospital NHS Trust; Purdy S, Haddon A, Eastbourne Sussex Healthcare NHS Trust; Buckler A, Lelliott L, Surrey and Sussex Healthcare NHS Trust

### Background

Individual Trusts historically provided local training sessions for their preregistration trainees (PRP) to support their training. To optimise resources and expertise between neighbouring trusts it was agreed to develop a collaborative local programme to meet all organisational needs. The perceived benefits were closer networking with educational leads, prevention of repetition, development of peer learning and a cohesive educational and governance infrastructure.

### Objectives

Create a training programme underpinned by the GPhC Registration Assessment Framework<sup>1</sup> (RAF) and Future Pharmacist Outcomes<sup>2</sup>

Create an "Educational Agreement" outlining responsibilities within the collaboration

Evaluate trainee satisfaction

### Method

Pharmacy Education Leads from each Trust developed a programme schedule incorporating all common elements of the historic localised sessions and any additional themes. The content, across 9 planned study days, was mapped against the GPhC section 10 outcomes<sup>2</sup>. Medical and Pharmacy Education literature was appraised to identify appropriate teaching methodology. An Educational Agreement was drawn up encompassing the expectations of the programme, allocation of a lead for each scheduled session, method of peer communication between PRPs, teaching material, management of PRP or trainer non-attendance and cancellation of sessions.

At the end of the each session PRPs completed an online evaluation questionnaire to evaluate their satisfaction, confirm if the learning outcomes had been met, identify highlights of the sessions and areas for improvement. The qualitative comments were thematically analysed. This study did not require ethics approval.

### Results

A standard training day format was established and 16 PRP attended the programme. The concept of flipped learning<sup>3</sup> was introduced and session teachers requested to engage with this new approach had opportunities for training in this teaching methodology. Case based discussions were introduced using established assessment tools with PRP training on this tool integral to the programme. Administration time was factored in to cascade programmes and training material in advance of sessions. The educational agreement was signed by all educational leads, monitored throughout the year and showed transparency of the programme governance. Three common themes were identified from evaluation responses:

- Appreciation of programme content relevance, specifically the RAF and application to practice
- Value of case-based discussions and formative feedback
- Appreciation of benefits of flipped learning methodology. Evidence that not all teachers used this methodology and didactic teaching was less positively evaluated by the PRPs.
- Content level identified within some sessions overlapping with the undergraduate curriculum.

### Conclusion

Mapping of content to relevant frameworks received an overwhelmingly positive evaluation. Education leads appreciated the educational agreement transparency supporting programme management. Other themes of PRP satisfaction were relevance of case-based discussions and appreciation of flipped learning. Further trainer guidance identified to support this methodology and awareness of PRP level of training. Programme annual review will support future evolution.

Acknowledgements: Session facilitators involved with the preparation and delivery of this programme.

### References

1. General Pharmaceutical Council Pharmacist *Pre-registration manual*. (2017). Available: <[https://www.pharmacyregulation.org/sites/default/files/prm\\_pdf/preregistration\\_manual\\_20151120\\_2.pdf](https://www.pharmacyregulation.org/sites/default/files/prm_pdf/preregistration_manual_20151120_2.pdf)> Last accessed 21/01/2017).
2. General Pharmaceutical Council Future Pharmacists (May 2012) Available: <[https://www.pharmacyregulation.org/sites/default/files/document/gphc\\_future\\_pharmacists\\_may\\_2011.pdf](https://www.pharmacyregulation.org/sites/default/files/document/gphc_future_pharmacists_may_2011.pdf)> Last accessed 21/01/2017).
3. Cristina Rotellar and Jeff Cain (2016). Research, Perspectives, and Recommendations on Implementing the Flipped Classroom. American Journal of Pharmaceutical Education: Volume 80, Issue 2, Article 34.

#### 14. Pharmacy-led prescribing of natalizumab in MS patients improves the quality of monitoring and overall safety

Dorsey-Campbell R, Quinn T, Felongo T, Delacruz D, Walters P, Scalfari A, Singh-Curry V, Malik O, Nicholas R, Imperial College Healthcare NHS Trust, London

##### Introduction

The use of natalizumab to treat Multiple Sclerosis (MS) is associated with an increased risk of Progressive Multifocal Leukoencephalopathy (PML). This potentially fatal opportunistic infection is caused by the John Cunningham Virus (JCV). The risk of PML is increased in patients who are positive for JCV antibodies, who have been on treatment for more than 2 years & who have had previous immunosuppression.<sup>1</sup> MS services are therefore required to undertake regular monitoring, using MRI and blood samples, to minimise the risk of PML. This presents a significant burden on specialist MS centres. Following the addition of an MS pharmacist to the team, patients receiving natalizumab at Imperial College Healthcare Trust (ICHT) MS centre now have their charts re-written by a prescribing pharmacist every 6 months. The pharmacist routinely records number of infusions, JCV status, date of last MRI & date of last consultant review. Treatment is put on hold if required monitoring is overdue. We investigated how the introduction of a pharmacy-led prescribing service impacted on the quality of monitoring and on the safety of patients.

##### Methods

We used the information held in the pharmacy database to evaluate the frequency of consultant reviews, JC virus (JCV) status measurements and timeliness of MRI assessments before and after the introduction of a pharmacy-led prescribing and monitoring service. An MRI was considered overdue if the interval since the last scan was more than recommended by the regulatory authorities i.e. every 12 months for JCV negative patients, every 6 months for low positive (JCV  $\leq 1.5$ ) or every 3 months for high positive patients (JCV  $> 1.5$ ).<sup>1</sup>

##### Results

Currently at ICHT 331 patients are treated with natalizumab each month; 839 prescription charts were reviewed by a pharmacist between December 2016 and April 2018. Treatment duration ranged from 1 month to 9 years (mean 4.5 years, 53 doses). Of the 299 patients reviewed in 2017, the most recent JCV status was negative in 40% (n=120) and positive in 60% (n=178) of patients; 28% (n=83) had low titre and 32% (n=95) had high titre. The pharmacy led prescribing and monitoring service was introduced in December 2016. Following this a higher number of patients had their JCV status recorded (98% in 2016 to 100% in 2018).

We observed a significant reduction of the number of patients who had an overdue MRI. The number of overdue MRIs fell from 16% in 2016 to 5% in 2018. In the subgroup with a high JCV titre the number of patients with an overdue MRI fell from 7.6% to 1.8%, and no patients had an MRI more than 3 months late. This indicated a significant improvement in timeliness of MRI surveillance.

##### Conclusion

A pharmacy-led prescribing and monitoring service is feasible and frees up time for the MS clinical team. It also helps to routinely identify patients at higher risk of developing PML & greatly helps complying with natalizumab monitoring requirements, which overall improves patient safety. Further recommendations would be to liaise with the radiology department to arrange routine scheduling of MRIs in this patient group.

##### References:

1. Electronic Medicines Compendium. (2016). *TYSABRI 300 mg concentrate for solution for infusion*. Available at: <https://www.medicines.org.uk/emc/product/222> (Accessed: 10 August 2018).

#### 15. Identification of the unmet medication needs of first time post MI patients

Kirsty Dove- Mid Yorkshire Hospital Trust, Wakefield

##### Background

Secondary prevention medicines for patients post myocardial infarction (MI) have a well-established evidence base for their use; however adherence to these medicines is generally poor<sup>1</sup>. Community pharmacists offer medication review services as part of their contract, to help patients with long term conditions manage their medications and encourage medication adherence; however public knowledge and their awareness of these services are lacking.<sup>2</sup>

##### Objectives

- To identify a post myocardial infarction patients' unmet medicine needs
- To evaluate what information they are receiving about their medicines prior to discharge compared to what information they need
- To critically assess whether or not community pharmacy has a role in meeting these medicine needs in post MI patients

##### Methods

This study was carried out at two neighbouring NHS Trusts in the North East of England. Between the dates: September 2015 until November 2016, a total of 100 consecutive patients who were diagnosed as having a MI for the first time, were invited to take part in the study. This was a three part study:

Part 1: A questionnaire was given to 100 post MI patients on discharge from two large NHS acute Trusts. 50 post MI patients were followed up at one month post discharge and 50 post MI patients were followed up at four months post discharge via telephone. The questionnaire design consisted of closed questions interspersed with open questions. A five point Likert scale was used.

Part 2: Community pharmacist online survey based on the feedback from the patient questionnaires.

Part 3: Semi-structured interviews with community pharmacists based on the feedback from the patient questionnaires.

This study did not require ethics approval as it was classed as a service development project as per the 'Research and Development' departments at both NHS Trusts.

##### Results

90% (90/100) of Cardiology inpatients at discharge agreed they had received sufficient information about medicines; however they also expressed a wish to know more about specific aspects of their medication, in particular the side effects. The majority of community pharmacists felt that post-MI patients fit well into the current services they offer. Community pharmacists who took part in the study felt that a referral process from secondary care pharmacy to community pharmacy would be a feasible process and would fit easily into current practice. When the community pharmacists were asked about potential future services for post-MI patients, including reviewing their medications and up-titration of their beta-blocker and ACE inhibitor; the consensus was that they would need extra training, access to patients' blood results and a prescribing qualification for this to be undertaken safely in the community.

##### Conclusion

Patients discussed how they had unmet medication needs post discharge, however very few patients had contacted their community pharmacist for help with these unmet needs after discharge from hospital.

## References

1. Lambert-Kerzner,A., Havranek,E., Plomondon,M., Fagan,K., McCreight,M., Fehling, K., Williams,D., Hamilton,A., Albright,K., Blatchford,P., Mihalko-Corbitt,R., Bryson,C., Perspectives of patients on factors relating to adherence to post-acute coronary syndrome medical regimens. *Patient Preference and Adherence* 2015;9:1053-1059
2. Rodgers,RM.,Gammie,SM.,Leng-Loo,R.,Corlett,SA and Krska,J. Comparison of pharmacist and public views and experiences of community pharmacy medicines-related services in England. *Patient Preference and Adherence* 2016;10: 1749-1758.

## 16. Healthcare experiences of people with hip osteoarthritis: a meta-ethnographic analysis of qualitative studies

George Elgallab<sup>a</sup>, Tania Jones<sup>a</sup>, Gemma Donovan<sup>a</sup>, <sup>a</sup>University of Sunderland, Sunderland

### Background

One of the most common disabilities of the elderly is osteoarthritis (OA). It affects day-to-day activities and may cause individuals to stop work or retire early<sup>1,2</sup>. There is no cure for OA nor can any drug decrease disease progression. Patients with hip OA specifically experience worse pain and have more difficulty resolving their pain<sup>2</sup>. However, medicines or hip replacement surgery may be considered to manage pain and improve quality of life<sup>3</sup>.

### Objectives

This study aimed to synthesize published qualitative data that examines the experience of patients suffering from hip OA in order to achieve a comprehensive understanding of the needs of this patient group.

### Methods

A search of the literature was conducted in January 2018 using healthcare databases including MEDLINE and CINAHL. Inclusion criteria were studies examining patient experiences of hip OA; pain, quality of pain, and/or treatment. Only qualitative studies were included. A meta-ethnographic approach was used, which improves coding of primary and secondary data. The coding was then applied to the Health Belief Model<sup>4</sup>. This study did not require ethics approval.

### Results

An initial search identified 11,141 records, abstract screening reduced this to 437 for full text review leading to the inclusion of 9 studies. Included studies were from the UK, Canada, Australia, Norway and the US. The analysis of the qualitative studies revealed that patients' experience of their hip OA seemed to be affected by symptom severity, physical limitations and/or the effect on their relationships with others because of their limitations. Factors that were found to affect patients' views on treatment were symptom relief, close proximity to care, ability to participate in activities, having caring health professionals and private health insurance. Across the studies, health systems seemed to create barriers which prevented patients from receiving the management they felt they needed. Reasons patients believed their treatment was impeded included: poor understanding by health professionals, lack of resources, cost of care and/or being on a "public list". These factors and reasons identified seemed to affect readiness and ability to act towards their perceived ideal management of their OA.

### Conclusion

This is the first meta-ethnographic review of qualitative studies examining patient experience of hip OA. It highlights the need for a holistic patient-centered approach. Although some findings around the funding of the care may differ between healthcare systems, much is transferable to UK context. Healthcare professionals including pharmacists are key actors in facilitating access to treatments and educating patients about OA management, however research with patients seem to indicate that this role is inconsistently delivered. Research on how health professionals can optimize consultations to encourage informed decision making by patients about treatment and self-care is warranted.

## References

1. State of Musculoskeletal Health 2017 | Arthritis Research UK [Internet]. Arthritisresearchuk.org. 2017.
2. Litwic A, Edwards M, Dennison E, Cooper C. Epidemiology and burden of osteoarthritis. *British Medical Bulletin*. 2013;105(1):185-199.
3. Osteoarthritis: care and management | Guidance and guidelines | NICE [Internet]. Nice.org.uk. 2018.
4. Janz N, Becker M. The Health Belief Model: A Decade Later. *Health Education Quarterly*. 1984;11(1):1-47.

## 17. Service Evaluation: Integration of Clinical Pharmacist into Community Care Teams

Hannah Fletcher and Sara Moore, Harrogate and District NHS Foundation Trust, Harrogate

### Background

In 2016 a clinical pharmacy service was introduced as part of the Vanguard new models of care, supporting patients across the Harrogate district and staff of the Community Care Teams (CCTs). The pharmacist undertakes clinical medication reviews for people in their own home, advising them on their medicines use and optimising their medication regimen. Evaluation provided quantitative and qualitative data for pharmacist activity with the CCTs and evidence to support pharmacy presence in community settings.

This study did not require ethics approval.

### Objectives

- Identify the number and type of interventions made by the pharmacist
- Identify costs associated with medicines stopped, started and adjusted
- Quantify cost avoidance due to prevention of adverse drug events

### Method

All patients referred and interventions made by the CCT pharmacist were recorded from April 2017 to March 2018. Medication cost savings were calculated using the cost price from the January 2018 electronic drug tariff. The total drug savings per patient for a month's supply was calculated to show a potential 12 month saving. Interventions made were categorised through peer review and cost parameters for preventable ADEs used by NICE.<sup>1</sup>

### Results

214 patients were referred to the CCT Pharmacist; 185 patients were seen, resulting in a total of 259 visits. 29 patients were referred but not seen either because the patient refused or they were admitted to hospital prior to the pharmacist visit. Medications were stopped in 66% of patients and 35% of patients had their medications changed. 55% of interventions were classed as likely to have avoided significant harm for patients, e.g. detecting postural hypotension in frail elderly patients and amending antihypertensives. Serious harm was prevented in 2% of patients, this included warfarin being switched to rivaroxaban and dose adjustments of Low Molecular Weight Heparins. Approximate savings made over the study period have been extrapolated to a predicted 12 month saving of £52,514.4 (£36,930.40 in direct drug savings and £15,584 potential cost avoidance savings).



## Conclusions

This study has shown that the addition of a pharmacist to CCTs can have an important impact on patient care with comprehensive medicines review leading to direct medicines savings as well as cost avoidance due to adverse drug events. Savings made from de-prescribing were calculated over a 12 month period but it is likely that these savings will be greater based on the long term recurrent avoidance of repeat prescribing. Severity of harm avoidance due to adverse drug events has been peer reviewed but remains subjective. In line with other studies this review has highlighted the positive outcomes that effective medicines management can have on patient care and multidisciplinary working in a community setting.<sup>2</sup>

## References

1. Campbell F, Czoski-Murray C, Karnon J. Model-based cost-effectiveness analysis of interventions aimed at preventing medication error at hospital admission (medicines reconciliation). *Journal of Evaluation in Clinical Practice* 2009; 15(2): <https://www.ncbi.nlm.nih.gov/pubmed/19335488> (accessed 07/04/2017)
2. Dilks S, Emblin K, Nash I, Jefferies S. Pharmacy at home: service for frail older patients demonstrates medicines risk reduction and admission avoidance. *Clinical Pharmacist* 2016; 8(7): <https://www.pharmaceutical-journal.com/research/research-article/pharmacy-at-home-service-for-frail-older-patients-demonstrates-medicines-risk-reduction-and-admission-avoidance/20201303.article> (accessed 28/04/2017)

## 18. Appropriateness of the Intravenous (IV) Antibiotic Clinical Review Dominique Hall and Tori Young, Wirral University Teaching Hospitals

### Background

Prolonged and inappropriate use of antibiotics contributes to antimicrobial resistance therefore prudent antibiotic use and good antimicrobial stewardship practices are essential in preserving effective antimicrobials and slowing the development of resistance<sup>1</sup>. The Department of Health Antimicrobial Stewardship "Start Smart - then Focus"<sup>2</sup> guideline recommends measures for starting antibiotics appropriately, then focusing treatment so the most appropriate antibiotics are used.

### Objectives

The Aim was to determine whether an intravenous (IV) antibiotic review is undertaken and documented within 72 hours of antibiotic initiation and if the outcome of the review is appropriate.

The Objectives were:

1. To determine if antibiotic reviews are undertaken and documented within 72 hours of antibiotic initiation and if the Trust antibiotic review template is utilised for documentation. 100% of IV antibiotics should be reviewed within 72 hours and 100% of antibiotics prescribed should use the Trust template.
2. To quantify the outcomes of the review by type: stop, switch to oral (PO), escalate or de-escalate antibiotic, continue, or discharge on IV antibiotics.
3. To determine if the documented outcome is clinically appropriate according to; the Trust IV to Oral Step Down guidelines, Prudent Antimicrobial Prescribing guidelines and patient specific clinical parameters. 100% of outcomes should be clinically appropriate.
4. To compare these results to the previous year.

### Method

The auditors, both clinical pharmacists utilised the daily electronic report of all prescribed IV antibiotics, on two consecutive Mondays in January 2018. 72 hours after antibiotic initiation the medical notes were examined to collect data pertaining to the review and the appropriateness of the outcome. Data was collected using a data collection sheet. This data was then analysed using Excel. This study did not require ethics approval. One limitation is that the sample size used was rather small. It would also be useful to collect data over two different days during the week to collect more varied data.

### Results

A total of 66 IV antibiotics were prescribed for 57 patients. Of these, 63 prescriptions (95%) had a documented review within 72 hours, 3 (5%) did not. None of the reviews undertaken were on the Trust antibiotic review template.

The outcomes of the reviews were: stopped: 6 (9%), switched from IV to oral: 16 (24%), De-escalated 5 (7.5%), Escalated 3 (5%), continued with a stop date 32 (48%) and discharged on IV antibiotics 1 (1.5%).

Of the 63 reviews completed there were: 13 (20.5%) potential opportunities to use antibiotics more prudently.

### Conclusions

The rate of antibiotic reviews undertaken is high but the electronic review template is not utilised and opportunities to use antibiotics most prudently are missed. There were less IV to PO switches this year compared to last year. There was an increase from last year in antibiotics continued with a review/stop date. 0 antibiotics were continued without a review/stop date this year compared to 17% (15) last year.

### References

1. Public Health England. Health Matters: Antimicrobial resistance. December 2015. <https://www.gov.uk/government/publications/health-matters-antimicrobial-resistance/health-matters-antimicrobial-resistance> (Accessed February 2018)
2. Department of Health Advisory Committee on Antimicrobial Resistance and Healthcare Associated Infection ANTIMICROBIAL STEWARDSHIP: "START SMART - THEN FOCUS" March 2015

## 19. Pharmacists working in Emergency Departments reduce medication related delays and improve the safety of medicines and patient care

Ryan Hamilton, Sarah Hackney, Rishi Gupta, & David Kearney, Pharmacy Department, University Hospitals of Leicester NHS Trust

### Introduction

Pharmacy services in Emergency Departments (ED) is an expanding role with pharmacists delivering clinical care and increasingly being trained as ACPs. The ED at Leicester Royal Infirmary (LRI) is one of the busiest in the country and received funding from NHS England allowing pharmacists to be placed there during the 2017/18 winter period. Prior to this the clinical pharmacy service was provided remotely via dispensary pharmacists.

### Aims & Objectives

The aim was to determine the impact of having clinical pharmacists working in ED. This was done by measuring the difference in time taken to process prescriptions (including problem solving), number of patients seen by a pharmacist, number of contributions to patient care made by the pharmacists, and the potential impact of these contributions to patient care.

## Methods

Phase 1 (19-23/9/16) investigated the remote service provided through the dispensary. All prescriptions received in pharmacy was included and a standardised form was attached to collect data on time of arrival and completion, contribution(s) made, method of intervention, and space for further information. Phase 2 (11-15/9/17 then 8-29/11/17) investigated the on-ward ED pharmacist service. A similar data collection form was used for every patient seen. Contributions were reviewed independently by two pharmacists using a *Pharmacy clinical contributions severity rating scale for potential patient outcome* toolkit [1]. Differences in initial score were arbitrated by a panel of five pharmacists. Data were stored securely and processed in Microsoft Excel. Ethics approval was not required for this evaluation study.

## Results

A total of 44 patients (median 2 per day, range 1-5) were included in the remote service and 124 patients (median 9 per day, range 6-12) were seen by the ED pharmacist service. The mean average time taken to clinically screen prescriptions by the remote service was 53 min 29 s. This was greatly reduced when a pharmacist was providing an on-ward service, with a mean time of 15 min 35 s to complete the clinical review. There was no difference in the number of contributions made per patient (median = 2) between the remote or on-ward service. The proportion of contributions deemed *somewhat significant, significant, or very significant* was greater for the on-ward service than the remote service.

## Conclusion

Pharmacists working on ED, without additional or advanced training, review more patients than a remote service and contribute to care in a way that is likely to improve outcomes and patient safety. An on-ED service is also able to reduce process times and has the potential to build capacity into hospital flow.

## References

1. King's College Hospital (2017) Pharmacy Clinical Contributions severity rating scale for potential patient outcome [internal document]

## Acknowledgements

We would like to thank Raliat Onatade for access to, and advice with using, the scoring tools.

## 20. Evaluating the use of the RPS antibiotic checklist by Community pharmacists

Atiqah Liaqat, Hava Nasar, Mariam Qasim, Aida Shiraz, Gill Hawksworth, Saima Afzal, Sarah Frank, University of Huddersfield.  
Philip Howard, NHS Improvement Patient Safety Team, London

## Background

Antimicrobial resistance (AMR) is a worldwide public health crisis; this study analyses how community pharmacies could deliver elements of the 5-year AMR strategy as set out by the Department of Health in 2013<sup>1</sup> by using the Royal Pharmaceutical Society (RPS) antibiotic checklist<sup>2</sup> when counselling patients. By analysing the checklist use and counselling on AMR the potential for impact on AMR, by its adoption into community pharmacy practice, may be evaluated

## Objectives

To evaluate the use of the RPS antibiotic checklist by community pharmacists for counselling when dispensing antibiotic prescriptions in conjunction with a Public Health England (PHE) Infection patient information leaflet (PIL). Views of community pharmacists were assessed by questionnaire.

## Method

This study required and received ethics approval. A pilot antibiotic counselling checklist developed in 2017 was revised and promoted by RPS in their 2017 national antimicrobial stewardship campaign. Pharmacists who had used the pilot version were re-trained by researchers on the revised checklist which was used for 4 weeks in January 2018 to counsel patients when antibiotics were dispensed using an antibiotic PIL developed by PHE. A self completion tally sheet recorded the number and individual counselling points used with these patients.

A piloted questionnaire recorded usefulness of the checklist and PIL.

## Results

Twelve consenting pharmacists used the RPS checklist and tally sheet but after 4 weeks only 7 had recorded any data. A total of 211 patients were counselled, 29.8% (n=63) on alcohol, 31.2% (n=66) on not sharing with family and 42.6% (n=90) were asked to return unwanted medicines. A further 73.4% (155) were counselled on side-effects, 92.4% (n=195) on how often to take them, 82.9% (n=175) on duration and 81.5% (n=172) on finishing the course with 95.7% (n=202) being asked reason for antibiotic and 85.3% (n=180) told likely duration of infection. A PHE leaflet was given to 28.4% (n=60) of patients whilst 45.9% (n=97) were advised on safety-netting (seeking further advice) and 29.3% (n=62) on self-care. Only 18.4% (n=39) were advised on flu vaccination with the same number counselled on hand hygiene despite it being a key element of the RPS national campaign about antimicrobial resistance. In the questionnaire, although 71% (n=5) of pharmacists used the RPS checklist, only 57% (n=4) found it quite useful and 43% (n=3) thought it time consuming, stating 'too many options' as a barrier. The low number of eligible pharmacists taking part is a limitation.

## Conclusion

This limited study suggests community pharmacists are delivering some recommended educational elements about AMR to patients but not all. A review of the RPS checklist to make it less time consuming might encourage more pharmacists to use it in practice whilst counselling patients on antibiotic use. With more prominence given to AMR and specifically hand hygiene, it could help deliver the Government's AMR strategy<sup>1</sup>.

## Reference

1. Department of Health. 2013. UK 5 Year Antimicrobial Resistance Strategy. <https://www.gov.uk/government/publications/uk-5-year-antimicrobial-resistance-strategy-2013-to-2018> (accessed 27 May 2018)
2. Royal Pharmaceutical Society Antimicrobial stewardship quick reference guide :RPS website <https://www.rpharms.com> (accessed 27 May 2018)

## 21. An audit of Compliance with Trust Medicines Reconciliation Guidelines

Coupe J and Herring C, Wirral University Teaching Hospitals NHS Trust

## Background

Medicines reconciliation (MR) is defined by NICE as "the process of identifying an accurate list of a person's current medicines and comparing it with the current list in use" (1). This ensures discrepancies between patient's medication history (MH) and inpatient prescription are identified and communicated to healthcare professionals (HCPs) involved in their care. Trusts guidance state that MHs are initiated by the clerking HCP using the MR form within 24 hours of admission, detailing medicine name, dosage, frequency and route. This audit assessing completeness of MR forms follows on from previous audits undertaken at WUTH.

## Objectives

- Determine the proportion of MHs initiated by the clerking HCP
- Assess if the following were documented:
  - Patient details
  - Allergy status
  - Sources of information used
  - Medication details (name, strength, form, dose, frequency)
  - Details of when and by whom the MH was initiated.

Target compliance was 100%.

## Method

Data collection was piloted on 5<sup>th</sup> January and commenced from 8<sup>th</sup>-12<sup>th</sup> January 2018 on 3 admissions wards, comprising 60 beds in a large acute NHS teaching Hospital. Wards were selected due to the large number of MHs undertaken. All patients admitted that had a MH initiated were included in the audit. MR forms were compared against the audit standards.

This study did not require ethics approval.

## Results

Data from 110 MR forms were collected.

- 18% (n=20) were initiated by the clerking HCP. 70% (n=77) were initiated by a member of the Pharmacy department. 12% (n=13) were initiated but not signed.
- 56% (n=62) contained all medication details. Incorrect documentation of medication details were the biggest cause of non-compliance. 251 omissions of medication details were identified. Of which, 76% (n=190) relate to omission of dosage form.

## Conclusions

The majority of MRs were not initiated by the clerking HCP. This could be due to limited sources of information, particularly out of hours. It is expected that a higher proportion of MRs will be initiated by the clerking HCP once patient Summary Care Records (SCR) are available locally.

The main area of non-compliance is the omission of medication details from the MR.

The recommendations are as follows:

- Feedback results to the appropriate directorates
- Ensure all staff who initiate MRs receive education & training sessions
- Re-audit once access to SCR is available and local clerking in processes are amended to determine whether the proportion MRs undertaken by clerking HCPs has increased.

The audit was limited in that the accuracy of prescribing and proportion of patients who did not have an MR were not considered. A trust-wide audit would have allowed investigation in to whether there is a divisional variation or if the results are consistent throughout the Trust.

## References

1. National Institute for Health and Care Excellence (NICE), Quality Standard 120, Medicines Optimisation, March 2016, available at <https://www.nice.org.uk/guidance/qs120/chapter/quality-statement-4-medicines-reconciliation-in-acute-settings> (accessed 28/08/18)
2. H.Noble et al. *Medicines Reconciliation: A Guide to Obtaining and Documenting an Accurate Medicine History*. Wirral University Teaching Hospitals NHS Foundation Trust. Available at: <http://www.wuth.nhs.uk/media/3324769/medicines-reconciliation-guidance-clinical-guidance-v41.pdf>. [Accessed: 22/03/18]

## 22. Exploring patients' perception of the term allergy via semi-structured interviews

Rebecca Walton, University College London School of Pharmacy, Ian Wong, Centre for Medicines Optimisation Research and Education, University College London School of Pharmacy, Yogini Jani, Centre for Medicines Optimisation Research and Education, UCLH NHS Foundation Trust, London

## Background

Penicillin allergy is the most commonly reported allergy to antibiotics and frequently misdiagnosed with over 50% of these not of immunological origin<sup>1</sup>. Limited patient understanding can result in the holding back of first-line  $\beta$ -lactam antibiotics as well as increased hospital stays, toxicity and treatment failure. Considering a clinician may diagnose an allergy based on the patient's word rather than appropriate tests<sup>2</sup>, understanding allergies from a patient perspective is paramount.

## Objectives

To explore patients' perceptions of the term allergy and to determine patients' willingness of re-exposure to the medicine they report an allergy to.

## Method

In-depth interviews were completed at a university teaching hospital focussing on key themes surrounding allergies. 16 patients were identified using saturation sampling and sampled purposively to include a mixture of patients with (7) and without (9) allergy experience. Scenarios were used for patients without allergy experience. A pilot was completed, and a semi-structured interview guide developed. Inclusion criteria meant the patient was an English-speaking in-patient at the hospital during the days of data collection (12/12/17, 09/01/18 and 11/01/18) and no exclusion criteria could be present. The interviews ranged from 7 to 22 minutes and resulted in 44 pages of transcribed data. An indicative approach was taken alongside the use of a risk perception framework. This study did not require ethics approval.

## Results

Immunological origin was not identified though most patients recognised common allergens and symptoms with severity deemed a more important determinant for allergy identification. 12 patients concluded onset was acute. Exposure was identified as a key factor with patients explaining "if you have a really small number of nuts then it might take longer to come on," and severity with a patient suggesting, "some would manifest themselves almost immediately if they were serious." A varied duration was concluded with key factors identified as exposure, symptoms and treatment. Patients explained that, "[symptoms] probably last until you were no longer in contact with the stimulus," "if you vomited from food I would expect that it was now out of your system, so you should feel much better," and, "duration would vary depending on how quickly you got treatment." Patients would consider re-exposure to allergen medicines under appropriate conditions.

## Conclusion

The underpinning physiological mechanism as to how allergies manifest is not understood by the public. A mixed response of allergy symptoms and the subjectivity of severity means it is difficult for patients to identify allergies and may misdiagnose themselves. Research has been shown to improve patient understanding of their own allergy alongside the use of drug allergy cards, but little research has taken place to discover understanding from

a patient perspective. Although involving only a small number of hospitalised patients, this research identified a need to educate patients and enhance communication between in-patients and healthcare professionals.

## References

1. Charneski L, Deshpande G, Smith S. Impact of an Antimicrobial Allergy Label in the Medical Record on Clinical Outcomes in Hospitalized Patients. *Pharmacotherapy* 2011;31:742-747. doi:10.1592/phco.31.8.742
2. Portnoy J, Amado M. *Evidence-based Allergy Diagnostic Tests*. Kansas: Current Science Inc 2006. <https://www.ncbi.nlm.nih.gov/pubmed/17026871> (accessed 16 Nov 2017).

### 23. An evaluation of the impact of HIV medicines switches on patient outcomes

Mr. Tsz Ho Wong, University College London School of Pharmacy, Miss. Sheena Castelino, Pharmacy department, HIV & Sexual Health, Guy's Hospital, Guy's & St Thomas' NHS Foundation Trust, London, Dr. Yogini Jani, Centre for Medicines Optimisation Research & Education, UCLH NHS Foundation Trust and University College London School of Pharmacy

## Background

With improving life expectancy for HIV patients, the required lifelong antiretrovirals (ARVs) treatment has amplified the financial burden on the NHS.[1] Switching to generic ARVs has been estimated to save at least £1.25 billion.[2] During 2016-17, Guy's & St Thomas' HIV clinic (Harrison Wing) implemented a switch policy to enable efficient use of the HIV budget.

## Objective

To evaluate patient satisfaction and stability of clinical outcomes (defined as HIV viral load(VL) and CD4 count) amongst HIV outpatients after ARV switches in Harrison Wing.

## Method

Mixed methods including a retrospective review of patient records and patient survey were used. 120 adult patients who experienced one of the three ARV switches were randomly selected using the pharmacy database and electronic patient record. Data verification was conducted by re-entering on a separate form and comparing for any differences. Differences in CD4 count and proportion of patient with VL <20 copies/ml before and after switch were analysed using paired T-tests and McNemar's test respectively.

An anonymous patient satisfaction questionnaire was offered to all patients attending HIV clinics in Harrison Wing over a 4-week period. Piloting study was conducted beforehand to evaluate suitability of the questionnaire design. Kruskal-Wallis test was used to determine differences in the overall satisfaction score between various variables. This service evaluation did not require ethics approval.

## Results

Overall, switching to generic ARV led to an increase in CD4 for two of the three switches: Atripla® to Truvada® and generic efavirenz (p=0.001) and Darunavir/ritonavir to Rezolsta® (p=0.013); and an increase in proportion of patients with VL<20 copies/ml for Darunavir + ritonavir to Rezolsta®. However, the increases in CD4 count can either be a result of the switches or simply due to the natural progressive recovery of their immune system. There was no difference in CD4 or proportion of patients with VL<20 copies/ml for Atazanavir + ritonavir to Evotaz®.

Questionnaires were completed by 65 patients. 64.5% (n=42/65) experienced one of the switches. Majority of patients (92.9%, n=39/42) agreed that the healthcare team had provided adequate information about their ARVs switch. 73.8% (n=31/42) stated that opportunities were given to express their views and/or concerns about switching during consultation. Only one-third (n=14/42) of patients expressed they had concerns toward generic switching. The mean overall satisfaction score was 4.1 out of 5 (standard deviation=0.96). There were no statistical differences between the satisfaction score and patient characteristics, switch drugs or time of switch.

## Conclusions

A limitation of the study is that the impact on clinical outcomes was assessed retrospectively at two time points only. No negative impacts on clinical outcomes were identified, although increases in CD4 and VL for two of the switches require further study. There was high patient satisfaction with the implementation of ARV switches.

## References

1. Deeks SG et al. The end of AIDS: HIV infection as a chronic disease. *The Lancet* 2013; 382: 1525-1533.
2. Hill A et al. Predicted savings to the UK National Health Service from switching to generic antiretrovirals, 2014-2018. *J Int AIDS Soc* 2014; 17: 19497.

### 24. Electronic Discharge Summary process for Pharmacy: recovery of a failed implementation

Cooper R, Jones N, University Hospitals Bristol NHS Foundation Trust, Bristol

## Context

UHBristol has been awarded the status of Global Digital Exemplar (GDE) and as such is undergoing a rapid digitalisation. One area of which is a first of kind Electronic Prescribing and Medicines Administration (EPMA) system, developed in partnership with System C. Alongside the EPMA system; a new discharge summary solution, and process was developed.

## Problem

After the introduction of a new EPMA system, the discharge process within Pharmacy was reported to take three times that of the old system. This was causing delays in patient discharge and reduced patient flow as well as impacting staff morale. This study did not require ethics approval.

## Assessment of problem | Intervention | Strategy for change | Measurement of improvement

Using fishbone analysis we identified four main areas that were causing the increased time: training; reconciliation process; discharge supply source assignment and transcription check. Utilising PDSA Quality Improvement tool we targeted specific improvements:

- Cycle 1: Configuration of a default to auto-assign supply source to reduce the number of supply source edits required
- Cycle 2: Re-design of the medicines section of the discharge summary resulting in less transcription effort
- Cycle 3: We developed detailed step-by-step guides to aid in the training of Pharmacy staff
- Cycle 4: Re-design of the letter creation and prescribing process to allow for auto-population of admission medicines reconciliation to the discharge summary, reducing the need for pharmacist intervention at discharge

The business intelligence (BI) environment of our system meant we were able to time the process from the beginning of a pharmacist's intervention to the sign-off denoting the clinical check had been completed. This mirrors the measurement taken from the previous system. Our aims were to match the time taken using the old process within 3 months, and improve the time taken within 12 months.

### Effects of changes

After cycle 2, we experienced a visible reduction in mean process time, and an increase in staff morale. After cycle 4, we experienced an improved transfer of information to primary care (medicines reconciliation at discharge) and an improvement in control of variation in the process. At 3 months, we had achieved the aimed reduction in time. We are working on the next steps to allow us to reduce significantly the process time in comparison to the old system whilst maintaining improved information quality.

### Conclusion

We have reduced the time taken to complete the process down to match that of the old process. To improve our communication, we have added the timings to other KPIs displayed on a suite of dashboards available to all staff.

Our next steps have us working with System C to remove the need for a manual transcription check, and broadening our Quality Improvement scope by investigating the process time for stages before and after Pharmacy i.e. time between prescriber completing discharge summary and Pharmacy process, and post-Pharmacy deliver times.

## 25. Digital Clinical Prioritisation Dashboards for safe and effective patient prioritisation and handover (acuity)

Cooper, R, Jones, N, University Hospitals Bristol NHS Foundation Trust, Bristol

### Introduction

Our project focused on the development of digital clinical prioritisation and safety dashboards. A growing number of digital systems, requiring users to login to multiple solutions, has led to risk of user error and patient miss-match, and reduce user acceptance of digital practice. Having multiple solutions was causing frustration amongst clinicians as it required multiple screens and logins, which meant key clinical information was often missed. Handovers within Pharmacy were previously a non-standardised paper process, with a reliance on human initiative to check correct results or vital signs. Paper handovers provide out of date, location based information that was easily be lost (e.g. when patient's transferred wards), increasing the time taken to perform key clinical and safety tasks.

This study did not require ethics approval.

### Objectives

Our aims were to:

1. Replace paper handovers on which clinical pharmacy staff were reliant to guide patient prioritisation
2. Host all relevant clinical and non-clinical information from across the trust's digital clinical systems suite in one solution reducing time taken to log in and prioritise patients

### Method

Using SQL Server Reporting Services (SSRS) and with support from our trust's information team, we developed a suite of clinical prioritisation and safety dashboards. The solution was developed following detailed requirements gathering 'shadowing' during normal clinical practice.

Ward level dashboards provide a solution to see patient level clinically relevant and medicine supply information. They provide a digital handover of pharmacy tasks that were previously lost, and providing automatic alerts for pharmacy related tasks such as transcription checks, antibiotic reviews, and IV to Oral switches. Previously unseen missed doses and critical medicine supply requests are displayed clearly to pharmacy staff.

The development of a specialist anti-infective dashboard enables all clinicians to view all anti-infectives prescribed within the trust in one screen, in context of the relevant clinical picture including pathology, indication and cultures, as well as other key stewardship information such as review dates, and defined daily doses.

### Results

We have received qualitative feedback that clinicians now spend more time undertaking clinical reviews of patients most in need of their expertise and less time searching for clinical and task related information.

The specialist anti-infectives dashboard has allowed clinicians to easily spot errors in anti-infective use, and given them the ability to quickly identify areas of concern, freeing them to undertake valuable anti-microbial reviews.

Our ward level dashboards have allowed for a standardised approach to prioritisation, and handover. Improved visibility of missed doses and supply requests, and improved medicines reconciliation at admission coverage are other benefits seen with the introduction of clinical prioritisation and safety dashboards.

### Discussion/Conclusion

We have seen improved safety and effectiveness from a more efficient clinical prioritisation and handover process. Future developments include incorporation of bed-side observations, and automated pharmacotherapy assessments to include anticholinergic burden, QT prolonging therapy, and falls risk assessment.

## 26. Increase knowledge of disease modifying therapy in multiple sclerosis amongst clinicians and pharmacists

Janeme Lam & Yesim Karapinar, Northampton General Hospital

### Context

This study did not require ethics approval.

Setting: A district general hospital

Project lead: High Cost Medicines (HCM) Pharmacist; supported by the Multiple sclerosis (MS) nurses and consultants.

Target group: Trust doctors and pharmacists

### Problems

Healthcare professionals (HCPs) had limited knowledge of various disease modifying therapy (DMT) and their monitoring parameters and side effects. Lack of blood monitoring can reduce patient's safety and patient's experience.<sup>1</sup>

### Assessment of problem and analysis of causes

A Likert scales questionnaire designed by the author to assess baseline awareness and knowledge in understanding of the use of DMT was issued to 21 pharmacists and 24 doctors (junior doctors and consultants). Analysis of the results highlighted a general lack in confidence in recognising the criteria for MS patients to qualify for DMT use. The cause is due to MS is a specialised area which not all HCPs may have come across.

### Intervention

The aim is to increase awareness and knowledge of DMT amongst doctors and pharmacists by 50% from baseline measure of 12% in October 2017 by October 2018. The interventions include displaying a DMT tool on wards and providing two hours teaching sessions.

### Strategy for change

PDSA Cycle 1: HCM pharmacist designed a DMT tool in Nov 2017 to list all DMT's used in MS including the prescribing criteria, monitoring parameter, and side effects. HCM pharmacist utilised the national guidelines and commissioning policy. The tool was displayed within the pharmacy department and medical wards.

PDSA Cycle 2 and 3: teaching was arranged for doctors and pharmacists in Dec 2017 and in Feb 2018 respectively. Teaching was provided on the prescribing criteria for DMT, blood monitoring, and side effects. Teaching was provided by the neurology consultants, MS specialist nurse and lead pharmacist.

### Measurement for improvement

The questionnaire same as the one used for baseline was given to the same group of audience straight after they have reviewed the DMT tools and after the teaching sessions. Overall, an increase in awareness and confidence of DMT used to manage MS patients has successfully occurred (>50%). The target for the project has been achieved.

### Effects of changes

The MS teaching session increases HCPs' awareness of DMTs and how to contact the team if MS patients are admitted. Numbers of patients referred to MS clinic to initiate or review DMTs have doubled after the interventions.

### Conclusions

The DMT tool is a novel concept for the Trust and has potential to share with other hospitals. Delivering teaching as a multiple disciplinary team is the key to make the project successful.

Further PDSA cycles will include uploading the DMT tool online to consolidate learning further and provide easily accessible resource.

Recognising the blood monitoring of DMT will ensure the medicines are prescribed safely and cost-effectively. Early referral to the MS clinical team means that patients will receive prompt review in their current DMTs, which can potentially reduce the length of stay in hospital admission.

### References

1. NHS Health A-Z. Multiple Sclerosis. <https://www.nhs.uk/conditions/multiple-sclerosis/treatment/> (accessed 28 May 2018).

## 27. Reducing Meropenem consumption at Northampton General Hospital (NGH) using electronic prescribing Jessica Masaun, Kiran Dhillon, Lauren Ramm, Northampton General Hospital, Northampton

### Background

The Commissioning for Quality and Innovation (CQUIN) 2017-19<sup>1</sup> has set national targets for trusts to reduce consumption of antimicrobials in light of the global risk of resistance. A main driver of resistance being inappropriate use of broad-spectrum antibiotics such as Meropenem, one of our last line agents. The World Health Organization's (WHO) global action plan estimated 10 million deaths by 2050.<sup>2</sup> Effective and prompt Antimicrobial Stewardship is required to reduce this threat and maintain an adequate spectrum of antibiotic choice.

The introduction of ePMA across healthcare settings supports the vision of a paperless NHS and can be used to generate prescribing reports efficiently.<sup>3</sup>

### Objectives

- Prompt antimicrobial review within 24-48hrs by the ward clinicians and/or escalate to a microbiologist for advice
- To reduce the overall consumption of Meropenem across NGH.

### Method

Previously pharmacists had no formal method for identifying patients on Meropenem and found they had received multiple doses before a thorough review. The intervention was implemented on the 04/01/2018; ePMA automatically generated a daily report of all Meropenem prescribed within 24 hours. This was sent directly to the Antimicrobial Pharmacist, whom informed the clinical pharmacists to discuss within the Multi-disciplinary team (MDT). Clinicians decided whether deescalating, switching from IV to PO or discussing with microbiology was the most appropriate option.

The intervention included all adult wards and was undertaken daily from Monday- Friday. The weekend data was retrospectively addressed on the next working day.

The data was collected, stored and analysed using Excel. The 'Define' software was used to standardise consumption data. This study did not require ethics approval.

### Results

Pharmacists replied promptly within 24 hours (92%) indicating a review had been initiated with the MDT. 237 interventions were made in January, 128 in February, 113 in March and 98 in April. From Q3 to Q4 there was an 18% reduction in the no. of Meropenem vials dispensed from pharmacy. It was found that 44% of patient's penicillin allergies were documented as unknown. Pharmacists and technicians were able to intervene and update ePMA on 82% of patients with a reaction to penicillin. This will broaden the antibiotic choices available to the clinicians both for this and future admissions. Overall consumption of Meropenem reduced by 21% during Q4 compared to Q1-3.

### Conclusions

The no. of interventions declined over the months due to an initial discussion with microbiology or prompt optimisation of antibiotic choice and sampling before starting antibiotics were being taken as more antibiotic sensitives were being reported and regular review of antibiotics.

EPMA auditing found an increasing trend of Meropenem being borrowed from other wards and the emergency cupboard as only a select number of wards keep it as stock. Unintended consequences to consider is the increased consumption of other antibiotics, often multiple agents and increased demand for microbiology advice.

### References

1. NHS England, Commissioning for Quality and Innovation (CQUIN) 2018-19. [ Accessible via: <https://www.england.nhs.uk/nhs-standard-contract/cquin/cquin-17-19/>]
2. World Health Organisation, Global action plan on antimicrobial resistance. 2015 [Accessible via: <http://www.who.int/antimicrobial-resistance/publications/global-action-plan/en/>]
3. NHS England, NHS five year forward view. 2017 [Accessible via: <https://www.england.nhs.uk/publication/next-steps-on-the-nhs-five-year-forward-view/>].

## 28. Pharmacist medication reviews: audit to determine compliance with devised standard for frequency

Naiomi Morris, Sasha Bettell-Higgins, David McRae,  
Pharmacy Department, Prince Charles Hospital, Cwm Taf University Health Board, Merthyr Tydfi

### Background

Medication reviews are one of the principal mechanisms through which hospital pharmacists contribute to patient care. However, declining durations of inpatient stay, set against increasing pressures to expedite discharge and meet national medicines reconciliation targets, are thought to be reducing the opportunity for pharmacists to conduct medication reviews outside of admission and discharge contacts. In the absence of a local standard for frequency of medication review, or prioritisation system for pharmaceutical input, a standard was devised by the Health Board's Clinical Pharmacy Network Group to facilitate a pre-registration audit to determine the frequency of medication reviews. The aim of the current study was, therefore, to determine if the devised standard, that all adult inpatients receive a medication review twice weekly per 'working week' (Monday to Friday), was being met at one district general hospital.

### Objectives

- To determine the proportion of admissions that receive a pharmacist medication review on two or more occasions per week during the audit period.
- To identify the prompts which lead to pharmacists to conduct medication reviews.

### Method

The study did not require ethics approval. Data were collected prospectively by ward pharmacists for all adult inpatient wards (excluding intensive care) receiving a daily visit from the ward pharmacy service over a four week period between January and February 2018. Dispensary based reviews were excluded. Pharmacists documented that a review had been performed and what prompted the on the data collection form at the time of review. Acomb's "Medication Review (Level 2)" was used as the definition of medication review for the audit.<sup>1</sup> Reviews carried out on the day of admission or discharge were excluded. Prompts were selected from a list of healthcare professionals who could potentially request a review (doctor, nurse, pharmacy technician, other pharmacist). An option for an 'unprompted review' (carried out as part of a routine 'sweep') was also included. Data were analysed using Microsoft Excel.

### Results

Incomplete data collection on three wards led to exclusion of their results. Of the 246 admissions included in the audit, 57% (n=140/246) received a medication review on two or more occasions per week during the audit period. The prompt leading to each review was recorded for 35% (n=86/246) of patients. Of the prompts recorded, 6.9% (n=6/86) originated from other pharmacists, 4.7% (n=4/86) from nurses, 1.2% (n=1/86) from pharmacy technicians and 1.2% (n=1/86) from doctors. Eighty six percent of reviews (n=74/86) were unprompted.

### Conclusion

The devised standard for frequency of medication review was not met. Only one in ten pharmacist medication reviews were prompted. Given the limited number of reviews being conducted, future work should focus on the implementation of a prioritisation system which enables pharmacists to target patients with the greatest need of medication review. The study is limited by incomplete data capture during the audit period. A simple method for pharmacists to record when a medication review has been conducted should also be devised.

### References

1. Acomb, C. Yorkshire and Humber Clinical Pharmacy Benchmarking. 2012. Accessed online 1 June 2018. Available at: [https://www.sps.nhs.uk/wp-content/uploads/2013/03/Presn\\_MUSN\\_26Feb13\\_York\\_and\\_Humber\\_CP\\_Benchmarking\\_CA.pdf](https://www.sps.nhs.uk/wp-content/uploads/2013/03/Presn_MUSN_26Feb13_York_and_Humber_CP_Benchmarking_CA.pdf)

## 29. Comparison of errors made on discharge prescriptions written by doctors and pharmacists

Miller G, Whitehead D, Limbau A, Easmin S, King's College Hospital NHS Foundation Trust

### Background

When patients are due to be discharged from hospital their discharge prescription (TTA) was traditionally written by a doctor and then clinically checked by a pharmacist. At King's College Hospital, accredited pharmacists write the majority of discharge medication, by a process known as drug listing<sup>1</sup>. Drug lists are not second checked by a pharmacist. There is little published work looking at the error rates on discharge medication between doctor written TTAs and pharmacist written drug lists.

### Objective

To compare the number, frequency and type of medicine errors found on discharge prescriptions written by doctors and pharmacists.

### Method

For 4 weeks during January and February 2017, a standardised data collection tool was used to document the medicine errors picked up by pharmacists when they clinically checked a random sample of TTAs written by a doctor. A random sample of pharmacist written drug lists were also checked for medicine errors by another member of pharmacy staff. Errors were as defined by Dean et al<sup>2</sup> and were immediately rectified following a check of the patients' medical notes, a discussion with the medical team for TTAs and/or the pharmacist who wrote the drug list. This study was conducted in real time. This study did not require ethics approval.

### Results

A total of 73 TTAs and 140 drug lists were analysed from a variety of wards across the trust. 59% (43/73) of doctor written TTAs contained at least one error, compared to 3.5% (5/140) of pharmacist written drug lists. On the TTAs, 546 items were prescribed and 87 errors were identified (15.9%), compared to 7 errors identified from the 1226 (0.57%) items written on the drug lists. Drug omissions, incorrect dose and incorrect frequency were the most common types of errors identified.

### Conclusion

This study showed that pharmacists writing medicines on discharge prescriptions made significantly fewer errors than those written by doctors. The error rate of pharmacist written drug lists is comparable to other published work<sup>1,3</sup> where there was an error rate of between 0.2%-0.3%. The differences in error rate could be due to a lack of doctor knowledge and training in TTA writing, alternatively work pressures and workload could explain the high error rate.

A limitation of this small study is that different pharmacy staff checked the drug lists and TTAs for errors, however using a standard definition for errors should have limited any variability in reporting.

Pharmacists writing drug lists on discharge prescriptions reduces the error rate compared to doctors writing TTAs, but extra funding is often required when introducing this service change.

## References

1. Onatade, R *et al.* The incident and severity of errors in pharmacist-written discharge medication orders. *Int J Clin Pharm* 2017; 39: 722-728.
2. Dean, B *et al.* What is a prescribing error? *Quality in Health Care* 2000; 9: 232-237.
3. Baqir, W *et al.* Pharmacist prescribing within a UK NHS hospital trust: nature and extent of prescribing, and prevalence of errors. *Eur J Hosp Pharm* 2015; 22:79-82.

### **30. An audit on the effectiveness of the Green Bag Scheme** Mistry N, Patel A., Royal National Orthopaedic Hospital (RNOH), Stanmore

#### Introduction

The use of Patients' Own Medicines (POMS) is part of the recommendations for NHS modernisation highlighted in the NHS Plan<sup>1</sup>. Green bags, introduced at RNOH in 2013, are reusable bags for putting medicines in. Its use can save time & money and help ensure medicines stay with the patient during movement around the hospital; preventing missed doses of critical medicines. A baseline audit carried out before green bags were introduced illustrated that 79% of patients brought in their medicines<sup>2</sup>.

#### Objectives

- To evaluate whether there was an increase in the proportion of patients bringing in their medicines since introducing the green bag scheme
- To identify any critical medicine omissions due to patients not bringing in their medicines.

#### Standards

- All patients who attend pre-assessment on regular medicines should receive a green bag.
- All patients should bring in a one month supply of all their medicines in original packs.
- No patients should miss doses of critical medicines.

#### Method

An audit tool created for the baseline audit<sup>2,3</sup> in 2013 was adapted.

Pharmacy staff collected data from 30/04/2018 to 26/05/2018 on included wards (Rehab wards excluded as patients not pre-assessed) during medicines reconciliation for new patients with the aim of auditing 100 patients. Audit forms collated information on quantity and quality of POMS brought in, whether a green bag was given to patient at pre-assessment, reasons for not bringing in medicines and if any critical medicines omitted. Omissions were identified through the medicine not being available on the day of admission. Audit forms collected daily were entered onto excel and analysed.

This study did not require ethics approval

#### Results

91 patients were included in the audit. The average number of medicines taken was 5. 82% (75/91) of patients were taking regular medicines. 83% (62/75) patients brought in their medicines. 41% (20/49) patients attending face to face pre-assessment appointments received a green bag of which 95% (19/20) brought 2-4 weeks supply in original packs. No patients missed doses of critical medicines.

#### Discussion

There has only been a 3% increase in the number of patients bringing in their medicines since the introduction of the green bag scheme in 2013. The audit highlighted the green bag scheme is effective but needs to be utilised more. No critical medicines were missed due to patient's not bringing in their medicines.

Limitation: Incomplete information on audit tools reducing sample size.

#### Recommendations

- Re-advertise the green bag scheme
- Make green bags more visible in pre-assessment department
- Expand green bag scheme to patients who are telephone assessed by posting.
- Re-audit in one year

#### References

1. Department of Health. 2000. The NHS Plan. A plan for investment. A plan for reform.
2. Mistry N. Audit to assess the quantity of Patient's Own Drugs brought into hospital. Royal National Orthopaedic Hospital. May 2013.
3. East and South East England Specialist Pharmacy Services. Moving Medicines Safely: Implementing and sustaining a 'Green Bag' Scheme – V2 Jan13 (JH). A toolkit to support the implementation and evaluation of 'Green Bag' Schemes within Medicines Management Services – revised January 2013.

### **31. Pharmacist prescribing of discharge medications in elderly care: a pilot study** Sarah Mitchell-Gears and Rania Ishak, Pharmacy Department, Pinderfields Hospital, Wakefield

#### Background

Delays leaving hospital primarily affect older people. Between April 2016 and March 2017, an average of 6,178 patients per day was stuck in a hospital bed despite being medically fit to be discharged<sup>1</sup>.

The General Medical Council's EQUIP study in 2009 indicated an error rate amongst junior doctors (Foundation year 1 and 2) of 8.9% nationally<sup>2</sup>. These two issues were addressed by a Pharmacist prescriber to improve patient experience at the point of discharge.

#### Objectives

To examine the effects of a pharmacist prescriber on:-

1. Time from a patient being declared medically fit for discharge (MFFD) to the time that discharge medicines are available.
2. Accuracy of prescribing of discharge medicines.

#### Method

This study did not require ethics approval.



A four-week pilot study was conducted in November 2017, involving a pharmacist prescriber on two elderly care wards. Baseline data was collected by the prescribing pharmacist on the two wards for one week prior to the pilot study.

When patients were deemed MFFD at the morning board round or during the ward round the pharmacist prescribed the discharge medicines. The doctor maintained responsibility for the clinical details on the discharge letter.

The time the patient was deemed MFFD was recorded for each patient and data was collected from the pharmacy tracker showing the time the medicines were available. The data was entered into an Excel spreadsheet and analysed.

The average time taken from the MFFD decision being made to the medicines being available was calculated for the baseline data and for the four-week pilot study.

Any errors made by the pharmacist prescriber that were picked up and corrected by other pharmacists at the clinical check stage were identified from SystmOne by the Clinical Systems Manager.

## Results

From the baseline data, the average time taken from the patient being MFFD to medicines being available was 10 hours 14 minutes compared to 5 hours 38 minutes when the pharmacist prescriber was prescribing discharge medicines. This shows an average time saving of 4.5 hours

During the pilot study 91 discharge prescriptions were written, with a total of 900 medications prescribed by the pharmacist. Errors were recorded on 3 of these equating to 0.3% error rate, compared to the published error rate of 8.9% amongst junior doctors.

## Conclusions

The presence of a pharmacist prescriber resulted in: -

Discharge prescriptions being more accurate and discharge medicines being available earlier in the day, improving both patient safety and patient flow.

This pilot study was limited to elderly patients on two wards over a four-week period and a comparable study published by Lancashire NHS Trust in March 2016 showed similar results.

## References

1. NHS Benchmarking Network March 2017. Older People's Care in Acute Settings National Report.
2. <https://www.nhsbenchmarking.nhs.uk/projects/2017/4/10/older-peoples-care-in-acute-settings> (accessed 1st June 2018)
3. Dornan T AD, Ashcroft D, Heathfield H *et al*. An in-depth investigation into causes of prescribing errors by foundation trainees in relation to their medical education. London: General Medical Council, 2009.

## 32. Introduction of Paracetamol dose banding for adult inpatients to improve patient safety

Briggs, P, Deady, P, Mitchell-Gears, S, Mid Yorkshire Hospitals NHS Trust

### Background

The Trust Medication Safety Group noted an increasing number of incidents reported relating to patients receiving 1 gram of intravenous paracetamol when they were <50kg. Intravenous paracetamol is only licensed at a dose of 1 gram in patients weighing above 50kg. Subsequently a serious incident occurred where a 35kg patient was prescribed paracetamol 1 gram orally or intravenously post operatively, this resulted in the patient having elevated paracetamol levels, even though only 1 intravenous dose was administered and other doses were administered orally.

### Objectives

- To ascertain if paracetamol is being prescribed correctly Trust-wide
- A small working group of key stakeholders to analyse results and formulate proposals to improve paracetamol prescribing across the organisation
- To ensure an effective ongoing campaign of promotion and education to ensure initiatives become embedded Trust-wide to improve patient safety

### Method

An initial audit of prescribing practice was undertaken. Several acute surgery and elderly care wards, including the ward where the serious incident had occurred, were audited. This audit demonstrated that there was a widespread issue with the inappropriate prescribing of paracetamol. A task and finish group of key stakeholders met, including the Medication Safety Officer, nursing staff and key consultant colleagues from specialities including anaesthetics, elderly medicines and various surgical specialities. Several options were considered; however the group felt it was important that any changes made dosing options simpler and clearer for all staff groups. The group proposed the implementation of Paracetamol dose banding for all adult in-patients where patients less than 50kg only received a 500mg dose regardless of the route.

The reason for implementing this change was to increase clarity for prescribers and nursing colleagues with a single dosing regimen for all paracetamol dosage forms, coupled with the fact we had an underweight patient with elevated paracetamol levels who had been dosed orally. The proposal was supported by the Trust Medication Safety Group and approved by the Medicines Optimisation Group and implemented in March 2017.

To ensure clarity across the healthcare interface our initiative was shared with primary care colleagues, to ensure GPs could understand why some patients may be discharged on lower doses of paracetamol that they had previously been prescribed, and the safety benefits of this could potentially be implemented more widely.

### Results

The results of the initial audit showed 4.5% of patients were prescribed an incorrect Paracetamol dose. After implementation of dose banding, re-audit in May showed 2.3% of patients were prescribed an inappropriate dose of paracetamol based upon the new guidance. Further audit was conducted six months later, to gauge how the protocol had become embedded across the organisation. Re-audit showed that 0% of patients were prescribed an inappropriate dose. Ethics approval was not required for this project.

### Discussion

The introduction of paracetamol dose banding has demonstrated significant changes in prescribing practice and improvements in medication safety have become embedded across the organisation.

### 33. An Evaluation of a Clinical Pharmacist Medication Review Service in Primary Care

Eoin Moroney, Kevin Pickavance, David Russell, Stacey Nelson, Marie Neville, Sephora Shaw, Edel Marshall, Neveen Sorial.  
Brighton and Hove Clinical Commissioning Group (BHCCG) part of the Central Sussex and East Surrey Commissioning Alliance

#### Context

Caring for an aging population with multi-morbidities is the single greatest challenge facing healthcare to date. An increasingly older and frail population with complex medical needs has shifted the delivery of care from the acute setting into the community. It is estimated that 11% of unplanned hospital attendances are attributed to medication related harm<sup>1</sup>. The majority of these consist of elderly patients prescribed multiple medications which include high risk therapies as outlined by National Health Service (NHS) Education Scotland<sup>1</sup>. By proactively identifying and rationalising inappropriate polypharmacy in patients at risk of medication harm, there are significant opportunities for reducing unplanned hospital admissions.

#### Objective

To evaluate whether a pharmacy medication review service based within primary care could improve patient safety and reduce unplanned hospital admissions.

#### Methods

The service provides structured medication reviews via the use of six clinical pharmacists embedded across 40 GP (general practitioner) surgeries. The remit of the team is to focus on reducing inappropriate polypharmacy in compliance with medicines optimisation principles<sup>2</sup>. The target cohort of patients was identified by auditing prescribing practices within the GP clinical systems and through referrals from clinical practitioners, voluntary and social care services. Patients reviewed between April 2017 and March 2018 were included in the study. For each patient reviewed a score was attributed based on the RiO scoring system<sup>1</sup>. This study did not require ethics approval.

#### Results

A total of 1,300 patients were referred into the service and reviewed. Of these, 43% (n=559) originated from GPs and 34% (n=442) were identified from clinical audits. 12% of reviews involved initiating medication to manage previously unmet health needs, whereas 11% resulted in onward referral to other primary care services. 4.5% (n=58) of patients reviewed were ascribed as high risk of readmission based on the RiO admission avoidance score<sup>1</sup>. Over the 12-month period a total of 3,680 interventions were recorded, a mean of 2.8 interventions per patient. 91% of interventions were agreed and actioned by the relevant clinician. In comparison, only 9% of interventions were not actioned due to either refusal on clinical grounds or patient declined intervention.

#### Conclusions

Targeted medication reviews offer patients improved access to specialist medicines advice and reduced inappropriate polypharmacy. However, the quality of data collected was not sufficiently robust to draw a causative link between pharmacist interventions and admissions avoidance. The utilisation of more sophisticated information technology solutions in the future will improve data collection and analysis. Additionally, a peer review panel has been established to review the admission avoidance scores. Moreover, a retrospective audit of patients is planned to ascertain if reduced polypharmacy as a result of pharmacist review, reduced hospital admissions. Further analysis of the rationale for clinicians declining interventions is also needed to identify areas of future GP engagement.

#### References

1. Scottish Government Polypharmacy Model of Care Group. *Polypharmacy Guidance, Realistic Prescribing 3rd Edition, 2018*. Scottish Government.
2. National Institute for Health and Care Excellence (NICE). *Multimorbidity: clinical assessment and management*. NICE Guideline 56. London: NICE, September 2016. Available from: <http://www.nice.org.uk/ng56> [Accessed 24<sup>th</sup> May 2018].

### 34. Reduction in hypnotic initiation in older patients using e-prescribing and targeted feedback

<sup>1</sup>C.Alice Osborne, <sup>2</sup>Kelly Fisher, <sup>1</sup>Luke Elliott, <sup>1</sup>Jaymi Mistry, <sup>1</sup>Emma Ritchie, <sup>3</sup>Bryn Williams,  
<sup>1</sup>Pharmacy, <sup>2</sup>Nursing <sup>3</sup>Informatics, Guys and St Thomas NHS Foundation Trust, London

#### Background

A common source of harm for elderly inpatients is falls. Benzodiazepines and z-hypnotics increase falls risk particularly in elderly patients<sup>1-3</sup>, hypnotic initiation is associated with falls<sup>1</sup>. The trust Serious Incident Assurance Panel requested a review of hypnotic prescribing after an elderly patient fell.

#### Objectives

We assessed hypnotic prescribing in an acute trust. Objectives were to

1. Report initiation versus continuation of hypnotics
2. Describe prescription regularity: regular, as required and 'stat'
3. Evaluate prescribing by patient age
4. Test multifaceted intervention on initiation in elderly inpatients.

#### Method

Baseline prescribing of the five formulary hypnotics (temazepam, nitrazepam, loprozalam, zolpidem, zopiclone) from 1 June 2015 to 31 December 2016 were captured from the electronic prescribing and medication administration system (EPMA). Critical care, children's and day wards were excluded. Trust Informatics provided occupied bed day (OBD) data. Pharmacist annotations informed newly initiated, continued, changed (e.g. dose reduced) and unclear (e.g. not annotated). Data were analysed for all adults and for patients over 65 years. Interventions (February-July 2017) included face-to-face discussion of hypnotic risk-benefit with surgeons, Safety Signal (Medical director email), emails to prescribers and pharmacists reviewing hypnotics in elderly, describing risk-benefit, and removal of hypnotics in EPMA protocols. EPMA data were re-extracted. Ethics approval was not required.

#### Results

The 8413 hypnotic prescriptions extracted were zopiclone (4952,59%), temazepam (3224,38%), zolpidem (126,1%), nitrazepam (103,1%) and loprozalam (8,0%); 443 prescriptions per month. One-third (2832,34%,149 per month), were new, 14% were continued as before, 2% changed and half prescriptions' status was unclear (4205,50%). Of new hypnotics, 18 (1%) were started in another hospital, recommended by palliative care or psychiatry, or were for steroid-induced insomnia. Of prescriptions with status unclear, 1835/4205 (44%) were 'stat' doses. Prescribing varied nine-fold between high (e.g. cardiovascular) and low prescribing wards, maternity had 0.0 prescriptions per 100 OBD. On Cardiovascular<sup>1</sup>, temazepam dominated (1928,80%). Overall, 45%(3766) prescriptions were for elderly patients, 222 prescriptions per month, of which 71 (32%) hypnotics were new, 33 continued, 5 reduced, and 113(51%) status unclear.

After intervention, overall hypnotic prescriptions almost halved to 225 per month (P<0.05). In elderly patients, prescriptions reduced by two-thirds to 75 hypnotics per month (p<0.05); 16(22%) new, 18(24%) continued, 3(4%) reduced and 38(51%) unclear. Most 11/12,92% new hypnotics in elderly were as required. Reduction was greatest in cardiovascular wards.

## Conclusion

Hypnotic prescribing varied, reflecting pre-operative practice versus elderly care staff awareness of sedatives and falls. Longer-acting temazepam was favoured in cardiovascular areas. Multifaceted intervention reduced hypnotic use in elderly patients in line with advice<sup>2,3</sup>.

Removal of hypnotics from EPMA surgical protocols was simple. No clinical problems were identified after changes, hypnotics may still be prescribed long-hand. Pharmacists may omit annotations if prescription has ended before screening.

Future work includes 'Drugs and Falls' guidance, afternoon caffeine avoidance and assessing impact on fall rates.

## References

1. Richard,P., Cashin,R.P., Yang,M. Medications prescribed and occurrence of falls in general medicine inpatients. Canadian Journal Hospital Pharmacy 2011;64:321–326.
2. NICE. CG 161: Falls assessment and prevention of falls in older people. June 2013.
3. Royal College of Physicians. Medicines and falls in hospital. Darowski,A., Dwight,J., Reynolds,J. FallSafe Project. March 2011.

## 35. Improving medication management for liver transplant patients – Introducing a pharmacist to outpatient clinics

Lindsay Smith and Alison Orr, Kings College Hospital NHS Foundation Trust, Denmark Hill

### Introduction/Background/Context

King's College Hospital is a large liver transplant centre and the leading dedicated service in Europe. Liver transplant patients have incredibly complex medicines management needs and can lead to; unnecessary polypharmacy, costly readmissions, poorer clinical outcomes and patient dissatisfaction. A service improvement project was carried out to identify ways to improve medicines management in liver transplant patients. This highlighted areas where there are opportunities to develop multi-disciplinary clinics and thereby improving holistic patient review. A reduction in the impact of co-morbidities such as cardiovascular disease and diabetes is important to ensure long-term graft survival. Regular bone health assessment, would also contribute to morbidity reduction. Another issue emerging is responsibility for prescribing of immunosuppressant medications should remain with the transplanting centre. This puts additional pressure on clinics and makes it more difficult for patients to get quick, local supply of immunosuppressant medications. As a result of the project a specialist pharmacist was introduced to the liver outpatient clinics.

### Objective(s)

- To improve transition from inpatient to outpatient care by ensuring arrangements are in place for ongoing supply of immunosuppressant medications
- To reduce the number of prescription requests made between appointments by 50% over the first year

### Method

New transplant patients discharged between September and December 2017 were booked onto the pharmacist clinic list. Appropriate patients, as deemed by the lead floating Consultant in clinic, were reviewed prior to being handed over to the senior doctor. Intervention type was recorded on a spreadsheet and tallied accordingly and included medication review, responding to prescription requests and booking blood tests.

### Results

Intervention data was collected throughout the pilot period. The pharmacist saw 45 patients and made 64 separate interventions.

### Intervention type

Medication knowledge assessment/education – 5, Immunosuppression dose adjustment/switch – 5, Prophylactic medication stopped as per protocol – 5, Counselling for non-adherence – 4, Queries with supply of Medication – 9, Medication queries – 6, Medicines Reconciliation/checking for interactions - 2, Renal Function – dose adjustment of Medication – 2, Fracture risk assessed/started on bone protection – 6, Patient Referred to another service (e.g. Dermatology/Pain) – 2, Other – 10, Medication information to other HCP – 10. **Total number of interventions - 64 and total number of patients – 45.**

### Discussion/Conclusion

Having a pharmacist in clinic allows full focus and review of patient's medication ensuring timely discontinuation of unnecessary items and finite courses and side effect reporting. The pharmacist has also initiated medications to improve bone health, optimise blood pressure control, ensure healthy cholesterol levels and improve diabetic control. Ensuring medication lists are updated has helped ensure accurate medicines reconciliation. We have not seen a reduction in the number of prescription requests between appointments. Most interventions were made around supply of medications which pharmacists are best place to solve.

This service gives direct access to specialist medication information and raises awareness of services offered by the specialised liver pharmacy team. The feedback so far is positive. We plan to carry out a patient satisfaction survey 6 months after the introduction of the service.

Ethics approval was not required for this project as it was an audit.

## 36. Measuring compliance with Start Smart – Then Focus guidance on antimicrobial prophylaxis administration

Basirat Osinaike, East Sussex Healthcare NHS Trust, Hastings

### Background

Surgical site infections (SSIs) are preventable but contribute to a significant burden on the healthcare system by increasing patient mortality and morbidity, and healthcare costs.<sup>[1, 2]</sup> The "Start Smart – Then Focus" Antimicrobial Stewardship Toolkit for English Hospitals states that surgical antimicrobial prophylaxis (SAP) should be administered as a single dose within 60 minutes of skin incision to reduce the risk of SSIs.<sup>[3]</sup> In order to meet the registration requirements outlined in the Health and Social Care Act 2008,<sup>[4]</sup> there should be procedures in place to ensure prudent prescribing and antimicrobial stewardship. This includes regular monitoring, audit and review of surgical antimicrobial prophylaxis administration within the Trust.

### Objectives

1. To ensure that SAP is administered within 60 minutes prior to skin incision in orthopaedic and urogenital surgeries at East Sussex Healthcare NHS Trust (ESHT)
  2. To ensure that antibiotic choice for SAP is prescribed as per the local antimicrobial guidance is appropriate for the patient and procedure
- The target was 100% for both standards.

### Method

This study did not require ethics approval.

A prospective audit on SAP administration to all patients over the age of 16 undergoing either an orthopaedic or urogenital surgery was conducted at ESHT between 02/01/18 and 02/02/18. Data was collected retrospectively and intraoperatively by verbally questioning medical staff and extracting information from the Surgical Care Pathway documented in patient notes. The choice, dose, route and timing of SAP administration were assessed for compliance with local and national guidance. Additionally, patient details such as allergy status were used to assess safety and suitability of the choice of antibiotic used.

### Results

A total of 50 patients (100%) undergoing orthopaedic surgery and 48 patients (100%) undergoing urogenital surgery at ESHT received SAP within 60 minutes prior to skin incision. A total of 50 patients (100%) undergoing orthopaedic surgery and a total of 44 patients (91.7%) undergoing a urogenital procedure received the correct antibiotic in line with the local antimicrobial guidance. 8% of procedures deviated from the local antimicrobial guidance due to surgeon preference and/or a patient-led decision.

### Conclusion

ESHT has met the target and is 100% compliant with the Start Smart – Then Focus guidance of administering SAP within 60 minutes prior to skin incision. However, there is room for improvement with regards to antimicrobial choice as the compliance rate was 91.7% at Eastbourne. Furthermore, documentation of antimicrobial prophylaxis used, including timing, and allergies requires improvement.

### References

1. World Health Organization. Global guidelines for the prevention of surgical site infection. <http://apps.who.int/iris/bitstream/10665/250680/1/9789241549882-eng.pdf?ua=1> (accessed 1 March 2018)
2. Bassetti M *et al.* Antimicrobial prophylaxis in minor and major surgery. *Minerva Anestesiologica* 2015;81(1): 76–91. <https://www.minervamedica.it/en/getfreepdf/04BXknKFRvgLK6S4L34oB09IT333UKkBB1LtD4nbjK4j7%252Fu0N%252F3b1TNKdJY7fn%252Bin42RRQR8TijwBUTAue51NQ%253D%253D/R02Y2015N01A0076.pdf> (accessed 1 March 2018)
3. Public Health England. Start smart – then focus. Antimicrobial stewardship toolkit for English hospitals. [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/417032/Start\\_Smart\\_Then\\_Focus\\_FINAL.PDF](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/417032/Start_Smart_Then_Focus_FINAL.PDF) (accessed 1 March 2018)
4. Public and International Health Directorate, Health Protection and Emergency Response Division, Infectious Diseases Branch 10200. The health and social care act 2008 code of practice on the prevention and control of infections and related guidance. [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/449049/Code\\_of\\_practice\\_280715\\_acc.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/449049/Code_of_practice_280715_acc.pdf) (accessed 1 March 2018)

## 37. Evaluating patients' understanding of medication on a medium secure forensic ward

Sabeeha Patel & Loren Bailey; South London & Maudsley NHS Foundation Trust, London

### Context

Medicines optimisation through patient involvement in decision-making and understanding their views on medication<sup>1</sup> is vital in forensic ward settings. Part of the recovery process is to understand the purpose of medication and its role in preventing relapse and reoffending.

### Background

As service users progress through the forensic pathway, many are already stabilised on psychotropic and/or physical health medication(s). Therefore it is often assumed that patients have sufficient knowledge regarding their medicines.

### Objectives and standards

The aim of this audit was to evaluate patients' understanding of medication and address any issues identified. The results will be compared to the following standards:

- 100% of patients are aware of which medicines they are taking
- 100% of patients are aware of the indications of their medicines
- 100% of patients feel they have enough information about their medication

### Method

A questionnaire was designed and asked through face-to-face contact on a medium secure ward by the ward pharmacist. The ward was visited on two separate occasions in June and July 2018 to gather responses. This study did not require ethics approval.

### Results

The questionnaire was delivered to eleven out of 16 service users admitted to the ward. The remaining five patients were unable to take part, due to participation in off-ward activities or utilising therapeutic leave on both occasions when the survey was being carried out. Of the eleven patients interviewed, one patient declined to engage; one patient was not able to focus long enough, and another became agitated during the survey. Therefore complete responses were received from eight patients in total.

75% of patients were aware of their prescribed medications and the indication(s). Two felt they did not have enough information about their medications; both accepted 1:1 discussions to address this. Six patients in total accepted the offer of a 1:1 discussion. Five patients responded 'yes' or 'maybe' when asked if they would attend a ward-based medication group.

The standards may be achieved by carrying out 1:1 discussions with those who asked for this during the survey, and running a weekly ward-based group to educate patients about medication. The survey will be repeated six months after implementing the interventions.

There were several challenges which presented during this audit. Many patients admitted to the ward do not consent to taking psychotropic medications due to side effects, limited insight, etc. and may consequently hold negative views towards medication. Some refused or were unable to engage fully with the questionnaire, the reasons for which must be explored and addressed when implementing the initiatives discussed above.

### Conclusions

The survey highlighted the need for short and long-term pharmacy-led initiatives to educate patients about their medications; however poor engagement may limit their effectiveness. The aim of implementing the interventions is to increase patients' overall understanding, thus preventing non-adherence and relapse post-discharge.

### References

1. National Institute for Health and Care Excellence. Medicines Optimisation: the safe and effective use of medicines to enable the best possible outcomes. <https://www.nice.org.uk/guidance/ng5> (accessed 8 July 2018).

### 38. Quality of Allergy Documentation- Audit results in a Mental Health and Community Trust.

Ogo Echem Clinical Pharmacist, Jonathan Peters Antimicrobial Pharmacist, Gillian Ritchie Audit Pharmacist, Southern Health NHS Foundation Trust, Hampshire

#### Background

The possibility of anaphylactic reactions to treatments intended to benefit a patient is omnipresent. We also know that allergies can necessitate inferior therapy which can negatively impact outcomes<sup>1</sup>.

Accurate and sufficient allergy data are essential components in the patient/clinician prescribing process. The National Reporting and Learning System (2005-13) identified 18,079 drug allergy incidents; including 6 deaths and 19 severe harms<sup>2</sup>.

One study found penicillin allergy was self-reported in 11% of individuals; of those, 90% tolerated the drug<sup>3</sup>. A multi-centre study revealed 9.1% (n=29095) had recorded a  $\beta$ -lactam allergy, of those, 36.2% had incomplete descriptions<sup>3</sup>.

#### Objectives

- 1) 100% of patients have allergy status recorded and signed on the prescription chart
- 2) 100% of patients with a documented allergy have the reaction documented

#### Method

During an antimicrobial audit in 2018, questions regarding allergy documentation were asked (See results for details). Pharmacists collected the data upon reviewing in-patient drug charts over two weeks. This study did not require ethics approval.

#### Results

454 in-patients were audited. 450 (99.1%) of these had a complete, signed allergy section on the drug-chart. Three patients had their allergy status recorded but unsigned. One patient (0.2%) had no allergy status recorded.

Of the 453 who had data recorded, 193 had at least one allergy.

58 (30%) of these 193 had the reaction to allergen documented.

135 patients (70%) with an allergy had no reaction documented. Of these, 75 (55.6%) had been investigated and the reaction information was unknown. Frequent reasons for this omission included; the records with primary-care providers were incomplete, or documents from secondary-care did not describe the reaction.

#### Conclusions

Allergy documentation at SHFT is imperfect, however 99.8% of patients had allergy status documented; 99.1% had this signed.

Sufficient allergy detail is highly valuable when prescribing. This audit found this detail was often (31% 60/193) not fully investigated; however in 39% (75/193) of patients with a history of allergy the detail was unavailable.

We have discussed these findings with the pharmacy team and aim to reduce the proportion of allergies where the reaction detail is not investigated. We will re-audit annually.

The discharge documentation in a local acute hospital has recently changed to make an allergy reaction mandatory. Electronic records undoubtedly increase accessibility of allergy data; the results of this audit suggest that the quality of this data is not keeping pace with its accessibility.

We did not look at the accuracy of the allergy history, which drugs were involved, or the differences between allergy, intolerance or side effect. This could be explored in any re-audit. Future work should further quantify the quality of allergy documentation in various settings to focus work to improve allergy documentation across all healthcare sectors.

#### References

1. Bauman, N. VanNostrand, B. Ishmael, F. Milton, S. Prevalence of Penicillin Allergy and Adverse Outcomes in Geriatric Inpatients at a Tertiary-Care Hospital. *Journal of Allergy and Clinical Immunology* 2012;129(2):AB102
2. NHS England. *Drug allergies: an eight year review of NRLS medication incident reports 01 April 2005 to 31 March 2013*. 2013. Available at: [https://www.ncbi.nlm.nih.gov/books/NBK248066/pdf/Bookshelf\\_NBK248066.pdf](https://www.ncbi.nlm.nih.gov/books/NBK248066/pdf/Bookshelf_NBK248066.pdf) Accessed: 6/6/18
3. Macy, E. Penicillin and beta-lactam epidemiology and diagnosis. *Current Allergy and Asthma Reports*. 2014;14(11):476
4. Moskow, J. Cook, N. Champion-Lippmann, C. Amofah, S. Garcia, A. Identifying opportunities in EHR to improve the quality of antibiotic allergy data. *Journal of the American Medical Informatics Association*, 2015;23(e1):e108-e112.

### 39. Patients' perception of a Gentamicin Information-Leaflet to improve reporting of side-effects

Rasul A<sup>1</sup>, Stewart L<sup>1</sup>, Robb F<sup>1</sup> and Akram G<sup>2</sup>, <sup>1</sup>Pharmacy Department, Queen Elizabeth University Hospital, NHS Greater Glasgow and Clyde. Glasgow, <sup>2</sup>Strathclyde Institute of Pharmacy & Biomedical Sciences. University of Strathclyde. Glasgow

#### Background

Gentamicin's narrow therapeutic index requires hospital staff and patients to be aware of the symptoms of toxicity specifically, nephrotoxicity and ototoxicity.<sup>1,2</sup> Signs of potential ototoxicity reported by patients are not always linked to their gentamicin therapy and they can be incorrectly reassured that symptoms are not related or will resolve upon treatment cessation.<sup>1</sup> NHS Greater Glasgow and Clyde's (GG&C) programme on improving the prescribing and monitoring of parenteral gentamicin, included the development of a patient information-leaflet (PIL) which covers the use, administration and potential side-effects of gentamicin. However, some practicalities (e.g. who should issue the leaflet and when) and concerns over patient acceptability have limited the uptake of the PIL.

#### Objectives

To determine the patient's acceptability and potential impact of the gentamicin PIL amongst hospital inpatients.

#### Methods

A convenience sampling approach was used for participant recruitment. Following consent for participation, patients were given the PIL to either: read by themselves followed by a researcher administered questionnaire OR read by themselves and be counselled on the contents of the leaflet by the researcher followed by questionnaire administration. The researcher-administered questionnaire consisted of 11 attitudinal statements measured by a 5-point Likert scale with 2 open-ended questions to test recall of information. This study did not require ethics approval, however, Caldicott Guardian approval was obtained.

#### Results

Seventy patients, 29 males (41.4%) and 41 females (58.6%) were recruited. Sixty three patients (90%) agreed that the leaflet would help them to recognise side-effects and 67 patients (95.7%) agreed that the leaflet would help them to report side-effects. Most patients (n=47, 67.1%) were happy to receive treatment with gentamicin after reading the leaflet. While the majority of patients (n=53, 75.7%) would **not** refuse gentamicin treatment after reading the leaflet, nine patients (12.8%) said they would refuse and twenty-one (30%) would be 'worried'. Thirty-five (50%) patients agreed the leaflet should be given **before** treatment starts, even if the patient is too unwell to understand its contents. The responses to receiving the leaflet

before treatment starts were significantly different ( $p < 0.05$ ) between the age groups and whether they had been counselled or not, with the majority ( $n = 26, 37.1\%$ ) of >60 year olds agreeing with the statement. Recall of 3 or more side-effects was significantly affected by counselling ( $P < 0.05$ ).

### Conclusion

The PIL was positively received by the majority of patients and counselling appeared to improve recall of side-effects. However, the patients who were worried about treatment or would refuse treatment after reading the PIL cannot be disregarded. This study showed that the >60-year-olds wanted to receive the PIL prior to treatment suggesting that if resources are limited, this group could be prioritised to receive the PIL. Implementation of the PIL would require guidance and education of staff to equip them to respond to reports of toxicity, worries and treatment refusal.

### References

1. Black, F., Pesznecker, S. and Stallings, V; Permanent Gentamicin Vestibulotoxicity *Otology & Neurotology* 2004; 25(4); 559-569.
2. NHS Greater Glasgow and Clyde. Adult Therapeutics Handbook. (2017). *Gentamicin (therapeutic drug monitoring)*. [www.ggcprescribing.org.uk](http://www.ggcprescribing.org.uk). Accessed 31/8/2018.

## 40. Development of a Virtual Biologics Clinic for Inflammatory Bowel Disease

Helen Richards MPharm; Dr Gary Constable MB BS MSc FHEA FRCP, Princess of Wales Hospital, Abertawe Bro-Morgannwg University Health Board

### Context

Biological therapies have a major influence on modern management of inflammatory bowel disease (IBD) but with significant cost implications.<sup>1</sup> National guidelines recommend annual review of individual patients continuing need for biological therapy.<sup>2</sup>

### Problem

An audit demonstrated that patients were not having timely review of ongoing need for biological therapy and wide variation in therapeutic monitoring. We also found patients lost to follow up and continuing on biological therapy without clinical review.

### Assessment of problem and analysis of causes

Within our district general hospital 70 IBD patients on biological therapy were attending various consultant clinics with no standard approach to review, monitoring and optimisation of treatment.

### Intervention

This study did not require ethics approval

A virtual biologic clinic (VBC) was set up to improve patient care and the cost effectiveness and judicious use of biological therapies for IBD. The weekly clinic is run by a clinical pharmacist and attended also by a consultant gastroenterologist and IBD nurse specialist. Patients are reviewed 'virtually' using clinical data, correspondence, radiology and endoscopy from the hospital information system and medical notes requested when required.

Basic review considerations are:

Has therapeutic aim been achieved?

Is therapeutic drug monitoring (TDM) required?

Is multi-disciplinary team (MDT) meeting discussion or clinical review required?

Is annual disease re-evaluation required?

Therapeutic recommendations are in keeping with current guidelines and are documented and copied to the relevant IBD clinician. All infusional therapy is prescribed during the clinic.

### Strategy for change

The multi-professional VBC was set up as a 3 month trial. The significant resource required is healthcare professional time, allocated on invest to save basis. Outcomes from discussion are documented to allow for data collection on the number of reviews and interventions carried out.

### Measurement for improvement

A documented VBC review for all patients achieves national guideline recommendation for annual biologic review. Financial savings will be evaluated after 12 months. Feedback was sought from the IBD MDT.

### Effects of changes

In 3 months 29 patients were identified as requiring therapeutic changes, which might otherwise have been delayed awaiting respective clinical review. Six patients had biological therapy appropriately withdrawn and a further 6 identified for de-escalation and this process accelerated. TDM, clinic review and disease re-evaluation was expedited where necessary

Timely review of all investigations is enhanced through the VBC. Consultants value the standardised review of patients and report more efficient outpatient clinic follow-up due to the availability of expedited test results and evidence-based recommendations for management.

### Conclusions

A standardised evidence-based approach to the management of IBD patients requiring biological therapy improves timely decision making for best clinical outcomes. The clinical pharmacist is essential to the success of the VBC and an example of their extended role in clinical leadership.

### References

1. NHS Clinical Commissioners. Commissioning framework for biological medicines. September 2017. <https://www.england.nhs.uk/wp-content/uploads/2017/09/biosimilar-medicines-commissioning-framework.pdf> (Accessed 4 June 2018)
2. National Institute for Health and Care Excellence. TA329. Infliximab, adalimumab and golimumab for treating moderately to severely active ulcerative colitis after the failure of conventional therapy. February 2015. <https://www.nice.org.uk/guidance/ta329/chapter/1-Guidance> (Accessed 4 June 2018)

## 41. Integrating a patient-centred pharmacy review process into Transfer to assess pathways

Natalie Robinson and Raniah Kouzali, Stockport NHS Foundation Trust

This study did not require ethical approval.

### Context

A “transfer to assess (T2A)” model was introduced at Stockport NHS Foundation Trust in line with NHS England’s discharge to assess model<sup>1</sup>. In hospital, a trusted assessor identifies medically optimised patients and refers to Active Recovery (AR), a community-based rehabilitation team. The aim is to facilitate timely discharge with support and ongoing assessment in the most appropriate setting to maximise potential for independence.

### Problem

It has been estimated that half of prescribed medicines are not taken correctly<sup>2</sup> and transitions of care are a particular risk for medication error<sup>3</sup>. Medication is consequently an important part of the T2A referral and further assessment criteria.

### Intervention

A designated T2A pharmacy role was introduced to support trusted assessors to ensure patients receive the appropriate level of medication support on hospital discharge; meanwhile improving quality of care through patient-centred medication reviews and improving the quality of medication information provided during transition of care.

### Strategy for change

Following a three month pilot, an independent prescribing pharmacist was employed from February 2017 to review patients identified for T2A. The pharmacist undertook comprehensive patient-centred reviews; including social history taking, adherence assessment and medicines optimisation. Individualised interventions were actioned by the pharmacist to support independence and reduce modifiable risks of harm from medication. Information was provided to trusted assessors around medication and the level of medication support required on transition of care.

### Measurement for improvement

Intervention data was collected over 45 days in 2018 to evaluate the T2A pharmacy role. 114 referrals were received from 25 different hospital wards; 45 were discharges to patient’s own homes, 69 to a bed-based intermediate care setting. Average age was 84 years.

### Effects of change

Of the 114 patients reviewed by the T2A pharmacist;

- 32% required medicines reconciliation.
- 35% had medicines optimised e.g. through de-prescribing or clinical intervention.
- 25% had medication timings rationalised to support adherence or in line with care calls.
- 91% received education on their medication.
- 42% involved discussions with patients and their next of kin.
- 7% had a new compliance aid set up with their community pharmacy.
- 13% required referral to AR nurses to administer parenteral medication.
- 21% were referred for additional medication support on hospital discharge e.g. physical assistance accessing medication or full medication management by AR rehabilitation workers.
- 3% had a hospital discharge letter written by the T2A pharmacist.

### Conclusions

The data highlights interventions completed by the T2A pharmacist however further analysis is required to assess any associated cost-savings and potential risk reduction.

The real success of the service to date has been the positive patient stories and feedback from trusted assessors and AR. Further qualitative work is being undertaken to capture patient feedback.

### References

1. NHS England. NHS England Quick Guide: Discharge to Assess. London; 2016. <https://www.nhs.uk/NHSEngland/keogh-review/Documents/quick-guides/Quick-Guide-discharge-to-access.pdf> (Accessed 29/05/2018).
2. National Institute for Health and Clinical Evidence. Medicines adherence: involving patients in decisions about prescribed medicines and supporting adherence, CG76. London; 2009.
3. World Health Organization. Medication Without Harm - Global Patient Safety Challenge on Medication Safety. Geneva; 2017.

## 42. Pharmacy technician-led use of intravenous to oral switch criteria for antimicrobials

Lauren Sanderson, Jinnan F. Azeez, Kathryn M. Ashton, Rachael Hinchliffe, Jade Lee-Milner, and Stuart E. Bond, Pharmacy Department, Pinderfields Hospital, Wakefield

This study did not require ethics approval.

### Background

Switching from intravenous to oral antimicrobials is a fundamental component of hospital antimicrobial stewardship programs<sup>1,2</sup>. Reductions in the duration of intravenous therapy can have been reported without any negative effect on treatment outcomes<sup>3</sup>. Ward-based medicines optimisation pharmacy technicians are ideally placed to identify patients receiving intravenous antimicrobials and eligibility for oral switch to due to regular ward presence and review of medication charts.

### Objective

To determine the proportion of inpatients eligible for intravenous to oral switch according to a set of locally agreed criteria.

### Methods

A repeated point prevalence survey was conducted in a 700 bed district general hospital over a five day period in March 2018. Pharmacy technicians, pharmacists and data analysts supported the data collection process. Medication charts were viewed to determine which intravenous antimicrobials the patient was receiving and the duration of therapy. The intravenous to oral switch tool used was Afebrile, Clinically improving, eating and drinking, not Deep infection (ACED; adapted from Leeds Teaching Hospitals NHS Trust). Sources of information included observation software (VitalPac®; patient temperature, blood pressure, respiratory rate, and heart rate), nursing and medical notes (indication, documented improving signs and symptoms of infection), and results software (ICE®; white cell count, C-reactive protein). Examples of deep infections included osteomyelitis, abscess and endocarditis. Patients were excluded if they were transferred between wards. Patients eligible for intravenous to oral switch received an antimicrobial stewardship pharmacist intervention.

## Results

Medication charts for 486 patients were reviewed, with 98 patients (20%) receiving intravenous antimicrobials. Ten patients were excluded from assessment due to single dose, prophylaxis or notes unavailable. Of the remaining 88 patients, 23 (26%) were eligible for intravenous to oral switch. The largest proportion of patients on intravenous antimicrobials was seen on the acute assessment unit (n=10; 9%), acute care of the elderly (n=6; 6%) and the respiratory ward (n=6; 6%). The most common intravenous antimicrobial was co-amoxiclav (27/88 prescriptions; 30%). The most common indications treated were respiratory (26/88; 30%).

## Conclusions

The results demonstrate that over a quarter of patients receiving intravenous antimicrobials during the study period were eligible for oral switch. Pharmacy technicians were able to identify patients eligible for switch using the ACED tool. The next stages of this project will be to implement a technician-led pilot of the tool in clinical areas with high intravenous antimicrobial use, and to conduct departmental education sessions on appropriate identification of eligible patients. It is anticipated that pharmacy technicians will be able to provide this service within their existing roles, thereby initiating a referral process to ward pharmacists and antimicrobial stewardship pharmacy teams.

## References

1. National Institute for Health and Care Excellence. NG15. 2015. Antimicrobial stewardship: systems and processes for effective antimicrobial medicine use. <https://www.nice.org.uk/guidance/ng15/chapter/recommendations#antimicrobial-stewardship> (Accessed 25<sup>th</sup> May 2018).
2. Public Health England, 2015. Start smart- then focus: Antimicrobial Stewardship toolkit for English hospitals. [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/417032/Start\\_Smart\\_Then\\_Focus\\_FINAL\\_PDF](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/417032/Start_Smart_Then_Focus_FINAL_PDF). (Accessed 25<sup>th</sup> May 2018).
3. Mertz, D *et al*. Outcomes of early switching from intravenous to oral antibiotics on medical wards. *J Antimicrob Chemother* 2009; 64(1): 188-99

### 43. Effect of near-patient dispensing trolleys on discharge prescription turn-around time

Sarah V. Chohan, Lauren Sanderson, Pharmacy Department, Mid Yorkshire Hospitals NHS Trust, Wakefield

This study did not require ethics approval.

## Context

Delays in hospital discharge have been an issue in the NHS for many years<sup>1</sup>. Releasing hospital beds by speeding up the discharge process is a priority for Mid Yorkshire Hospitals Trust (MYHT). The Acute Medical Admissions Unit (MAU) and Respiratory ward have the highest demand for beds so patient flow and delays in discharge are routinely scrutinised. Delays in medically fit patient discharge include time taken to prescribe, dispense and deliver discharge medicines to the patient<sup>2</sup>. Pharmacy technicians can play a key role in improving the discharge process.

## Problem

Discharge delays contribute to bed pressures and disrupt patient flow. They also create frustration for patients, carers and healthcare professionals. Historically, the discharge prescription was transported from the ward to the central pharmacy dispensary and then clinically checked and dispensed. The dispensed medicines were then returned to the ward at hourly intervals by a porter service for handover to the patient by nursing staff.

## Assessment of problem

Turnaround time for discharge prescriptions was identified by pharmacy and nursing colleagues as delaying patient discharge. MYHT Friends and Family test results proved that patients and carers concurred. Centralised dispensing within the pharmacy dispensary and the requirement to transport the paper prescription and medicines contributed to longer turnaround times.

## Strategy for change

The discharge prescription dispensing process was redesigned with the support of a multidisciplinary group in an attempt to shorten turnaround times. Clinical pharmacy teams with mobile dispensing trolleys were introduced to AAU and the Respiratory ward in March 2017. These trolleys facilitated the dispensing of discharge prescriptions at ward level and discharge counselling by Pharmacy staff at the point of prescription handover to patients. The highest use items identified for each clinical area, using transaction data specific to each speciality, were placed in mobile trolleys. A limit of five items was placed on discharge prescription for dispensing using mobile trolleys to account for trolley size and mobility within clinical areas. Patient experience groups were updated on the change process and anticipated benefits.

## Effects of changes

Results of a post-implementation audit (n=18) in March 2018 reported that for the existing centralised dispensing system the median turnaround time was 189 minutes (interquartile range [IQR] 134-210 min). In the first year since implementation, using the mobile trolley system resulted in a median turnaround time of 34 minutes (IQR 14-56 min; n=43). This represents a reduction of 2hr 35 min (82%) in median turnaround time.

## Conclusions

Prior to the implementation of near-patient dispensing trolleys, the discharge prescription process was time-consuming and inefficient. This project demonstrated a reduction in the pharmacy-related delay to the discharge process. The project will be rolled out to other clinical areas with high patient flow.

Reducing turnaround time for prescriptions has highlighted other shortcomings in the discharge process, such as booking of transport, removing of intravenous access devices and implementation of care packages which will be addressed by the Patient Flow Team.

## References

1. Improving Hospital Discharge. NHS England <https://www.england.nhs.uk/urgent-emergency-care/hospital-to-home/improving-hospital-discharge/> (accessed 18 May 2018)
2. Emergency Care Improvement Programme. NHS Improvement [https://improvement.nhs.uk/documents/627/optimising-medicines-discharge-to-improve-patient-flow-RIG\\_holhrdD.pdf](https://improvement.nhs.uk/documents/627/optimising-medicines-discharge-to-improve-patient-flow-RIG_holhrdD.pdf) (accessed 18 May 2018)



#### 44. Pharmacist prescribing quality and breadth in e-hospital critical and transplant care teams

Aris Saoulidis, Rotational Pharmacist, Brit Cadman, Consultant Pharmacist Critical Care, Sarah Pacey, Chief Pharmacist, Inpatient Pharmacy, Cambridge University Hospitals NHS Foundation Trust

##### Background

Pharmacist contribution to prescribing for critical care patients has been shown to improve patient outcomes<sup>1</sup>. Critical care and transplant unit independent prescribing pharmacists (CCIPPs) prescribe medicines for high-risk patients, however, data on pharmacist prescribing errors is lacking<sup>2</sup>.

##### Objectives

1. To estimate the percentage of drugs prescribed by CCIPPs
2. To ascertain the CCIPP error rate and severity
3. To confirm the routine consideration of the allergy status by CCIPPs
4. To categorise the breadth of CCIPP interventions by BNF therapeutic area
5. To quantify the most common drugs involved in CCIPP interventions

##### Method

Between November 2017 and March 2018, a retrospective evaluation of the prescribing events by four CCIPPs in electronic patient records was conducted. The prescribing events were reviewed by a single pharmacist as per normal practice to identify any prescribing errors and to confirm that the allergy status was considered. Error severity was classified according to the EQUIP study's classification<sup>3</sup>. Medication therapeutic areas were categorised according to the BNF. This study did not require ethics approval.

##### Results

1001 (18.5%) out of 5516 prescriptions were prescribed by pharmacists for 162 patients spanning 228 different patient review episodes. Pharmacist prescribing events averaged 4.4 ( $\pm 3.4$ ) per patient review and the total prescriptions averaged 24.2 ( $\pm 10.8$ ) per patient chart. One error involving omeprazole administration times was identified and categorised as minor, resulting in a final 0.1% error rate. Allergy status was reviewed for 221 patient reviews (96.9%). Prescribing events: medicine stopped/omitted 30.1% (301), new medicine 24.7% (247), dose or frequency change 14.8% (148), route amendment 12.5% (125), discharge transcription 7.1% (71), medicines reconciliation 1.1% (11) and other 9.8% (98). Medication was prescribed from all BNF chapters, most commonly from CNS (20.5%), Gastroenterology (20%) and Infections (19.2%). Top drug-type interventions (66% of total amendments) involved analgesia, anaesthesia & agitation (16.4%), electrolytes & nutrition (11.5%), antimicrobials (10.9%), laxatives (9.6%), stress ulcer prophylaxis (7.9%), MRSA decontamination (7.3%).

##### Conclusions

The quality of CCIP prescribing corroborates the currently limited evidence<sup>4</sup> supporting IPPs in UK hospitals, as they demonstrate a minimal prescribing error rate (0.1%) vs the EQUIP study's 8.9%<sup>3</sup>. Pharmacist prescribers prescribe a wide range of medicines and intervene with renal dose adjustments, analgesia, protocol adherence, etc. Thus, as the PROTECT-ED study has also demonstrated<sup>4</sup>, CCIPPs contribute to good patient outcomes<sup>1</sup> and support seven-day clinical pharmacy services in critical care.

##### References

1. Chant C et al. Do we need a pharmacist in the ICU? *Intensive Care Medicine*, 2015, Vol.41(7).
2. Bourne RS, Baqir W, Onatade R. Pharmacist independent prescribing in secondary care: opportunities and challenges, *International Journal of Clinical Pharmacy*, 2016, Vol.38(1).
3. Dornan, T et al, An in-depth investigation into causes of prescribing errors by foundation trainees in relation to their medical education. EQUIP Study. General Medical Council; 2009.
4. R. Shulman et al. Pharmacist's review and outcomes: Treatment-enhancing contributions tallied, evaluated, and documented (PROTECTEDUK), *Journal of Critical Care*, 2015, Vol.30(4).

#### 45. Audit on second check processes for intravenous injectable medications during nurse administration rounds

Emily Hampton, UCLH NHS Foundation Trust, London, Elise Thys, KU Leuven, Belgium, Yogini Jani and Neha Shah, Centre for Medicines Optimisation Research and Education, UCLH NHS Foundation Trust, London

##### Background

Errors occur in 35% of intravenous (IV) doses administered in UK hospitals<sup>1</sup>. Independent second checking is a safety intervention aimed at reducing potentially serious administration errors. Based on recommendations of national patient safety alerts<sup>3</sup> many organisations have a policy to second check injectable medicines, but there is no standard definition of what constitutes a second check.

##### Objectives

To audit the practice of independent second checking when administering intravenous medication. 100% of all intravenous medications should be second checked.

##### Method

A snap shot cross-sectional observational study of nursing staff administering intravenous medications was conducted over a two week period in February 2018. A pre-registration pharmacist and an undergraduate pharmacy student were using a standardised template to observe current practice. Nursing staff were informed that they were being observed, but were unaware of the focus on second checking. Critical care and a surgical ward were selected to observe practice due to high volumes of intravenous medicines being administered. Doses to be observed were identified opportunistically through review of the electronic prescribing system. Practice was compared to the standard set in the local medicines management policy: administration of all intravenous drugs should involve a second check. Limitations to this method were that only two clinical areas were observed rather than all the clinical areas within the organisation. Nursing staff also knew that they were being observed which could have caused bias. All observations were carried out during normal working hours, and the results may not be reflective of what happens during night shifts, for example. This study did not require ethics approval as it was an audit and evaluation of existing practice.

##### Results

97 intravenous drug administrations were observed (39 were pre-made infusions and 58 required reconstitution and/or dilution). 80% (77/97) of administrations involved a second checker. None of the second checks were performed at the patient's bedside prior to administration, and in circumstances when infusion pumps were used, the pump setting was not second checked. Nurses often had two or more patients requiring intravenous medications at the same time, and in half of these cases, medicines for different patients were prepared concurrently.

## Conclusions

Some form of second check was conducted for most, but not all of the intravenous drugs being administered. All the checks were at the preparation stage, and none of them occurred at point of administration to the patient.

## References

1. McLeod MC, Barber N, Franklin BD. Methodological variations and their effects on reported medication administration error rates. *BMJ Quality & Safety* 2013; 22(4): 278–89.
2. Institute of Safe Medical Practice (ISMP), 2013. Independent Double Checks: Undervalued and Misused: Selective Use of This Strategy Can Play an Important Role in Medication Safety. Available at <https://www.ismp.org/resources/independent-double-checks-undervalued-and-misused-selective-use-strategy-can-play> (accessed on 24 May 2018)
3. National Patient Safety Agency. 2007. Patient safety alert. Promoting safer use of injectable medicines. Learning from National Reporting. Available at <http://webarchive.nationalarchives.gov.uk/20171030131058/http://www.nrls.npsa.nhs.uk/resources/type/alerts/?entryid45=59812&p=3> (accessed on 24 May 2018)

### 46. Developing drug libraries for smart infusion pumps: exploring governance arrangements in other hospitals

Zahra Al-Hadi, University College London School of Pharmacy, London, Neha Shah & Yogini Jani, Centre for Medicines Optimisation Research and Education, UCLH NHS Foundation Trust, London

## Background

Intravenous (IV) administration often results in some of the most serious medication errors making up 60% of the most life-threatening potential adverse drug events<sup>1</sup>. Smart infusion devices and use of drug libraries or dose error reduction software (DERS) - with pre- set rates of infusions or limits for minimum and maximum rates of infusions – have been used to reduce medication administration errors<sup>2</sup>.

## Objectives

To explore the governance arrangements for the development and maintenance of infusion device drug libraries in NHS organisations.

## Method

Semi-structured interviews were conducted in March 2017 with a sample of medication safety officers and pharmacists from English hospitals that have implemented infusion devices with DERS. An interview guide exploring the use, development and maintenance of DERS was used for discussion. Interviews were recorded, transcribed and a general inductive approach was used to identify emergent themes. This study did not require ethics approval.

## Results

Individuals from four of the eleven organisations using DERS agreed to be interviewed. Governance arrangements varied across the four organisations. Duration for drug library set up ranged from two months to six months depending on the size of the organisation. Each organisation applied a different model of checking and validation. Choice of areas to implement also varied, from areas of high use or risk, such as critical care units, to the entire organisation. Frequency of review and update of libraries varied from every 6 months to every 2 years. Time and resource were the main determinants of the governance arrangements. All respondents agreed there was benefit of using DERS but identified that the time and resource required to develop and implement was often underestimated.

## Conclusion

All participants interviewed strongly recommended the use of DERS with infusion devices to help improve patient safety and reduce administration errors.

Variation in governance arrangements, implementation areas and update of drug libraries between organisations was noted and requires further exploration and understanding to optimize the potential safety benefits.

## References

1. National Patient Safety Agency. 2009. Safety in doses. Improving the safe use of medicines in the NHS. Learning from National Reporting. Available at <http://www.nrls.npsa.nhs.uk/resources/patient-safety-topics/medication-safety/?entryid45=61625>
2. Ohashi K, Dalleur O, Dykes PC et al. Benefits and risks of using smart pumps to reduce medication error rates: a systematic review. *Drug Saf* 2014;37:1011–20. doi:10.1007/s40264-014-0232-1

### 47. Intravenous to oral switch of antimicrobial therapy in general surgical patients

Zahra Shamshudin, Stuart E Bond, Kathryn M Ashton, Jade Lee-Milner, Kelly-Marie Chesham, The Mid Yorkshire Hospitals NHS Trust, Pinderfields Hospital, Pharmacy department, Wakefield

This study did not require ethics approval

## Background

Initiatives such as the Start Smart-Then Focus toolkit seek to engage a multidisciplinary approach to reducing inappropriate prescribing, optimising antimicrobial use and improving patient safety<sup>1</sup>. The components of best practice for antimicrobial prescribing involve switching from the intravenous to oral route promptly and in accordance to local guidance.

## Objective

To assess the impact of pharmacist and nurse led educational intervention on the appropriateness of intravenous antimicrobial therapy according to defined intravenous to oral switch criteria.

## Method

Pre intervention:

Three point prevalence surveys were conducted on the general surgical ward from January to February 2018 in order to determine the potential for an intravenous to oral antimicrobial switch.

The criteria used to identify an intervention was Afebrile, Clinically improving i.e. blood pressure, respiratory rate and inflammatory markers, Eating and drinking and not Deep-seated/high risk infection (ACED criteria) which was adapted from a neighbouring trust.

If the answers to each question using ACED were yes i.e. 4 Yes's, the patient was deemed appropriate for an oral switch and a clinical intervention was considered through contacting the appropriate team.

The results were distributed to the team through oral presentations and departmental governance meetings.

Educational interventions regarding the ACED criteria were made by meeting with relevant multidisciplinary staff, putting up posters on the ward and notes trolleys, identifying patients on intravenous antibiotics on nursing and pharmacy handovers, using ACED stickers and written documentation in the clinical notes to identify relevant patients as well as discussion on ward rounds by the ward manager and senior pharmacist.

Post intervention:

Another round of three point prevalence surveys were repeated in May 2018.

### Results

Pre-intervention, 31 patients were identified on 50 intravenous antimicrobials. Using the ACED criteria, 34% (17/50) of these were deemed appropriate for an oral antimicrobial switch.

Post-intervention, 24 patients were identified to be on 54 intravenous antimicrobials, 26% (14/54) of these were deemed appropriate for an oral switch.

The most common diagnosis group was abdominal infection (n=14 pre-intervention, n=17 post-intervention), with metronidazole the most commonly prescribed antimicrobial in both groups (n=9; n=16).

### Conclusions

This project, through the implementation of the ACED criteria has demonstrated an improvement in appropriateness of intravenous antimicrobial prescribing following an educational intervention. This highlights the impact of a multidisciplinary approach in targeting eligible patients.

The potential benefits of oral switch include reduced nursing time on preparation, cost reduction, the possibility of earlier discharge and improved patient satisfaction. Limitations include a small sample size and potential time constraints when covering a large ward.

The project will now be disseminated to various surgical wards using the multidisciplinary approach through nurse, pharmacist and pharmacy technician led implementation with the aim to challenge the culture of continuing intravenous antimicrobial therapy for longer than required.

### References

1. Public Health England. Start Smart Then Focus Antimicrobial Stewardship Toolkit for English Hospitals. 2015  
[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/417032/Start\\_Smart\\_Then\\_Focus\\_FINAL.PDF](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/417032/Start_Smart_Then_Focus_FINAL.PDF) (Accessed 7th June 2018)

## 48. Puddles: The implementation of pharmacy huddles on surgical wards

Zahra Shamshudin, James Firth, Siobhan Conaghan, The Mid Yorkshire Hospitals NHS Trust, Wakefield

This study did not require ethics approval.

### Context

The surgical pharmacy team can consist of between 2-4 pharmacists, 2-3 technicians and 1 assistant covering five wards and 145 patients. The number of new patients on each ward can vary therefore the traditional pharmacy model of allocating one ward to a pharmacist and technician can result in an inequitable service.

### Problem

Prioritising work by ward rather than by patients means that the pharmacy team is not always focussing on areas of most need. Without the availability of electronic systems; prioritisation and handover of patients is difficult and even more so with a lack of flexibility of staff between wards. This can result in prescription charts being sent to the dispensary which has implications for both medical and pharmacy review and medication administration.

### Assessment of problem and analysis of causes

Medication reconciliation targets not achieved.

Patients not being reviewed by the pharmacy team due to suboptimal cover on the admission unit and insufficient prioritisation of patients.

Number of prescriptions received in the dispensary due to difficulties in management of workload.

### Intervention

Puddles are to be implemented for all pharmacy staff working within an allocated range of surgical wards at 9am and 2pm. They are led by a co-ordinator assigned on the rota. Staff will ascertain the number of new patients prior to attending the morning huddle. This information is used to prioritise wards and allocate staff accordingly. The daily plan is recorded onto a puddle sheet including known high priority patients i.e. patients with high risk medications/conditions and patients that have been admitted for over 24 hours and not yet reviewed. The handover is updated with any follow up required at the end of the morning session. The afternoon co-ordinator then allocates the team based on the handover.

### Strategy for change

Initial consultation was at a team meeting to ensure buy-in and to formulate a plan for implementation. The idea was trialled over a three month period. Any concerns or feedback regarding the process was encouraged through emails, discussions and team meetings. Barriers for improvements would include staff availability, meeting demands of the wards, nursing staff knowing how to contact the team and individual differences in prioritising patients by pharmacy staff.

### Measurement for improvement

Monthly audits of medicines reconciliation rates. Analysis of work received in the dispensary i.e. screened by a pharmacist or unsorted and if this has an impact on turnaround time. Feedback from both pharmacy and nursing staff post initial implementation.

### Effects of change

- Improved medication reconciliation figures
- Reduced dispensary turnaround time for discharge prescriptions
- Reduced proportion of unsorted work in the dispensary
- Improved pharmacy and nursing communication
- Improved patient prioritisation
- Increased number of pharmacy prescription reviews
- Improved staff morale, confidence and positive feedback

### Conclusions

Implementing puddles has provided team based efficient working. Prioritising new admissions regardless of ward ensures that medicines reconciliation is completed early allowing afternoon staff to focus on follow up and interventions. It has been highlighted as a practical, patient focused way of working. Puddles are now being implemented within other pharmacy teams in the Trust.

## 49. Exploring how community pharmacists perceive multi-compartment compliance aids (MCAs): a survey

Simkins, L. & Brown, D., University of Portsmouth, Portlock, J., University of Sussex

### Background

MCAs are systems for repacking tablets and capsules to make them easier to take by putting medicines for each time of the day together in a single compartment. MCAs are provided for patients under the Equalities Act (EA) 2010, as an adjustment the pharmacist can make to enable someone to take their own medicines<sup>1</sup>. The NHS is not required to fund MCA provision outside of the EA, yet they are used widely in social care as an aid for carers to administer medication to patients. It is thought, although unsupported by evidence, that MCAs are used by employers of carers to save time and reduce the need for medication training<sup>2</sup>.

### Objectives

Survey community pharmacists in Lambeth and Southwark:

1. To establish what community pharmacists perceived were the reasons for MCA supply.
2. For their views on MCA suitability.

### Methods

A pre-piloted postal survey was sent to all Lambeth and Southwark community pharmacists to find out the reasons for MCA use<sup>3</sup>. The survey included a section that allowed the community pharmacist to express their views about MCAs. This study required and received ethics approval.

### Results

18 pharmacy contractors responded (14%). They all asked for 7-day scripts to cover their expenses for their MCA patients, and did not get involved in the reasons why the MCA was needed every time they were asked to provide one. There was an assumption that some form of assessment has been made already.

Most respondents supplied MCAs to patients living in their own homes in order for a social carer to administer medication, at the request of GPs and without assessment. Support was stronger for carer use than for patient use in self-administration. There was general agreement that care agencies insisted on MCAs for their carers to administer medicines, and this resulted in reduced medication administration errors.

The vast majority of respondents felt MCAs were of use in patients with memory issues (17/18) and believed patients found them easy to use. There was strong support for using MCAs in complex medication regimens.

The majority of respondents disagreed that MCAs had disadvantages related to patients feeling less involved in their treatment and not being able to include all medicines.

### Conclusions

It is difficult to generalise results as the response rate was low. From subjective questioning, community pharmacists had positive opinions of MCAs. There was minimal involvement from the pharmacist in deciding on MCA suitability.

The study was largely quantitative and this may have been a limitation as trying to capture views and opinions. There is scope to carry out qualitative research into the nature of carer and patient MCA use.

### References

1. Oboh, L. Monitored dosage systems are not the only solution for older people. *The Pharmaceutical Journal* 2007; 278, 606-609.
2. Nunney, J., & Raynor, D. How are multi-compartment compliance aids used in primary care? *The Pharmaceutical Journal* 2001; 267, 784-789.
3. Greenhalgh, T. A hands on guide to questionnaire research part one: selecting, designing, and developing your questionnaire. *British Medical Journal* 2004; 1312-1315.

## 50. Are potassium solutions being prescribed and used correctly?

Chin Wing Sonia Sin, East Sussex Healthcare Trust, South East England

### Background

Injectable medicines present a significant clinical risk to patients if errors occur in their prescribing, preparation or administration<sup>1,2</sup>. Mis-selection of a strong potassium solution is classified as a never event. In response to the NPSA safety alert 1051 and 0434, the pharmacy team has developed a policy for potassium solutions<sup>3</sup> and is keen to promote their safety use. These include managing the supply of pre-made potassium infusion bags and restricting the use of strong potassium solutions on general wards.

### Objectives

This study aimed to identify the incorrect use of potassium solutions, common prescribing and administration errors<sup>3,4</sup>. All standards were expected to achieve with 100% compliance.

- Appropriate use of potassium infusion bag on general wards
- Correct potassium prescription
- Correct route and rate of administration and infusion line
- Nurse administration record including the start time and signature

### Method

Hypokalaemic patients were identified from the pathology department. A list of moderate and severe hypokalaemic patients with their potassium levels, hospital numbers and inpatient wards was generated every day. Targeted patients were followed on the wards. Data were extracted using patient's drug chart and direct observation. They were subjected to descriptive statistical description. Ethics approval was not required as this was deemed as an audit project.

### Results

64% of the hypokalaemic patients (n=61) were prescribed intravenous potassium supplements. 20% had oral potassium supplements, whilst 5% had no potassium supplements where concern was raised to the ward pharmacist for follow-up. 53 intravenous potassium supplement entries were retrieved, in which 53% from general medical wards, 9% from general surgical wards, 15% from intensive care units, 15% from cardiology units and 8% from the accident and emergency units. 77% (n=41) were prescribed as potassium infusion whilst 23% (n=12) were prescribed as concentrated potassium infusion. All intravenous potassium solutions (n=53) were given with the correct rate, route and infusion line. 98% were correctly prescribed and 94% were administered with the administration time and practitioner's signatures. 92% were used appropriately on general wards, where the procedure of requesting concentration potassium solution was not complied.

### Conclusions

The use of intravenous potassium solutions was satisfactory with 97% compliance to the trust policy. Missed prescribing the route of administration and the missing administration records were identified as the common prescribing and administration errors. The study findings were feedbacked to

the multi-disciplinary team on ward level and were discussed with the Medicines Safety Committee. A hypokalaemic guideline will be implemented and promoted to ensure clinically appropriate use of potassium solutions. Prescribing of potassium solutions will be regularly audited.

#### References

1. National Patient Safety Agency. *Potassium solutions: risks to patients from errors occurring during intravenous administration*. <http://www.nrls.npsa.nhs.uk/alerts/?entryid45=59882&p=4> [Accessed 5th March 2018].
2. National Patient Safety Agency. *Promoting safer use of injectable medicines*. <http://www.nrls.npsa.nhs.uk/alerts/?entryid45=59812&q=0%2c2%acPromoting+safer+use+of+injectable+medicines%2c2%ac> [Accessed 5th March 2018].
3. Starr J. *Procedure for the Prescribing, Ordering, Storage, Supply and Administration of Strong Potassium Solutions*; 2017.
4. Moulard A, Redmond L, Pringle S, Ball J, Furner R and Starr J. *Policy for the Management and Administration of Injectable Medicines*, 2017.

### 51. Innovating standardised prescribing bundles to reduce error with high risk cardiac infusions

Emma Ormond<sup>1</sup>, Zen Mohammed<sup>1</sup>, Ian Towle<sup>1</sup>, Pernille Sorensen<sup>2</sup>, John Byrne<sup>2</sup>, Faheem Ahmad<sup>2</sup>, <sup>1</sup>University of Strathclyde, Glasgow, <sup>2</sup>Queen Elizabeth University Hospital, Glasgow

#### Context

Following a near fatal iatrogenic flecainide dosing error in 2015, standardised prescribing bundles for high risk cardiac infusions were implemented in Coronary Care Units (CCU) at two large University hospitals.

#### Problem

Over the past five years, multiple serious medication incidents involving infusion therapies have been reported through the Trust clinical risk system.<sup>1</sup> Many more remain anecdotal and unreported. Lack of standardisation presents a major source of risk. Three smaller hospitals were amalgamated, no uniform drug preparation or prescription policies were instituted. Incompatible legacy protocol and prescription charts continued to circulate unchecked.<sup>2</sup>

#### Assessment of problem

Flecainide concentration and delivery rates were confused due to a mis-match between two outdated protocols. The patient suffered major haemodynamic collapse and required intensive care support.<sup>2</sup> A formal investigation revealed a lack of familiarity with high risk drug infusions.<sup>2</sup>

#### Intervention

No ethical approval was required for the project. A working group comprising of senior nurses, a cardiac pharmacist and senior cardiology registrar developed standardised prescribing and administration infusion booklets for 13 high risk infusions: amiodarone, dobutamine, dopamine, flecainide, furosemide, glyceryl trinitrate, isoprenaline, labetalol, magnesium, noradrenaline, tirofiban, unfractionated heparin. This novel concept comprises of 4 pages: a drug monograph; an administration chart; a summary of therapeutic notes; and a prescribing chart. Specific yellow 'alert' paper was utilised to capture attention and reduce risk of inappropriate photocopying. Small group teaching to doctors and nurses was delivered prior to implementation.

#### Measurement of improvement

A quantitative and qualitative study 6 months post-intervention involving an audit on completion to the requirements (consisting of 46 patient's new high risk prescribing and administration charts) and questionnaires (completed by 50 CCU staff members) were conducted. The questionnaire demonstrated there was an urgent need for these standardised bundles (strongly agree 60%; agree 24%) and they should be implemented across the Health Board (strongly agree 60%; agree 34%). Three multidisciplinary focus group interviews (5 members including nurses, junior doctors and pharmacists) affirmed these sentiments. The audit highlighted areas with high healthcare professional completion, such as patient's details being present (100%), and conversely low adherence, such as, the completion of the pump batch number (2.4%), which has been removed due to its lack of necessity. Both studies revealed a further need for ongoing training for medical and nursing staff to optimise chart utilisation.

#### Effects of changes

Continuous data monitoring during an 8-month pilot period found no adverse events arising from the use of the standardised prescription and administration charts. Following implementation in 2017, no prescribing or administration incidents have been reported on Datix one year later. Staff felt more confident in both prescribing and administering these high-risk cardiac infusion medicines.

#### Conclusions

The prescription bundles were extremely well received across the professional groups with consensus on their ability to reduce preventable errors. Standardization of infusions across the Health Board has been recognised as key to improving patient safety and bundling information greatly enhances ease of use. Small amendments to the standardised infusion bundles have been completed and development of a training program for nursing and medical staff is in progress. These prescription bundles will be applied across all cardiology areas within the health board.

#### References

1. Trust's Datix reporting system 2010-2017
2. Significant Clinical Incident Investigation Report. Datix Reference: ID 429366. 2017.

### 52. Reducing missed doses due to medicine unavailability using a new workflow

Fergal Crowley, Kerry Haggerty, Anna Hill, Amna Hussain, Julie Morrison, Andrew Steele, Douglas Sutherland, Alison Mackie, Caroline Souter, NHS Lothian Pharmacy Service, Edinburgh

#### Context

Omitted medicines are a patient safety priority. Pre-registration pharmacists tested a workflow in four wards across NHS Lothian (acute medicine, general medicine, medicines of the elderly (MOE) and surgery) to reduce missed doses due to medicine unavailability. This study did not require ethics approval.

#### Problem

Missed doses can cause loss of therapeutic effect and deterioration, particularly for critical medicines. A local study reported 70/197 (35.5%) patients had  $\geq 1$  missed doses due to medicine unavailability<sup>2</sup>. Lack of escalation and documentation for missed doses are frequently observed.

#### Assessment of problem and analysis causes

A snap shot survey identified medicine unavailability as a leading cause of missed doses. Process mapping medicine administration rounds highlighted variation and deviation from local policy.

### Intervention

The SEED (Search, Evaluate, Escalate, Document) workflow is a step-by-step guide supporting nurse decision making around medicine unavailability and includes a critical medicines list to help determine urgency<sup>1</sup>. The workflow was displayed in different areas in the wards (eg treatment room and patients' drug lockers).

### Strategy for change

Senior nurses on each ward agreed the method for using and raising awareness of the workflow. Baseline data was collected for 7 weeks pre-intervention and 6 weeks post-intervention. Results were shared weekly with wards using run charts.

### Measurement for improvement

Data was collected for 20 patients/ward/week. Results were reported as median at baseline and after introducing the workflow.

### Effects of change

Proportion of patients with  $\geq 1$  missed dose: decreased in surgery (40% to 10%) and increased in acute medicine (35% to 45%), MOE (25% to 30%) and general medicine (35% to 43%).

Percentage of missed doses: decreased in MOE (1.3% to 0.9%), general medicine (2.3% to 1.4%) and surgery (2.6% to 0.3%), and increased in acute medicine (2.2% to 2.7%).

Proportion of patients with  $\geq 1$  missed dose of a critical medicine: decreased from 10% to 0% in surgery.

Percentage of missed doses documented in notes: increased in surgery (0% to 25%) and general medicine (0% to 11.4%).

Although the proportion of patients with  $\geq 1$  missed dose only improved in one ward, the % of missed doses decreased in three wards as medicine unavailability was resolved quicker. The workflow was less visible in acute medicine and did not lead to improvement. Documentation of missed doses remained poor.

### Conclusion

In most wards the workflow had a positive impact on the rate of missed doses and supported resolution of medicine unavailability. Poor documentation of missed doses and escalation plans reflects the paperwork burden for nurses; priority should be given to critical medicines. A generic critical medicines list was used and wards should be given the option of adding medicines relevant to their patient group. Workflow visibility to nursing staff during medicine administration rounds, multidisciplinary team engagement and regular feedback to ward staff were enablers. Missed doses awareness should be incorporated into the nursing curriculum and ward level induction education.

### References

1. Hah J. Reducing missed doses associated with medication unavailability in acute hospital wards: a new workflow and awareness campaign. <http://nhsscotlandevent.com/sites/default/files/PDF%20SEED%20Poster%20NHS%20Scotland%20Event%2018-V4.pdf> [Accessed 8<sup>th</sup> June 2018]

### 53. UK and Zambian pharmacists: improving pharmacy practice, education and research by working together

Aubrey Kalungia<sup>1</sup>, Derick Munkombwe<sup>1</sup>, Samantha Lippett<sup>2</sup>, Megan Hockly<sup>2</sup>, Emma Foreman<sup>2</sup>, Alice Conway<sup>2</sup>, Sarah Marshall<sup>3</sup>, Claire May<sup>4</sup>, Stewart Glaspole<sup>4</sup>, Bugewa Apampa<sup>5</sup>, Mike Pettit<sup>5</sup>, Enock Chikatula<sup>6</sup>, Andrew Bambala<sup>6</sup>, David C Banda<sup>6</sup>, Victoria Rutter<sup>7</sup>, Anja St.Clair Jones<sup>2\*</sup>, 1. Department of Pharmacy, University of Zambia, Lusaka, Zambia, 2. Brighton & Sussex University Hospitals NHS Trust, Brighton, UK, 3. Brighton & Sussex Medical School, University of Sussex, UK, 4. School of Pharmacy & Biomolecular Sciences, University of Brighton, UK, 5. School of Pharmacy, University of Sussex, UK, 6. Pharmacy Department, University Teaching Hospitals, Lusaka, Zambia, 7. Commonwealth Pharmacists Association

This study did not require ethics approval

### Context and Problem

The Brighton-Lusaka Health Link (BLHL) is a non-profit organisation established in 2005, aiming to empower Zambian and UK-based health care professionals with an overall goal of improving healthcare in Zambia. Past joint projects have linked nursing and anaesthetics teams in the two countries. As pharmacy practice and education are evolving globally, there is an opportunity for pharmacists from low and high income settings to share best practices and develop capacity to address current and emerging pharmaceutical care needs. This led, in 2016, to pharmacists from UK and Zambia becoming involved in the BLHL.

### Intervention

In order to develop areas for collaboration, scoping visits of one week were undertaken by pharmacists from Brighton and Lusaka. A visit by 6 UK pharmacists to Lusaka, Zambia in April 2016 was followed by a reciprocal visit by 5 Zambian pharmacists to Brighton, UK in October 2017. Programmes for the visits were comprehensive and included discussions with pharmacists from clinical practice, academia and various pharmacy professional bodies and opportunities to tour facilities.

### Outcomes

As a result of the visits, a number of opportunities were identified including:

1. **Antimicrobial Stewardship (AMS) practice and innovation**
  - AMS is a high priority for healthcare professionals at UTH, and there is opportunity to widen scope and capacity of existing Zambian AMS teams e.g. through piloting use of mobile apps to improve antimicrobial prescribing.
2. **Academic Pharmacy**
  - AMS is not an integral part of the pharmacy curriculum at UNZA.
  - Integrated undergraduate pharmacy curricula in the UK can support UNZA education strategy and underpin multi-professional learning and skills mix for pharmacy.
3. **Hospital and clinical pharmacy practice**
  - 24-hour hospital pharmacy services are being implemented at UTH.
  - Encourage and promote inter-professional teaching and learning
  - Well-established specialist pharmacist roles in the NHS include accredited independent prescribing.
  - Legislation to support pharmacist independent prescribing in Zambia has not been passed. Opportunities to improve prescribing practices are limited.
  - Share, promoted and develop pharmacy educational infrastructure and governance in practice.
4. **Pharmacy research**

- Opportunities to build research links identified include research collaborations; PhD co-supervision, bilateral research placements and collaboration with the Commonwealth Pharmacists Association (CPA).

### Effects of changes

A number of projects have been agreed upon and initiated. These include:

- Evaluating the cost effectiveness of 24-hour pharmacy services. Data collection taking place and protocols exchanged.
- Piloting mobile apps for antimicrobial prescribing. Funding discussion are in place and progressing
- Collaborating with the CPA to carry out an AMS gap analysis
- Evaluating pharmacist interventions. Current methodologies used and outcomes have been exchanged. Planning in progress for simultaneous data collection and comparison of outcomes.
- Co-supervision of a PhD student at discussion stage
- Development of teaching materials for AMS at discussion stage

### Conclusions

Collaboration between UK and Zambian pharmacists was successfully established via the Brighton-Lusaka Health Link. Scoping visits to Lusaka and to Brighton were a successful method of sharing best practices, seeing and experiencing what works well and how processes can be improved. Collaborative projects and activities being implemented are anticipated to improve AMS, education and bilateral research.

**54. Adherence to rifaximin initiation and prescribing at King's College Hospital NHSFT**  
Connor Thompson, Sital Shah, King's College Hospital NHS Foundation Trust, London

### Background

Hepatic encephalopathy (HE) has been described as the most debilitating manifestation of liver disease thereby putting a burden on health resources<sup>1</sup>. A NICE Technical Appraisal for rifaximin was approved in 2015 for use in Overt Hepatic Encephalopathy (OHE)<sup>2</sup>. Rifaximin must be initiated in secondary care and once stable, after six months, transferred to primary care upon completion of a shared care agreement (SCA)<sup>3</sup>.

### Objective(s)

1. Determine diagnosis and initiation by Consultant Hepatologist/Gastroenterologist.
2. Determine documented improvement in HE.
3. Determine supply and booked appointments.
4. Determine if SCAs are sent.

### Standards

1. 100% documented diagnosis of HE.
2. 95% initiated directly or been advised by Consultant Gastroenterologist/Hepatologist.
3. 90% documented evidence of improvement.
4. 100% receive up to the first 6 months of rifaximin from KCH.
5. 100% appointments booked within hepatology clinic.
6. 100% of stable patients have SCA in place, receiving only 6 months from KCH.

### Method

Retrospective data collected using Ascribe to identify patients dispensed rifaximin over 12 month period starting 1<sup>st</sup> September 2016, excluding non-HE or initiated elsewhere. Fifty seven patients were eligible for inclusion and their records were interrogated using key terms aligned with above standards.

This study did not require ethics approval.

### Results

Objective 1: Diagnosis documented for 93% (n=53/57) and 86% (n=49/57) initiated by appropriate Consultant.  
Objective 2: Documented improvement in 67% (n=30/45), excluding 8 patients who died and 4 patients received a liver transplant.  
Objective 3: Clinic appointments booked for 91% (n=50/55); 63% (36/57) received 6 months supply.  
Objective 4: 50% (n=22/44) of patients had only 6 months from KCH, 12 excluded plus 1 drop out.

### Conclusions

Although none of the standards were met the proportion of patients achieving all standards is much greater when prescribed or advised by appropriate Consultant. Only 7% did not have documented HE diagnosis possibly due to initiation on non-specialist wards and/or inappropriate prescribing.

Despite 91% of patients being booked into a hepatology clinic, less than 70% received 6 months of consecutive treatment or had documented improvement of HE potentially due to incorrect clinic booking.

50% received only 6 months treatment from KCH highlighting SCA is not being processed which could be due to incorrect clinic booking or patient complexity where local referral would not be appropriate. This could lead to re-admissions with worsening or life threatening HE and overall reduced quality of life.

Limitations include no access to paper notes which may have included paper SCA, multiple Consultant clinics leading to variation in documentation style and a small sample size.

The results demonstrate a need to redesign the pathway; with pharmacist integration for improved supply chain and appropriate transfer of care.

### References

1. EASL - Clinical Practice Guidelines [Internet]. Easl.eu. 2018 [cited 3 October 2017]. Available from: <http://www.easl.eu/research/our-contributions/clinical-practice-guidelines/detail/hepatic-encephalopathy-in-chronic-liver-disease-2014/report/3>.
2. Rifaximin for preventing episodes of overt hepatic encephalopathy | Guidance and guidelines | NICE [Internet]. Nice.org.uk. 2018 [cited 3 October 2017]. Available from: <https://www.nice.org.uk/guidance/ta337>
3. RIFAXIMIN- $\alpha$  (Targaxan<sup>®</sup>) for preventing episodes of overt hepatic encephalopathy in adults. South East London Prescribing Committee approved March 2016.

## 55. Exploring pharmacy students' perspectives of the roles of pharmacists in GP practices

Cassandra Perone, Rebecca Hayley Venables, School of Pharmacy, Keele University

### Background

An increase in GP demand and an increasing number of pharmacists has led to the role of the pharmacist changing to meet these needs<sup>1</sup>. The newest change, to provide patient-facing roles in GP practices. It's expected that some pharmacists and also pharmacy students may not be entirely familiar with these. Limited research investigates the perspectives of pharmacists and pharmacy students on this. It is essential to explore pharmacy students' opinions as future pharmacists; results will inform education, preparing students for these opportunities.

### Objective

To explore pharmacy students' perspectives of the roles of clinical pharmacists within GP practices.

### Method

A questionnaire was designed with fixed response and free-text questions, informed by literature on the role of pharmacists working in GP practices. Stage 3&4 MPharm students were invited to participate, and consent was sought. This study required and received ethics approval. Data was analysed using a framework analysis approach and descriptive statistics were also calculated.

### Results

In total, 132/189 Stage 3&4 MPharm students participated (70% response rate), in January 2018. 40% of participants rated "patient communication," as the most important focus of the role of a pharmacist in a GP practice, owing to the importance of patients being more involved in their care. "Clinically checking prescriptions" was reported as most important by 30% of participants; to ensure the safe supply of medication and patient safety. "Prescribing" was reported, next as the most important (15% of participants); in order to take the prescribing pressure off GP's. "Conducting medicine reviews" was considered the most important role by 14% of participants - as pharmacists have experience in this area and can identify the changes needed. "Issuing repeat prescriptions" was ranked by 56% of participants as the least important focus of the role. 77% of students reported they strongly agreed or agreed with the statement "I would consider working as a clinical pharmacist in a GP surgery". Most common reasons stated for this were that the job seemed interesting, using clinical knowledge was appealing, and they thought it would enhance clinical skills and knowledge. The most common reason reported for not considering this role was that they did not understand what it entailed.

### Conclusion

Not understanding what the GP practice pharmacist role entails was reported as the most common reason for students not considering this role. This is as expected, and similar for other newer pharmacist roles. Results from this small-scale study conducted in one school of pharmacy, can be used to advise future studies exploring pharmacy students' perspectives and knowledge, leading to exploration into how students' knowledge of pharmacist roles in GP practice may be improved. Findings can be used to inform the education of undergraduate students. The overarching aim is to prepare pharmacy students when planning career paths, to encourage them to utilise their expert skills and embrace this newly developing role.

### References

1. RPS. Pharmacists role in the next steps for NHS England's Five Year Forward View. [online] Available at: <https://www.rpharms.com/news/details/Pharmacists-role-in-the-next-steps-for-NHS-Englands-Five-Year-Forward-View> [Accessed 08/06/2018].

## 56. Improvements to oral antibiotic liquid supply beyond seven days at hospital discharge

Stuart E. Bond<sup>1</sup>, Tommaso Malavenda<sup>1</sup>, Kathryn M. Ashton<sup>1</sup>, Nicola J. Walker<sup>1</sup>, Justine Clark<sup>1</sup>, and Helen J. Chadwick<sup>2</sup>,  
1. Pharmacy Department, Pinderfields Hospital, Wakefield, 2. Design and Print Unit, Pinderfields Hospital, Wakefield

This study did not require ethics approval.

### Context

Patients discharged from the emergency department and inpatient wards occasionally require longer than seven days of oral antibiotic liquid<sup>1</sup>. The most common indication is tonsillitis, requiring 10 days of phenoxymethylpenicillin<sup>1</sup>. Some oral antibiotic liquids have a 7 day expiry following reconstitution, which can be shorter than the course length. The requirement for prudent antibiotic use, including appropriate duration of therapy, has been documented in the UK 5 year antimicrobial resistance strategy<sup>2</sup>.

### Problem

There are varying local practices for greater than seven days' supply of oral antibiotic liquid. Those include: referring the patient to their GP for the remainder of the course, requesting that the patient return for subsequent supply of a freshly reconstituted bottle and writing an FP10HP prescription for community pharmacy supply. Reported missed antibiotic doses may have resulted in undertreatment of infections.

### Strategy for change

Following feedback from local Clinical Commissioning Groups (CCGs), an options appraisal was conducted in November 2017 to determine the best method of oral antibiotic liquid supply to improve the patient experience and reduce the workload on local general practices. Criteria included: patient/carer practicality, risk of error, cost, and staff training. The decision, supported by the Trust's Medicines Optimisation Group was to supply dry powder bottles with instructions to reconstitute at home using a 90mL proprietary water product (Cow and Gate®) for any doses required after seven days. Printed material was also produced in the form of a pictorial patient leaflet, which was created with the Design and Print unit and was piloted on the Children's ward. Design principles for the poster included: predominantly pictures, minimal writing and able to be understood with minimal English. The poster was also supported by a standard operating procedure. Where patients or carers were unable to undertake the reconstitution process at home, an alternative method of supply as described above would be employed.

### Effects of changes

In keeping with the Trust vision statement to "achieve an excellent patient experience each and every time", this change aims to reduce the burden on patients and health care staff without increasing harm. The intervention has been advertised to GPs, with acknowledged risks including home reconstitution and patient/carer comprehension. Lessons learned include the need for broad consultation with clinical and dispensary staff, and testing different reconstitution methods.

### Conclusions

This project improves the likelihood of an excellent patient experience and reduces the risk of missed antibiotic doses towards the end of the antibiotic course. A limitation is lack of follow up to determine if subsequent bottles were taken at home. Further quantitative and qualitative analysis will be required to demonstrate effectiveness. The leaflet is freely available to other NHS institutions experiencing similar issues with supply of oral antibiotic liquids on discharge from hospital.



## References

1. NICE Respiratory Tract Infections. National Institute for Health and Care Excellence. <https://www.nice.org.uk/Guidance/CG69> (accessed 10th May 2018)
2. UK 5 year Antimicrobial Resistance Strategy 2013-2018. UK Government. <https://www.gov.uk/government/publications/uk-5-year-antimicrobial-resistance-strategy-2013-to-2018> (accessed 10th May 2018)

## 57. Barriers and drivers to advanced clinical practice (ACP) and consultant pharmacist roles

J Warburton and T Beswick, Health Education England, Bristol

### Background

With increasing demand on a wide range of healthcare services the way in which care is delivered is rapidly changing. Recently the NHS has pledged to 'do far better at organising and simplifying the system' including 'far greater use of pharmacists'<sup>1</sup>. Pharmacists with additional training have been cited as a potential solution to staffing deficits in emergency departments<sup>2</sup> and national projects are exploring greater pharmacist utilisation in general practice.

The new ACP framework outlines the four capabilities of advanced practice as well as principles for implementation to assure the vision that the right people with the right skills are in the right place at the right time<sup>3</sup>. An appreciation of the strategic drivers for these roles and the barriers faced will help to determine the direction for support from organisations like Health Education England.

### Objective(s)

- To determine the contributing factors, both barriers and enablers, to the implementation of pharmacist ACP and consultant posts
- To understand what factors would empower organisations to utilise pharmacists in this way

### Method

Formal ethical approval was not required as the project constitutes a foundation to service improvement. Two focus group panels were convened from the South West and Wessex Clinical Pharmacy Managers Groups. The themes underpinning the questions used in the focus group originated from risks identified by the National ACP Steering Group.

Participants were forwarded information prior to the meeting and then were consented on the day. The contributions were recorded and transcribed verbatim before undergoing thematic analysis using grounded theory.

### Results

Ten clinical pharmacy managers were recruited representing a variety of hospitals across the HEE South region. Key themes concerning barriers to the implementation of advanced roles were the lack of clarity in training pathway, competition with nurses, funding for training, difficulties of organising clinical supervision, defining roles clearly within clinical teams, assuring competency for potential post holders and cost.

Drivers to the implementation of these roles were considered to be enthusiastic individuals driving their own post development, gaps in medical rotas, staff retention, clinical areas with high medicines risk (e.g. frailty or stroke) and strategic drivers such as sustainability and transformation programmes or pharmacy contributions to coping with winter pressures.

Enablers to the implementation of these roles were considered to include national funding for additional training, support for clinical supervision, published case studies on a range of ACP pharmacist posts and raising organisational awareness of what pharmacists could do in these roles.

### Conclusions

The identified drivers and barriers to ACP and consultant posts should be better shared between organisations to strengthen business cases and enhance the utilisation of existing roles. Common proposed enablers may need national strategic support to support the expansion of pharmacist ACPs and consultants.

## References

1. NHS England. Five Year Forward View. <https://www.england.nhs.uk/wp-content/uploads/2014/10/5yfv-web.pdf> (accessed 8 May 2018).
2. Royal College of Emergency Medicine. Securing the future workforce for emergency departments in England. [https://improvement.nhs.uk/documents/1826/Emergency\\_department\\_workforce\\_plan\\_-\\_111017\\_Final.3.pdf](https://improvement.nhs.uk/documents/1826/Emergency_department_workforce_plan_-_111017_Final.3.pdf) (accessed 8 May 2018).
3. Health Education England. Multi-professional framework for advanced clinical practice in England. <https://hee.nhs.uk/sites/default/files/documents/Multi-professional%20framework%20for%20advanced%20clinical%20practice%20in%20England.pdf> (accessed 23 May 2018).

## 58. Does Role Progression of the Critical Care Pharmacy Technician Impact on Patient Care?

Majella Warnock, Linda Robinson, Grainne Reed, Altnagelvin Hospital, Western Health & Social Care Trust, N-Ireland

### Background

It is estimated that 1.7 prescribing errors occur per day in critically ill patients<sup>1</sup>. Pharmacy technicians are recognised as an important resource for optimising clinical pharmacist activity<sup>2</sup>. Their use to directly support pharmaceutical care in the Intensive Care Unit (ICU) has been described to include data retrieval for haemodynamic, respiratory, fluid and nutritional parameters<sup>3</sup>. This incorporation of workflows into direct patient care processes has been reported to add value to service delivery through increased work efficiencies.

### Objectives

By remodelling the technician role to be more clinically focussed, the key objective was to define the impact of Technician Review Requests (TRR) on patient care.

### Method

A process map was undertaken to identify in the patient journey where technician input was required. After collaborative pharmacist and pharmacy technician engagement in trigger brain storming a proforma with TRR triggers was developed. Data was collected prospectively from October – December 2017 inclusive. TRR with outcomes post pharmacist follow up were graded using the Eadon Scale<sup>4</sup>. To check for consistency of agreement a random sample of 20 interventions were peer reviewed by two critical care pharmacists and a pharmacy technician working in other trusts. This study did not require ethics approval.

### Results

A total of 458 TRR were actioned by the pharmacist. Mean TRR per patient was 3.48. While TRR for medicine reconciliation accounted for the largest proportion (41.8%), other key areas including Stress Ulcer Prophylaxis (SUP), anti-infectives and Venous Thromboembolic risk (VTE) accounted for 15.6%, 9.6% and 9.2% respectively. Grading of TRR in relation to outcomes and impact on patient care indicated that 71% were Eadon Grade 4 or above, reflecting an improvement in the standard of patient care. Reliability analysis of the remaining interventions yielded a Cronbach's alpha of

0.87 (n=20) indicating a good consistency of interpretation of the scenarios presented. An intra-class correlation (two-way fixed effects model where people effects are random and measure effects are fixed) of 0.866 (95% confidence interval 0.743, 0.940, p<0.001) represented a very good level of agreement between all pharmacists and technicians. This confirmed validity of the self-grading within acceptable parameters.

### Conclusion

Given the demonstrated impact on patient care, as defined by Eadon, this indicates that development of the role optimises pharmaceutical care of critically ill patients. Assisting with data retrieval proves beneficial prior to MDT rounds as it facilitates timely intervention with relevant up to date information. Further development to facilitate completion of Medicines Reconciliation should be considered given highest proportion of TRR were for this area.

### References

1. Donchin Y, Gopher D, Olin M, Badihi Y, Biesky M, Sprung CL, Pizov R, Cotev S. A look into the nature and causes of human errors in the intensive care unit. *Critical Care Medicine* 1995; 23:294-300.
2. Core Standards for Intensive Care Units (2013).
3. Ervin KC, Skledar S, Hess MM, Ryan M. Data analyst technician: an innovative role for the pharmacy technician. *American Journal Health System Pharmacy* 2001; 58:1815-1818.
4. Eadon H. Assessing the quality of ward pharmacists' interventions. *International Journal of Pharmacy Practice* 1992; 1:145-147.

## 59. PRECISION FOR PHARMACY – Data Driven Staff Deployment to Optimise Patient Care

Majella Warnock, Eileen Gingell, Brendan Moore, Altnagelvin Hospital, Western Health & Social Care Trust, N-Ireland

### Background

Clinical pharmacy skills in the NHS are in high demand with pharmacists and pharmacy technicians playing a central role in patient care. Central to the Medicines Optimisation strategy there is a key focus in ensuring that pharmacy staff are present at all stages of the patient journey. However, challenges exist because of the lack of transparency around patient need, task allocation and ownership. Therefore, Preventable Adverse Drug Events (pADEs) often go undetected resulting in harm and potentially avoidable costs to the healthcare system of up to £2.5 billion<sup>1</sup>. Under the remit of a Small Business Research Initiative (SBRI) local pharmacy leaders worked with a data analytics company to develop a unique solution, PRECISION, which visualises patient need and optimises staff deployment ensuring the right level of expertise is present with the right patient at the right time.

### Objectives

Overall projective objective was to develop an innovative technological solution that would use data to visualise patient need, thus facilitate appropriate staff deployment ensuring optimal medication outcomes. Initial targets were to reduce time taken to completion of admission medicines reconciliation by 25% and to improve task capacity by 20%.

### Method

Working in collaboration with the data analytics company, a process map of the patient journey was undertaken. Pharmacy tasks at each stage, alongside underpinning goals related to local and national policies and challenges encountered, were identified and carried forward. Patient priorities for medicines management were identified from Patient Public Involvement (PPI) surveys and utilised to inform system design. A prioritisation tool was developed to work in tandem with PRECISION and facilitate patient risk stratification. Project team co-ordinators engaged stakeholders weekly, undertaking a SWOT analysis to explore functionalities of the proposal. Feedback was utilised to further inform product design, with a phase 1 trial on two wards commencing in April 2018. Ethics approval was not required.

### Results

Data for both phase 1 indicates that Precision has impacted on both capacity and timeliness to Medicines Reconciliation on admission. Initial four-week results (Monday-Friday service), demonstrate that targets were met with a reduction in time to medicines reconciliation of 42%, 48% and 21% for Red, Amber and Green patients respectively. Analysis by complexity demonstrates added value with a 55% increase in admission Medicines Reconciliation tasks for Red patients. Overall an additional 32 patients (22%) compared to baseline had a medicines reconciliation task completed. Applying previous Quality Improvement (QI) data and extrapolating Eadon graded interventions, projected cost avoidance due to increased capacity enabled by PRECISION is between £10,451 – £ 23, 282 per month.

### Conclusion

Initial data, while limited, has proven that PRECISION optimises patient care and safety through visibility of patient need and complexity which facilitates optimal staff deployment, better skill utilisation and targeting of high risk patients. Scale and spreadability have been proven with roll out of Phase 2 across all Integrated Medicines Management (IMM) wards, including critical care and paediatric specialities.

### References

1. Torjesen, I. Medication errors cost the NHS up to £2.5bn a year. *The pharmaceutical Journal* 2014; 293 (7834): <https://www.pharmaceutical-journal.com/news-and-analysis/news/medication-errors-cost-the-nhs-up-to-25bn-a-year/20066893.article> (accessed 08/06/18)

## 60. A Clinical Audit Investigating Adherence to Amiodarone Monitoring Guidelines in Primary Care

Laura Heward<sup>1</sup>, Beth Phillips<sup>1</sup>, Kevin Pickavance<sup>2</sup>, Alison Warren<sup>2</sup>, <sup>1</sup> School of Pharmacy and Biomolecular Sciences, University of Brighton, <sup>2</sup> Brighton and Hove Clinical Commissioning Group (CCG)

### Background

Dose and monitoring (baseline and on-going) guidelines for amiodarone are laid out in the British National Formulary and Summary of Product Characteristics to reduce the risk of adverse events associated with this high risk medicine<sup>1,2</sup>. However locally there was no data to support whether these recommendations are adhered to in practice.

### Objective

To quantify adherence to the recommendations for baseline monitoring of cardiac, thyroid, liver, pulmonary and ophthalmology tests and to establish whether suitable follow-up monitoring of amiodarone therapy in primary care is occurring. For each of these parameters an audit standard of 100% was set.

### Methods

A retrospective audit of the patient's primary care record was conducted on 28<sup>th</sup> February 2018 and included all patients currently prescribed amiodarone at four GP surgeries in Brighton with a patient population of approximately 42,000. An anonymized data collection form was developed

and to reduce bias data was collected by one project member (LH) who was not part of the practice team. Results were collated with statistical analysis performed using SPS software.

This study required and received ethics approval.

## Results

The audit included 35 patients prescribed amiodarone. In all cases this was commenced by secondary care with atrial fibrillation being the most common indication. With regards to evidence in primary care of the baseline monitoring the highest levels of adherence were found for electrocardiogram (89%) and serum potassium (88%). Evidence of thyroid function tests (TFTs), liver function tests (LFTs) and chest X-rays was 72%, 76% and 48% respectively.

Ongoing 6 monthly testing was 69% for TFTs and 77% for LFTs. The frequency of ECG monitoring and chest X-ray/examination for lung toxicity was much more variable across the time frames and documentation of ophthalmologic examinations was scarce either at baseline or on follow up.

Within these four practices the practice based pharmacist has put a system in place to ensure appropriate ongoing monitoring is undertaken.

## Conclusions

The results of this audit found levels of adherence to both baseline and follow-up monitoring tests were suboptimal. This may lead to unidentified adverse effects and potential patient harm. The main limitations of this audit are the small sample size and the availability of tests undertaken in secondary care (in particular ECGs and chest X-rays) as it was not always clear whether these tests had been performed.

The results will be discussed with the Sussex Cardiac Centre (main secondary care provider) cardiology and pharmacy teams to consider how to improve communication relating to amiodarone monitoring and the audit will be carried out across the CCG by the pharmacy team to evaluate the wider picture across the CCG to improve systems of care and patient safety.

## References

1. Joint Formulary Committee (2017). Amiodarone hydrochloride | Drug | BNF Bnf.nice.org.uk. <https://bnf.nice.org.uk/drug/amiodarone-hydrochloride.html> [Accessed 15/11/17].
2. Medicines.org.uk. (2018). Amiodarone 200mg Tablets - Summary of Product Characteristics [online] <https://www.medicines.org.uk/emc/product/6018> [Accessed 14/3/18].

### 61. Methotrexate dosing in renal impairment – more awareness and action needed

Wilcock M<sup>1</sup>, Rutkowska A<sup>1</sup>, Jenkinson T<sup>1</sup>, Thomas D<sup>2</sup>, <sup>1</sup>Royal Cornwall Hospitals NHS Trust, Truro,  
<sup>2</sup> NHS Kernow Clinical Commissioning Group Prescribing Team

## Background

Chronic kidney disease impacts upon prescribing for some disease modifying anti-rheumatic drugs, of which methotrexate is the most widely prescribed. While methotrexate is usually initiated in secondary care, rheumatology and dermatology patients will be monitored by their general practitioner, receiving repeat prescriptions in primary care. In patients with normal renal function methotrexate is typically dosed at 10 to 15mg/week, up to 25mg/week. When renal function is reduced, accumulation may lead to toxicity such as excessive bone marrow suppression, acute hepatic toxicity, and acute interstitial pneumonitis. Inappropriate dosing has been reported.<sup>1</sup> Though there is no uniform guidance, British Society of Rheumatology guidance advises not exceeding 12.5mg weekly when estimated Glomerular Filtration Rate (eGFR) is less than 60 mL/min/1.73 m<sup>2</sup>.<sup>2</sup>

## Objective

The primary outcome was to determine how many rheumatology/dermatology patients in primary care with impaired renal function were prescribed methotrexate at a dose exceeding 12.5mg per week.

## Method

EclipseLive (a patient safety alerting system) was used to capture anonymous data for patients prescribed methotrexate across 49 of 60 practices in one Clinical Commissioning Group (CCG). Data (demographics, methotrexate formulation and dose, and most recent eGFR) were exported into Microsoft Excel. This study did not require ethics approval.

## Results

For three month period to mid-May 2018, there were 2,110 patients with a current prescription for methotrexate, of which 1,867 (88%) had an eGFR  $\geq$  60 mL/min/1.73 m<sup>2</sup>. There were 243 patients with a recent eGFR < 60 mL/min/1.73 m<sup>2</sup> (86% on tablets and 14% on subcutaneous injection). No clear dose instruction was captured by data extraction for 29 of these patients on oral medication, leaving 214 whose dose (mean weekly dose 14mg, range 2.5-25mg) could be viewed relative to an eGFR result.

There were 121/214 patients (mean age 75, 62% female) who received a dose greater than 12.5mg per week (mean 18mg, range 15-25mg).

Three of these patients had an eGFR of less than 30 mL/min/1.73 m<sup>2</sup> where methotrexate would be contraindicated according to BSR.<sup>2</sup>

## Conclusions

In this primary care database from one CCG, there were approximately 6% (121/2,110) patients on methotrexate who were prescribed a dose too high for their eGFR value. Limitations include we did not check for comorbidity or concomitant nephrotoxic agents (e.g non-steroidal anti-inflammatory drugs) which may have increased the potential toxicity risk, and we did not look at trends in eGFR for individual patients. We will communicate our results to primary care and describe the necessary action to be taken regarding eGFR monitoring and dosing. We will alter our local shared care guideline to emphasise caution on dosing in renal impairment. We will repeat data extraction and analysis in 6 months to ascertain if the situation has improved.

## References

1. Karie S. *et al.* Kidney disease in RA patients: prevalence and implication on RA-related drugs management: the MATRIX study. *Rheumatology* 2008;47(3): 350-4.
2. Ledingham J. *et al.* BSR and BHPR guideline for the prescription and monitoring of non-biologic disease-modifying anti-rheumatic drugs. *Rheumatology* 2017;56(6): 865-868.

## 62. Are inpatients receiving inhaler technique counselling?

Tadeh Tahmasi, Alyson Winter, Vimbai Simbi, Bedford Hospitals NHS Trust

### Background

Poor technique occurs with up to 90% of inhaler users and decreases the efficacy of inhaled medications (1).

A Review of Asthma Deaths found two-thirds could be prevented by better routine care and recommended trained staff should assess patients' inhaler techniques (2).

Cognitively-able patients with Chronic Obstructive Pulmonary Disease (COPD) can achieve adequate technique given instruction, the right device and regular reinstruction (3).

### Objectives

Audit standards:

100% of inpatients using inhalers have their technique checked during their inpatient stay.

100% of these inpatients report having their inhaler technique checked in the last 12 months.

100% of these inpatients use their device correctly.

100% of these inpatients have the inspiratory flow required for their device to function correctly.

The study determined which healthcare professional (HCP) checked technique during the stay.

### Method

This study did not require ethics approval.

Data was gathered from September 2017 to May 2018. Twenty patients with COPD or asthma completed a questionnaire and had their inspiratory flow measured.

Acutely unwell patients were excluded.

Documentation of inhaler technique review was searched in medical notes.

Poor technique identified during the audit was actioned with reinstruction or change of device.

### Results

5% of inpatients using inhalers had technique checked during their inpatient stay.

40% reported having inhaler technique checked in the last 12 months.

25% used their device correctly.

77% had sufficient inspiratory flow for their device to function correctly.

### Conclusion

HCPs rarely assessed inhaler technique on the ward. A respiratory nurse made the only check.

More patients had had reviews in primary care. However, a good technique did not correlate with having a recent check. Possibly, the HCP involved lacked appropriate skills. Only 5% of HCPs demonstrate appropriate inhaler technique (1). The ability of Trust staff to do so was not evaluated.

Assessment of the technique of patients involved in the audit demonstrated large potential to improve inhaler use.

Limitations included the small sample size and the time patients were questioned during their stay. Respiratory nurses may assess technique at discharge but this may limit useful intervention. Unwell patients may show lower inspiratory flow than their best.

Review of the appropriateness of continuing inhalers whilst an unwell patient is on oral or nebulised therapy could be improved.

The main recommendation is increased checking and optimising of inhaler use by HCPs. This starts with training nurses on the respiratory ward, using a competency framework (4), to check technique as part of their medicines administration rounds. Checks should also be integral to medicines reconciliation by pharmacists and medicines management technicians.

### References

1. Price, D *et al.* Inhaler competence in asthma: Common errors, barriers to use and recommended solutions. *Respiratory Medicine* 2013; 107 (1): 37-46.
2. Asthma UK. Time to take action on asthma. <https://www.asthma.org.uk/globalassets/campaigns/compare-your-care-2014.pdf> (accessed 22 January 2018).
3. National Institute for Health and Clinical Excellence. COPD: Management of COPD in adults in primary and secondary care. Update guideline 2010. <https://www.nice.org.uk/guidance/cg101/evidence/full-guideline-pdf-134519581> (accessed 30 August 2018).
4. UK Inhaler Group. Inhaler Standards and Competency Document. <http://www.respiratoryfutures.org.uk/media/69775/ukig-inhaler-standards-january-2017.pdf> (accessed 22 January 2018).

## 63. A Case for Medicines Management Assistants (MMAs)

George Osei-Barnieh, Alyson Winter, Bedford Hospitals NHS Trust

### Background

Delayed or omitted medicines are a significant factor in harmful incidents for inpatients (1).

Nursing staff are responsible for ensuring that patients' medicines are transferred with them when they move clinical area or are discharged (2), but indications are that this is not happening reliably from the Acute Assessment Unit (AAU) and medicines are being omitted or wasted.

### Objectives

Audit standard:

100% of inpatients had all their own, or hospital-dispensed medicines, which were to be continued, transferred with them from AAU to another ward, or to home at discharge.

The study also examined clinical and financial implications of medicines not following patients.

### Method

This study did not require ethics approval.

Data was collected for 20 days by listing medicines retrieved from the AAU returns cupboard, identifying the patients for whom the medicines were dispensed and reviewing their prescription chart to check if the medicine had been stopped, omitted or delayed.

The financial value of medicines which were redispensed or wasted was calculated.

### Results

Medicines retrieved from the cupboard showed 57 out of approximately 700 patients left AAU without their on-going medicines during the study.

Hence 92% of inpatients had all their own, or hospital-dispensed medicines, which were to be continued, transferred with them from AAU to another ward, or to home at discharge.

From 30 patients who did not have medicines transferred to another ward, 27 missed doses were identified, of which 18 were for critical medicines. Critical medicines were also left behind at discharge.

Eight patients had items resupplied incurring medicine costs of £55 (representing £1000 annually). Unreusable medicines totalling £66 were wasted (representing £1205 annually).

### Conclusion

Although the standard was met in 92% of cases, finding 18 omitted doses of critical medicines during this short study raises serious patient safety concerns.

Medicine costs identified were low value but a re-audit looking at staff time searching for, ordering, redispensing or disposing of items would show greater expense.

Limitations included the difficulty of following the medicines of every patient given the unit's high turnover and constraints on investigator time. The total number of patients through the unit had to be estimated (figures are not counted). AAU nurses were more alert to their responsibilities during the audit. More omitted doses may have happened if ward stock of drugs not transferred had not been available.

An MMA on the Unit would improve outcomes (to be proven by re-audit). They would have the tasks of checking medicine lockers, transferring medicines left behind to wards and supporting the pharmacist to ensure medicines are complete for discharge. The MMA would be a Band 2 employee (salary £15,251) providing a Monday to Friday service initially. (Nursing staff would maintain primary responsibility for transferring medicines so that processes are the same across weekdays and weekends).

### References

1. National Reporting and Learning Service *Reducing harm from omitted and delayed medicines in hospital*. 2010. Available from: <https://www.sps.nhs.uk/articles/npsa-alert-reducing-harm-from-omitted-and-delayed-medicines-in-hospital-2010/> [Accessed 20<sup>th</sup> March 2018]
2. Bedford Hospital *Policy for the Safe Storage and Handling of Medicines*. Bedford Hospital NHS Trust; 2018.

## 64. The 3 year impact of a Pharmacy Technician in a Medicines Information Centre

Angelica Steward, Hannah Levene, Esther Wong, Chelsea and Westminster NHS Foundation Trust, London

### Background

Following the merger of Chelsea and Westminster Hospital and West Middlesex Hospital in September 2015, there was a drive to design cross-site services to improve cost effectiveness and streamline resources. This led to an integrated Medicines Information (MI) centre allowing for a Specialist MI Pharmacy Technician role. UK Medicines Information (UKMi) offers a training scheme aimed at pharmacy technicians who wish to become an UKMi accredited MI Technician<sup>1</sup>.

### Objectives

This service comparison spans over three years looking at the impact of an MI technician on the service pre and post completion of UKMi accredited MI technician qualification. The service is then reviewed a year post qualification to assess the continuing impact on an UKMi centre. This study did not require ethics approval.

### Method

Data was extracted from MiDatabank using the reporter function<sup>2</sup>. Data was collected between January to March in the years 2016 (pre completion of UKMi technician accreditation), 2017 (post completion of UKMi technician accreditation) and 2018 (one year experienced UKMi accredited technician).

Enquiries were categorised then analysed assessing workload of the MI technician and time spent completing enquiries in the different categories; interactions, adverse effects, availability, formulations, fridge stability and administration and dosage.

### Results

From January to March 2016, the MI technician completed 39 enquiries from a total number of 151 enquiries (25% of workload). This spent a total number of 187.2 hours. Four category types were observed; interaction (133.9 hours), fridge stability (21.8 hours), formulation (16 hours) and adverse effects (15.5 hours).

From January to March 2017, the MI technician completed 69 enquiries from a total number of 186 enquiries (37% of workload). This spent a total number of 378.7 hours. The four original category types were observed, interaction (169.7 hours), adverse effects (141 hours), fridge stability (24.9 hours), formulation (12.8 hours); a new 'availability' category was introduced which took 30.3 hours of the total enquiry time.

From January to March 2018, the MI technician completed 148 enquiries from a total number of 319 enquiries (46% of workload). This spent a total number of 439.7 hours. The five category types were observed; interactions (214.5 hours), adverse effects (56.2 hours), availability (42.6 hours), formulation (41.7 hours), fridge stability (56.4 hours). Addition of a further category regarding administration and dosage took 28.3 hours of the total enquiry time.

### Conclusions

The results show that an accredited MI technician was able to research and complete more enquiries than prior to accreditation. Following a year of accreditation, the MI technician has shown improved experience and skill by completing a significant proportion of the total MI workload over a wider breadth of enquiry types. The workload has shown a 50% increase in the audited months between 2017 and 2018; the impact of an experienced MI technician has allowed other members of the MI team to complete directorate and clinical duties.

### References

1. Specialist Pharmacy Service. SPS: UKMi Accredited Medicines Information Technicians Training Scheme (AMITTS). <https://www.sps.nhs.uk/articles/ukmi-accredited-medicines-information-technicians-training-scheme-amitts/> (accessed 06 June 2018)
2. COACS. MiDatabank Enquiry Manager v3.2. Date accessed: 06 June 2018

**65. Reliability and utility of an adapted hospital clinical pharmacy patient prioritisation tool**

Junel Ahmed, Charlotte Bell, Raliat Onatade, Barts Health NHS Trust, London

This study required and received ethics approval.

**Background**

Hospital inpatients have different levels of clinical acuity, some requiring greater intensity of care input compared to others. In the UK, most patients will be seen by a pharmacist daily, regardless of need. An existing Pharmaceutical Assessment and Screening Tool (PAST)<sup>1</sup> was adapted for use by junior pharmacists to assign patient acuity levels (PAL) for prioritising pharmaceutical care input. This study aimed to assess the utility and potential benefits of the tool.

**Method**

WPs referred to the tool to assign PALs to patients, during their daily clinical work. A senior pharmacist (SP), independently assigned PALs to patients seen by 4 WPs. Agreement levels between SPs and WPs, and potential time saved by applying the tool were calculated<sup>2</sup>.

**Results**

217 patient encounters for 122 patients were assessed. Percentage agreement between SP and WPs was 81% (range 62% - 88%). Overall Cohen's Kappa was 0.59, moderate agreement (range 0.38 – 0.60). For 11.5% encounters, the SP allocated a higher PAL than the WP. For 7.8% encounters, the SP allocated a lower PAL. Every day, 45 to 60 minutes per 25 beds could be saved by not seeing patients assigned the lowest PAL score daily. Assigning PALs using the tool was straightforward and feasible.

**Conclusion**

Effective use of the tool can lead to time efficiency savings. Pharmacists sometimes used their clinical judgements to override the PAL indicated by the tool. The safety implications of junior pharmacists assigning lower PALs than might be expected need to be assessed.

**References**

1. Journal Article (Print): Hickson, R. P., et. al (2016). Evaluation of a pharmaceutical assessment screening tool to measure patient acuity and prioritise pharmaceutical care in a UK hospital. *European Journal of Hospital Pharmacy*, ejhpharm-2015-000829
2. Journal Article (Print): Onatade, R., et al (2016). A quantitative comparison of ward-based clinical pharmacy activities in 7 acute UK hospitals. *International Journal of Clinical Pharmacy* (2016) 38: 1407.

**Regional Pre-Registration Pharmacists Project Winners 2018**

**66. An audit of paediatric parenteral nutrition**

Danielle Samantha Brown (Pre-registration Pharmacist)

Supervised by Natalia Iglesias (Advanced clinical pharmacist in paediatric and neonatal nutrition), Leeds Teaching Hospitals

**Background**

When a child is born the aim is to begin enteral feeding as soon as possible, however this is not always possible and is when parenteral nutrition (PN) is required. The patients who are most in need of PN are those born prematurely or who have low birth weight<sup>1</sup>. It is crucial that these patients receive the correct amount of PN in order to bridge the gap of functional gut immaturity until enteral nutrition can be established<sup>2</sup>. In children with extremely low birth weight it is vital that PN is initiated as soon as possible to ensure that maximum nutrition can be achieved in early post-natal life<sup>3</sup>.

**Standard**

At Leeds Teaching Hospitals 100% of patients should be receiving the quantity of parenteral nutrition prescribed.

**Aim**

To identify the proportion of patients receiving the incorrect amount of paediatric PN on the neonatal unit at Leeds General Infirmary using the trust guidelines.

**Objectives**

This project aims to identify the rates of neonatal PN not being given as prescribed and the reasoning behind the deviations from trust guidance. This data was collected between September 2017 - Decembers 2017.

**Method**

An audit was undertaken of PN prescribing on the neonatal ward (L43) at the Leeds General Infirmary, using a data collection tool identifying the weight of the neonate, gestational age, the current rate of PN administration and what had been prescribed. The percentage of PN being received in comparison to what had been prescribed was then calculated. Any reasons for deviations from intended prescribing were also documented. Ethics approval was not required for this research.

**Results**

Of the 54 patients audited, 20 were not receiving the PN that had been prescribed. Of these 20 patients, 5 did not receive the prescribed amount due to the initiation of new intravenous (IV) drugs. This is considered an unacceptable deviation from guidance.

**Conclusions and recommendations**

This audit has identified a significant deviation from the standards set. Standardised PN bags are now being implemented in the trust which has nutrition contained within a smaller volume than previous bags. The aim is that this will allow for prescribing of additional IV medications without the PN being compromised. Once the new PN bags have been fully implemented this will create scope for a re-audit to assess the impact the new bags have had in relation to the frequency of deviations from guidance. A limitation of this audit was that data collection was only completed on week days. This creates an opportunity to extend this audit to compare the frequency of deviations during the week compared to those seen on a weekend.

**References**

1. ESPGHAN. Guidelines, *Journal of Pediatric Gastroenterology and Nutrition* 41:S5–S11 (2005)
2. Stewart et al., An enquiry into the care of hospital patients receiving PN, national Confidential Enquiry into Patient Outcome and Death (2010)
3. Wilson DC, Cairns P, Halliday HL, et al. Randomised controlled trial of an aggressive nutritional regimen in sick very low birthweight infants. *Arch Dis Child Fetal Neonatal* Ed 1997;77:F4-11 (1997)

## 67. An Audit of Current Insulin Prescribing

Ellen Hetherington, University Hospitals Coventry and Warwickshire NHS Trust

This study did not require ethics approval.

### Background

Insulin prescribing is highlighted as an area for improvement within the trust. This audit assesses current compliance of insulin prescribing with standards in line with law, good prescribing practice and trust policy<sup>(1-5)</sup>. Findings compare compliance with, and guide improvements for, new insulin prescription and monitoring charts that are to be introduced.

### Objectives

- To see if prescribing of subcutaneous insulin for inpatients at the trust currently complies with all legal requirements, good prescribing practice and trust standards for insulin prescribing<sup>(1-5)</sup>.
- Compliance with standards is measured to understand current problems with insulin prescribing so that the new insulin prescription and monitoring chart can compare compliance to the current system.
- 18 standards were deemed to show good prescribing safety. All charts were expected to comply 100% with all standards
- Standards cover monitoring, referrals, hypoglycaemia, target levels, omitted doses, timing, clarity and legibility of prescription, device, brand, demographics, allergy, legal prescription requirements.

### Method

A snapshot sample was taken of all current inpatients with insulin on their drug history on 15/2/18 between 0900 and 1730 using data collection tool. Included all patients on main site bar women's and children's wards. Did not include variable rate insulins. Data was analysed on Microsoft Excel to show a simple % compliance of charts with standards.

### Results

- No chart was fully compliant to all standards and only 5 standards were met across all charts (100% compliance): brand, legibility, timing, no omitted doses and appropriate stopping.
- Results showed good compliance with core areas of current chart but poor compliance with monitoring, pre-emptive prescribing and details with no allocated box.

### Conclusions

- Poor compliance to glucose monitoring 4 times a day (40%) as separate sheet from drug kardex. The new chart should have monitoring included on the same chart, forcing prescribers and nursing staff to check levels more often and see missed levels.
- Hyperglycaemia referral compliance (70%) is likely an underestimate due to the snapshot nature of sampling. It is probable that some referrals were made after the point of audit.
- Device (60% compliance), target blood glucose (0% compliance) and prescriber name and GMC# (20% compliance) had poor compliance. Pre-emptive prescribing for hypoglycaemia was also poor (20%), though all patients received non-prescribed treatment. The new chart should have an allocated box for these criteria, to prompt prescribers.
- The new charts, when implemented, can be re-audited to see if compliance has improved due to the changes made.

### References

1. NICE. Safer insulin prescribing. Options for local implementation. 2017 [accessed 2018 Feb 24]; <https://www.nice.org.uk/advice/ktt20/resources/safer-insulin-prescribing-pdf-58758006482629>
2. Harrold DC. Safe prescribing and use of insulin in adult inpatients, UHCW Clinical Guideline. 2017.
3. GOSH. Insulin: from prescription to administration | Great Ormond Street Hospital [Internet]. 2018 [accessed 2018 Feb 24]. <http://www.gosh.nhs.uk/health-professionals/clinical-guidelines/insulin-prescription-administration>
4. diabetes.org.uk. Improving Insulin Safety In Hospital. [Internet]. 2017 [accessed 2018 Feb 24]; Autumn. <https://www.diabetes.org.uk/resources-s3/2017-10/InsulinSafety.pdf>
5. General Medical Council. Good Practice in Prescribing Medicines. 2013 [accessed 2018 Feb 24]; (January). [https://www.gmc-uk.org/Prescribing\\_guidance.pdf\\_59055247.pdf](https://www.gmc-uk.org/Prescribing_guidance.pdf_59055247.pdf)

## 68. An audit to evaluate the quality of antipsychotic depot prescribing and monitoring

Annabel Lane, Christopher Jenkins. Cambridge and Peterborough Foundation Trust, Cambridge

### Background

Medication adherence is a huge barrier to the successful treatment of mental illnesses. Administering antipsychotic medication via a depot contributes towards overcoming this barrier<sup>1</sup>, resulting in a reduced risk of hospitalisation<sup>2</sup> and better reported global outcomes compared to oral antipsychotics<sup>3</sup>. However, there are several side effects associated with antipsychotic medication, that increase rates of non-adherence and can be dangerous and sometimes fatal<sup>2</sup>. It is therefore vital that these patients are monitored appropriately. This work seeks to identify current performance in relation to the prescribing and monitoring of antipsychotic depots, with the aim of establishing areas of practice that could contribute to better outcomes for patients.

### Objectives

To evaluate whether depot antipsychotic medications are being safely prescribed, by identifying the percentage of prescriptions that clearly stated all relevant information, were checked by a pharmacist and where the dose followed British National Formulary (BNF) guidelines.

To identify the percentage of people on antipsychotic medication that were appropriately monitored according trust guidelines, including monitoring of weight, blood pressure and the following blood tests; liver function, blood glucose, blood lipids, HbA1c, prolactin, urea and electrolytes and full blood count, in the last twelve months.

### Method

The data was collected from four locality teams within CPFT in November 2017. The data was obtained from prescription charts, electronic medical notes and GP records. The data was made anonymous and recorded on a data collection form. This study did not require ethics approval.

### Results

In total, 51 patient's data was collected and analysed. The prescribing quality showed variable results, particularly when in regards to the information stated on the prescription. However 100% of doses were within the BNF limits. The monitoring parameters were poorly adhered to; with 35% of patients having their prolactin monitored and 39% of patients had their weight monitored in the last 12 months.

## Conclusion

Overall, it is clear that there needs to be improvement on the prescribing and monitoring of antipsychotic depot medication at the locations audited. This audit makes several recommendations in order to improve the prescribing quality and monitoring parameters of antipsychotic depots including: all prescriptions to be signed off as clinically checked by a pharmacist and consideration should be given to a systematic way of identifying those needing monitoring.

## References

1. Barnes, T. Shingleton-smith, A. Paton, C. Antipsychotic long-acting injections; prescribing practice in the UK. *Journal of Clinical Psychiatry Journal* 2009;195:37-42. [www.the-british-journal-of-psychiatry/article/antipsychotic-longacting-injections-prescribing-practice-in-the-uk/](http://www.the-british-journal-of-psychiatry/article/antipsychotic-longacting-injections-prescribing-practice-in-the-uk/) (accessed 30 January 2018)
2. Schooler, NR. Relapse and rehospitalisation: comparing oral and depot antipsychotics. *Journal of Clinical Psychiatry* 2003; 64 (16): 14-7. <https://www.ncbi.nlm.nih.gov/pubmed/14680414> (accessed 31 January 2018)
3. Adams, CE. *et al.* Systemic meta-review of depot antipsychotic drugs for people with schizophrenia. *British Journal of Psychiatry* 2001; 179: 290-9. [www.the-british-journal-of-psychiatry/article/systematic-metareview-of-depot-antipsychotic-drugs-for-people-with-schizophrenia/reader](http://www.the-british-journal-of-psychiatry/article/systematic-metareview-of-depot-antipsychotic-drugs-for-people-with-schizophrenia/reader) (accessed 30 January 2018)

## 69. An audit to identify the reasons behind unintentionally omitted doses

Ailsa MacRae and Jane Neal (Audit Supervisor), Buckinghamshire Healthcare NHS Trust, Aylesbury

### Background

Despite implementing the recommendations of the Rapid Response Report, 'Reducing harm from omitted and delayed medicines in hospital'<sup>(1)</sup> the number of incidents due to missed or delayed doses continues to be a concern in the Trust. Around 50% of reported medication errors are due to omitted doses<sup>(2)</sup>.

### Objectives

- To identify drug charts with unintentional omissions marked as 7 (drug not on ward), 8 (other reasons, to be documented), left blank or delayed and to determine the main reasons for omission.

### Standards:

1. 100% of medicines should be administered if listed as ward stock and clinically appropriate.
2. 100% of omitted doses should have an allocated code, such as 7 or 8, on the drug chart.
3. 100% of omitted doses listed as 8 on the inpatient prescription chart should have a reason further documented in the patient's clinical notes.
4. 100% of all time critical medicines, where clinically appropriate, should be administered to the patient and an incident report completed if not administered within 2 hours<sup>(2)</sup>.

### Method

This study did not require ethics approval. Data were collected retrospectively looking at every inpatient prescription chart on two respiratory wards. Charts with an omitted dose marked as 7, 8, left blank or delayed were included in the data. The reason behind each missed dose was investigated further.

### Results

The first three standards were not met (standard 1 = 97%, standard 2 = 65%, standard 3 = 50%). Standard 4 was met (100%) as all time-critical doses were given within two hours or had a clinically valid reason for omission.

The initial number of unintentional omitted and delayed doses appeared to be higher before identifying the reasons for omission. After investigation 54% (122/226) of these doses were found to be omitted due to a valid clinical reason, or had been given but not signed, so were discounted from the final results. The total number of doses marked as 7 on drug charts accounted for 66% (69/104) of unintentionally omitted doses. All doses on drug charts should be signed or have a code allocated but 19% (43/226) of doses were blank. Doses marked as 8 on drug charts should have a reason documented in the clinical notes but 50% (55/109) of these doses did not.

### Conclusions

The results highlight the need for better communication and documentation concerning omitted doses. Inaccurate documentation could have had an impact on the results from previous audits.

A recommendation would be to expand Trust mandatory training on medicines management to include the importance of documenting omitted doses, which code is appropriate to use on the drug chart for different reasons for omission and the importance of signing the drug chart when a drug had been given.

### References

1. National Patient Safety Agency. *Reducing harm from omitted and delayed medicines in hospital*, 2010. Available at: <http://www.nrls.npsa.nhs.uk/alerts/?entryid45=66720>. Accessed: 30/10/2017.
2. Neal, J., 2017. *Deep Dive into Medication Errors reported at BHT April 14 to March 17 - Report to Quality Committee May 2017*. Buckinghamshire Healthcare NHS Trust.

## 70. An Audit Evaluating the Outcomes of Medicines Reconciliation

Alysha Poole, Weston General Hospital, Weston Super Mare

### Background

Approximately 60% of medication errors occur at transitions of care<sup>1</sup>, where information is often lost or misinterpreted. Pharmacy staff play a vital role in reducing these errors; primarily through medicines reconciliation (MR). Pharmacist lead reconciliation correlates with reduced adverse drug events (ADE), and ADE related re-admissions / ED visits<sup>2</sup>. The reconciliation process ends with communication (written or verbal) to a prescriber, where discrepancies are brought to their attention. However, benefits to patients will only arise if these discrepancies are reviewed and appropriate action is taken. In 2017, WGH data demonstrated an average of 1.5 MR discrepancies per patient. This study aims to evaluate how these discrepancies are being resolved.

### Objectives

To identify:

- i) Whether discrepancies highlighted during MR are being acted on appropriately and within a reasonable timescale.



- ii) Whether any discrepancies are present in discharge summaries without clinical justification.

**Standards:**

- 100% of MR discrepancies will be addressed within 24 hours of identification.
- 80% of Monday-Friday admissions will have a MR.
- 100% of discrepancies involving critical medication will be communicated verbally to the prescriber when identified.
- 100% of changes made to medications during admission will be recorded in the discharge summary.

**Method**

Ethical approval was not required for this audit.

All patients on the medical assessment unit (MAU) between 8/11/17 to 21/11/17 who had their medicines reconciled by a pharmacist or technician with at least 1 discrepancy identified, were included in the audit.

At 24 hours following reconciliation, the inpatient drug chart, medical notes and discharge summary were reviewed for each patient. Data was collected against the 4 standards using a locally approved data tool.

**Results**

Only 27.5% of admissions to MAU during the audit period received a MR. This falls below target and is the biggest limitation of the audit, as the sample size is smaller than expected.

36 patients were included in this audit and 112 discrepancies were identified following MR. 39% of discrepancies took longer than 24 hours to be addressed.

88.34% of discrepancies involving high priority medications were verbally communicated to a prescriber. Compliance with this standard should be 100% as any delay could result in more serious harm.

13 discrepancies were identified in discharge summaries. None of these included critical medication. However, these errors still compromise patient safety.

**Conclusion**

Delaying the administration of regular medication has the potential to cause harm to patients. Further to this, 13 errors were evident in discharge summaries showing that some discrepancies were not resolved throughout entire admissions. The sample size of this audit is small, but if the data is representative of the whole hospital it is likely that a significant number of discrepancies are present in discharge summaries. Changes to practice must be considered to address this shortcoming.

**References**

1. Sullivan, C. et al. Medication reconciliation in the acute care setting: opportunity and challenge for nursing. *Journal of nursing care quality* 2005; 20(2).
2. Mueller, S. et al. Hospital-based medication reconciliation practices: a systematic review. *Archives of International Medicine* 2012; 172(14).

**71. Assessing the appropriateness of nefopam prescribing and reducing the usage within the Trust.**  
Anthony Shoukry, Northampton General Hospital (NGH), Northampton

This study did not require ethics approval.

**Background**

Figures from 2016/2017 across NGH show that around £115k was spent on nefopam. This is considerably higher than the usage of seven other Trusts in the East Midlands combined.

The main concern is inappropriate usage since most of the literature available surrounding the use of nefopam are based on its use in postoperative or acute pain with little evidence available for its effectiveness in chronic pain.<sup>1,2</sup> Nefopam is a non-opioid, non-steroidal, centrally acting analgesic drug used to prevent postoperative pain, primarily in the context of multimodal analgesia<sup>3</sup>. This makes it a seemingly useful alternative to opioids and to NSAIDs however nefopam has some unpleasant side effects including; dry mouth, light-headedness, nausea, urinary retention and confusion.

**Objectives**

To assess the appropriateness of nefopam prescribing, to implement changes based on the findings and to educate prescribers, nurses and pharmacists on appropriate nefopam usage. The aim is to reduce inappropriate usage and spending within a one-month implementation period.

**Method**

PDSA cycle 1 involved a questionnaire designed to assess appropriateness of prescribing by evaluating the prescribers' knowledge of nefopam. This was circulated to doctors on targeted wards which are known to regularly prescribe nefopam.

PDSA cycle 2, the implementation phase, involved creating a poster that was distributed to the targeted wards and a screensaver distributed around the Trust computers to educate on appropriate nefopam prescribing. Implementations to ePMA involved dose reduction on the initial template from 60mg TDS to 30mg TDS, seven-day review alerts and reminder notifications on short term use and regular review of analgesic needs.

**Results**

The questionnaire confirmed inappropriate prescribing across the Trust. Out of the 49 doctors only 23 were able to provide a correct dose, only 24 knew one contraindication or caution and only 2 recognised the side effects from a given list. There was no correlation between the grade of prescriber and performance across the questionnaire.

Spending across the Trust in January 2018 was £3525 whereas after one-month of implementations, spending had reduced by 53% to £1663. The targeted wards contributed 36% of the reduction in spending which confirms educational measures are key to increasing appropriateness alongside ePMA changes.

**Conclusion**

Meeting with prescribers during the questionnaire and implementation phase and correctly identifying the target wards has contributed to the success of the project which is still being observed quarterly. This has contributed hugely to both increasing the knowledge of nefopam as well as reducing the excessive inappropriate usage and expenditure. It also means patients are benefitting from more appropriate analgesic control.

**References**

- 1 Scottish Intercollegiate Guideline Network. SIGN 136. Management of chronic pain. December 2013. Last accessed 12/03/2018.
- 2 Kakkar M, Derry S, Moore RA et al. Single dose oral nefopam for acute postoperative pain in adults. *Cochrane Database of Systematic Reviews* 2009. Last accessed 12/03/2018.
- 3 Girard, P; Chauvin, M; Verleye, M (January 2016). "Nefopam analgesia and its role in multimodal analgesia: A review of preclinical and clinical studies". *Clinical and Experimental Pharmacology & Physiology*. 43 (1): 3–12.