Usage guidelines

Please refer to the usage guidelines at http://sure.sunderland.ac.uk/policies.html or alternatively contact sure@sunderland.ac.uk.

Oral Abstracts

Patient Safety Incidents

Effectiveness of interventions to improve the identification and reporting of medication-related patient safety incidents in primary care: a systematic review

M. Alsubaie, J. Cooper, J. Waring, A. Carson-Stevens and M. J. Boyd

School of Pharmacy, University of Nottingham
Mohammed.Alsubaie@nottingham.ac.uk

Medication-related patient safety incidents (MRPSIs) cause a significant burden on healthcare resources. Previous work looking at MRPSIs from primary care has highlighted how poor reporting of incidents makes analysis and subsequent learning challenging [1]. Improving the quality of MRPSIs reporting has been recommended to enhance the ability to identify learning for healthcare systems improvement.

The aim of this systematic review is to identify, summarise and describe the evidence of effectiveness of interventions aimed to improve the identification and reporting of MRPSIs in primary care.

A protocol for the systematic review was registered with the PROSPERO international prospective register of systematic reviews (CRD42017049676). Narrative synthesis of randomised controlled trials (RCTs) was conducted to assess the effects of professional and organisational interventions in comparison to the existing system of usual practice or no comparison to improve the identification and reporting of MRPSIs in primary care. Database searches were conducted using: Ovid MEDLINE, EMBASE, IPA, PsycINFO, and EBSCO CINAHL. Studies where the outcome measures included interventions to improve the number of MRPSIs identified and/or reported and the quality of reports were included. Titles and abstracts were assessed against the inclusion criteria. Then, full-text of the studies retrieved and assessed independently by two reviewers. Methodological quality was appraised independently by two reviewers using Cochrane Collaboration criteria [2].

Five RCTs met the inclusion criteria and all were conducted in general practice. Three of the RCTs identified and corrected MRPSIs using the process of feedback to prescribers with other adjacent complex intervention components. These RCTs used electronic patient medical records to identify patients at risk of unsafe prescribing. The RCTs demonstrated a notable reduction of high-risk prescribing of selected medicines ranging from 12% to 37% in intervention arms. The harm reduction observed was attributed to improved identification and reporting of MRPSIs. The other two RCTs reported complex interventions encompassing use of a validated patient safety culture questionnaire with other adjacent complex intervention components. The RCTs showed improved frequency of patient safety incidents. Two studies reported high quality trials due to adequate reporting of randomisation but all the five studies were judged low quality overall due to high risk of performance bias. All trials were conducted between 2012 and 2016 demonstrating a recent evidence of primary research investigating the effects of complex interventions to improve MRPSIs identification and reporting.

Evidence shows effectiveness of using complex interventions for the identification or reporting of MRPSIs in primary care. Evidence also shows that using patient medical records is an effective method to identify and encourage reporting of MRPSIs. Organisational culture is an important determinant of effectiveness of incident reporting systems. Achieving patient-centred, safe and effective use of medicines is coupled with applying the principle of a just culture in healthcare organisations. Due to the limited number of studies included, varied outcome measure definitions employed, findings should be interpreted with caution for different contexts.

References

1. Muhammad, K.W., Avery, A.J., B, M.J. and Carson-Stevens, A., 2016. Medication safety incidents reported to the National Reporting and Learning System in England and Wales: a review of primary care incidents classified as severe harm and death International Journal of Pharmacy Practice. 24(Supplement 3), 0108.
2. Effective Practice and Organisation of Care (EPOC). 2015. Suggested risk of bias criteria for EPOC reviews. EPOC Resources for review authors [Online]. Oslo: Norwegian Knowledge Centre for the Health Services. Available: http://epoc.cochrane.org/epoc-specific-resources-review-authors [Accessed 3/5/2016].

A systematic review of practical tools or frameworks to help deconstruct safety incidents and learn from them

N. Serou[a,b,c], L. M. Sahota[a], A. K. Husband[a], S. P. Forrest[a], K. Moorthy[b] and S. P. Slight[a,d,e]

[a]School of Pharmacy, King George VI Building, Newcastle University, Newcastle upon Tyne, UK [b]Theatres and Anaesthetics, Imperial College Healthcare NHS Trust, UK [c]College of Nursing, Midwifery and Healthcare, University of West London, UK [d]Newcastle upon Tyne Hospitals NHS Foundation Trust, Queen Victoria Road, Newcastle upon Tyne, UK and [e]The Centre for Patient Safety Research and Practice, Division of General Internal Medicine, Brigham and Women's Hospital and Harvard Medical School, Boston, MA, USA
n.serou2@newcastle.ac.uk

According to the *National Reporting and Learning System* recent report, 1,798,186 patient safety incidents occurred between July 2015-June 2016.[1] Organisations should learn from these safety incidents so similar events do not occur in future. A number of tools and initiatives were used within industry to learn from safety incidents, some of which could be adapted and used in health care.

The aim of this study was to explore what practical tools are currently available to help multi-disciplinary teams deconstruct and learn from safety incidents.

This review followed the PRISMA-P reporting guidelines and was registered with the PROSPERO database (CRD42017071528). We defined a practical tool as either a tool, learning process or approach used to learn from safety incidents. We defined a safety incident as any unplanned or undesired event that hindered the completion of a task and may have caused injury or illness.[2] We generated a list of MeSH terms and text words, with expert input from the University librarian. We searched MEDLINE, EMBASE, CINALH, PsycINFO, SCOPUS, Web of Science and ProQuest in June 2017. Doctoral dissertations and conference proceedings identified in the grey literature (http://www.opengrey.eu), and reports from National Patient Safety Agency, and Local and Regional Clinical Commission Groups were also reviewed. We included primary research studies or reviews that described a practical tool used previously in any sector e.g., healthcare, mining industry, aviation, energy, construction companies etc. A customised data extraction form was used to capture pertinent information from included studies and the CASP tool to appraise their quality.

A total of 4,724 articles were identified, with 942 duplicate articles removed and 3,759 excluded at the title (825), abstract (2,524) and full text (410) stages. Twenty-three articles were included in the final review (22 full text studies and one review). Six practical tools were found and four key themes emerged: (1) Debriefing, (2) Simulation training, (3) Usage of technology, (4) Dissemination of safety incidents. Debriefing was one method used to help staff to deconstruct incidents and learn as a team. One such tool included in the debriefing was the After Action Review model, which centred on four questions: What was expected to happen? What actually occurred? What went well and why? What can be improved and how? The Aviation industry used trained psychologists to facilitate debriefing sessions, which were mandatory for staff to attend. Studies have suggested that the timing, facilitation and consistency of debriefing was essential to maximise learning. All tools highlighted in the literature had pros and cons depending on the sector in which they were applied. Simulation training involved asking staff to relive the event again by performing the task(s) in a role play, and sharing the learning and recommendations following an incident. The use of e-learning and safety apps were also recommended as a way of disseminating key safety messages, although some messages were not actioned due to poor leadership and governance.

Each practical tool had pros and cons. The timing, facilitation and consistency of debriefing were essential to maximise learning. Organisations should be encouraged to use practical tools to help staff learn from safety incidents

We excluded studies that focused solely on learning theories and barriers to learning from incidents. These studies may provide further insights and recommendations for prospective learning tools.

References

1. National Reporting and Learning System (NRLS) organisation patient safety incident workbook: July 2015- June 2016. 28th September 2016.
2. Urban Kjellen, Eirik Albrechtsen (2017). Prevention of Accidents and Unwanted Occurrences: Theory, Methods, and Tools in Safety management. Second edition. CRC Press.

Polypharmacy

Interventions to improve the appropriate use of polypharmacy for older people: an updated Cochrane systematic review

A. Rankin[a], C. Cadogan[b], J. Cooper[c], S. M. Patterson[d], N. Kerse[e], C. R. Cardwell[f], M. C. Bradley[g], C. Ryan[h] and C. Hughes[a]

[a]School of Pharmacy, Queen's University Belfast, UK [b]School of Pharmacy, Royal College of Surgeons in Ireland, Ireland [c]Bamford Centre for Mental Health and Wellbeing, Ulster University, UK [d]Health and Social Care Board, UK [e]Faculty of Medical and Health Sciences, University of Auckland, New Zealand [f]Centre for Public Health, Queen's University Belfast, UK [g]Centre for Drug Evaluation and Research, Food and Drug Administration, USA and [h]School of Pharmacy and Pharmaceutical Sciences, Trinity College Dublin, Ireland
c.hughes@qub.ac.uk

The use of multiple medications (polypharmacy) in older people (>65 years) is common clinical practice and

increasingly recognised as potentially problematic rather than always inappropriate. Accordingly, assessments of prescribing appropriateness needs to differentiate between 'many' medicines (appropriate polypharmacy) and 'too many' medicines (inappropriate polypharmacy).[1] Selecting the most effective interventions to ensure appropriate polypharmacy in older people remains challenging.

The aim of this Cochrane review was to determine the effectiveness of interventions seeking to improve appropriate use of polypharmacy in older people, by updating the review which was published in 2014.[2]

A systematic review was undertaken using standard Cochrane methodology. A range of electronic databases (e.g. EMBASE, MEDLINE) were searched for articles published between November 2013 and May 2016 using relevant search terms (e.g. 'polypharmacy', 'inappropriate prescribing') as per original review.[2] Eligible studies (randomised controlled trials, non-randomised controlled clinical trials, controlled before-and-after studies, interrupted time-series studies) evaluated interventions aimed at improving appropriate polypharmacy in older people, using validated measures of prescribing appropriateness [e.g. Beers criteria, Medication Appropriateness Index (MAI)]. Primary outcomes of interest were changes in the prevalence of appropriate polypharmacy and hospital admissions. Secondary outcomes included medication-related problems (e.g. adverse drug reactions). Two review authors independently screened abstracts, extracted data and assessed risk of bias for included studies. Study-specific estimates were pooled for explicit/criterion-based measures (e.g. Beers) and implicit/judgement-based measures (e.g. MAI) of prescribing appropriateness using a random-effects model to yield summary effect estimates and 95% confidence intervals (CIs). The GRADE approach was used to assess the quality of evidence for pooled effect estimates. Ethical approval was not required.

Eight studies were added to the review bringing the total number of included studies to 20, involving 25,674 participants. Two interventions involved computerised decision-support and the remainder comprised complex pharmaceutical care-based interventions across various clinical settings. Changes in medication appropriateness scores using implicit tools showed a greater reduction in inappropriateness between baseline and follow-up in intervention groups compared to control groups (mean difference -6.34, 95% CI -12.23, -0.45). Assessments of the number of potentially inappropriate medications (PIMs) and potential prescribing omissions (PPOs) using explicit tools showed fewer PIMs (standardised mean difference -1.06, 95% CI -2.01, -0.12) and fewer PPOs per participant (standardised mean difference -0.81, 95% CI -0.98, -0.64) in intervention groups compared to control groups post-intervention. The proportion of patients prescribed ≥1 PIM (relative risk 0.61, 95% CI 0.42-0.89) was lower in intervention groups compared to control groups post-intervention. The overall quality of evidence for all pooled outcomes was low or very low. Evidence of the effects of interventions on hospital admissions and medication-related problems was conflicting.

This updated review found that included intervention studies reduced inappropriate prescribing for older people receiving polypharmacy. However, the quality of evidence from pooling data across studies remains weak. It is also still unclear whether interventions resulted in clinically significant improvements for patients. Future intervention studies could benefit from available guidance relating to intervention development, evaluation and reporting.

References

1. Cadogan CA, Ryan C, Hughes CM. Appropriate polypharmacy and medicine safety: when many is not too many. Drug Safety 2016; 39(2): 109-16.
2. Patterson SM, Cadogan CA, Kerse N et al. Interventions to improve the appropriate use of polypharmacy for older people. Cochrane Database Syst Rev 2014; 10: CD008165.

Development of a core outcome set for use in interventions aimed at improving appropriate polypharmacy in older people in primary care

A. Rankin[a], C. Cadogan[b], C. Ryan[c], B. Clyne[d], S. M. Smith[d] and C. Hughes[a]

[a]School of Pharmacy, Queen's University Belfast, UK [b]School of Pharmacy, Royal College of Surgeons in Ireland, Ireland [c]School of Pharmacy and Pharmaceutical Sciences, Trinity College Dublin, Ireland and [d]Department of General Practice, Royal College of Surgeons in Ireland, Ireland
a.rankin@qub.ac.uk

Intervention studies seeking to improve appropriate polypharmacy (≥4 medicines) in older people (≥65 years) often differ in reported outcomes, making it challenging to synthesise results.[1] To address this, the Core Outcome Measures for Effectiveness Trials (COMET) initiative has proposed the development of a core outcome set (COS).[2] A COS is an agreed, standardised outcome set which should be measured and reported, as a minimum, in all trials in a specific clinical area. The COMET initiative also recommends involving public participants in COS development, facilitating a move away from researcher-only selected outcomes.[2]

This study aimed to develop a COS for use in effectiveness trials of interventions aiming to improve appropriate polypharmacy in older people in primary care.

Standard COS development methodology was followed, comprising: (1) an update of an existing Cochrane systematic review[1]; (2) identification of outcomes from previously collected qualitative data, and; (3) an online, three-round, Delphi consensus exercise. An international expert panel (n = 120) and a public participant panel (n = 40) were recruited for the Delphi exercise. Expert

panellists included those with knowledge relevant to the COS (e.g. general practitioners, pharmacists, researchers). Public panellists included older people who were resident in the community. Identified outcomes were scored on a 9-point Likert scale using the GRADE scoring system anchored between 1 (not important) and 9 (critical). Consensus criteria for outcome inclusion were defined as ≥70% of participants scoring the outcome as 'critical' and ≤15% scoring the outcome as 'not important'. The seven highest ranked outcomes were also identified in line with COMET recommendations.[2] The study was approved by the School of Pharmacy Ethics Committee, Queen's University Belfast.

Twenty-nine outcomes identified from updating the Cochrane review and existing qualitative data were included in the Delphi exercise. After three Delphi rounds, which were completed by 152, 140 and 127 participants respectively, the final COS comprised 16 outcomes, with priority given to the seven highest ranking outcomes: 'serious adverse drug reactions', 'medication appropriateness', 'falls', 'medication regimen complexity' 'quality of life', 'mortality' and 'medication side-effects'. The remaining nine outcomes were: 'hospitalisations', 'patient's knowledge', 'adherence', 'clinically significant drug interactions', 'number of regular medicines prescribed', 'therapeutic duplication', 'prescribing errors', 'cognitive functioning' and 'patient perception of treatment (or medication) burden'.

This work has identified 16 outcomes, which should be considered for inclusion in effectiveness studies aimed at improving appropriate polypharmacy in older people in primary care. We recognise that having many outcomes may be impractical. Therefore, in line with COMET recommendations, we have highlighted the seven highest ranking outcomes. We suggest that these seven outcomes should be priority outcomes, with the remainder considered depending on the specific intervention and theoretical underpinning. The value of public participants' involvement was evidenced in the final Delphi round whereby the outcome 'patient's knowledge' would not have been included if the panel only comprised experts. Implementation of this COS may benefit patients and healthcare providers by facilitating evidence synthesis. Future work should determine the most appropriate methods of measuring each included outcome.

References

1. Patterson SM, Cadogan CA, Kerse N et al. Interventions to improve the appropriate use of polypharmacy for older people. Cochrane Database Syst Rev 2014; 10: CD008165.
2. Williamson PR, Altman DG, Bagley H et al. The COMET Handbook: version 1.0. Trials 2017; 18(3): 280.

Clinical Practice (Antipsychotics)

Patterns and indications for antipsychotic utilisation in older adults with intellectual disability: a cross sectional study

M. O'Dwyer, J. O'Connell, C. O'Dwyer, N. Mulryan, M. McCarron, P. McCallion and M. Henman

Trinity College Dublin, Ireland
modwyer6@tcd.ie

There have been concerns that antipsychotics have been overused in people with intellectual disabilities (ID), and may be prescribed inappropriately for behaviours that challenge (BWC) in the absence of diagnosed mental illness. In addition, as people with ID live longer, they are exposed to additional risks associated with antipsychotic use in older adults (>40 years) including; frailty, cognitive decline and mortality.

Determine the prevalence of exposure to antipsychotics and antipsychotic polypharmacy (concurrent use of 2+ antipsychotics) among older adults with ID.

Examine the patterns of antipsychotic utilisation (typical/atypical).

Examine the association with antipsychotic use and demographic and clinical characteristics including diagnoses, BWC and concurrent use of medicines that act on the CNS.

Data for this cross-sectional study was drawn from Wave 2 (2013/2014) of the Intellectual Disability Supplement to the Irish Longitudinal Study on Ageing (IDS-TILDA); a nationally representative longitudinal study which examines the ageing of persons over 40 years with ID. Medication data (self/proxy report) was available for 95.6% ($n = 677$) and antipsychotic usage was determined by the World Health Organisation (WHO) Anatomical Therapeutic Index Code N05A. Antipsychotic polypharmacy was defined as use of 2+ antipsychotics.

To examine antipsychotic use and indications those who reported hallucinations/psychosis/schizophrenia were grouped together to describe those with a psychotic disorder and manic depression was included as a licenced indication for AP use ($n = 73$). BWC were also reported in the study, as were other diagnosed mental health conditions. Bivariate analysis was employed to examine associations between antipsychotic use and demographic and clinical characteristics including mental health conditions and BWC, a P-value of <0.05 being considered significant.

Of the total population ($n = 677$), 45.1% ($n = 305$) were exposed to antipsychotics and of those exposed 20.7% ($n = 63$) were exposed to antipsychotic polypharmacy. Risperidone was most frequently reported: 36.1% (110) of those exposed to antipsychotics, followed by

olanzapine 31.5% (96) and chlorpromazine (55, 18.1%). Of 282 adults with antipsychotic use and diagnosis information, 25.9% (73) reported a psychotic disorder, 57.4% (162) another mental health condition, 8.5% (24) no mental health condition but BWC and 8.2% (23) no mental health conditions or BWC. There was a significant association ($P < 0.001$) between exposure and place of residence; 54% (149) of those in institutional settings exposed compared to 45% (135) in community group homes and 20.6% (21) who lived independently. Having severe/profound ID ($P = 0.03$), and reporting a doctor's diagnosis of a mental health condition ($P < 0.001$) and reporting behaviours that challenge ($P < 0.001$) were significantly associated with use. Among those reporting antipsychotic polypharmacy, 60.3% had concurrent antiepileptics, compared to 48.1% of those with one antipsychotic ($P < 0.001$).

Over four in ten of older adults with ID in the study were exposed to antipsychotics. The reported use of antipsychotics significantly exceeded reported doctor's diagnosis of psychotic conditions or manic depression. As study limitation was that the mental health conditions and medication information was based on self-report and/or proxy report. These findings highlight the importance of medication review to prevent inappropriate prescribing of antipsychotics.

A methodological study describing the development of the Rationalising Antipsychotic Prescribing in Dementia (RAPID) intervention using the behaviour change wheel, with public and patient involvement

K. A. Walsh[a], J. Mc Sharry[b], J. Presseau[c,d], S. Byrne[a], J. Browne[a], K. Irving[e] and S. Timmons[a]

[a]University College Cork, Ireland [b]National University of Ireland Galway, Ireland [c]Ottawa Hospital Research Institute, Canada [d]University of Ottawa, Canada and [e]Dublin City University, Ireland
Kieranwalsh@umail.ucc.ie

Antipsychotic prescribing in care home residents with dementia is prevalent despite the known harms and minimal benefits.[1] Many interventions have been shown to be effective at reducing inappropriate antipsychotic prescribing in this population in the short term, however there is a lack of evidence to support the sustainability of effects. There is a need to design an intervention based on best available evidence and appropriate theory to address this implementation issue. The Behaviour Change Wheel (BCW) is an approach for applying behavioural theory to intervention development.[2] Furthermore, involving carers and people with dementia in research, through their expertise by experience, helps to ensure that the research is relevant to them, and can also provide the researchers with unique perspectives.

The aim of our methodological study was to describe the development of an evidence-based, theoretically-informed intervention to improve the appropriateness of antipsychotic prescribing in care home residents with dementia, using the BCW approach, with Public and Patient Involvement (PPI) throughout.

Ethics approval was granted by the local ethics committee. Written informed consent was provided for participation in the semi-structured interviews and for involvement on the advisory groups. Two advisory groups were established, one with people with dementia, and the other with carers. The advisory groups provided insights into living with dementia, and caring for someone with dementia including managing behavioural symptoms. Stakeholder discussions also occurred with GPs and nurses to inform development of the intervention.

Following the three BCW stages, we sought to (1) understand the behaviour, (2) identify intervention options and (3) identify content and implementation options. To understand the behaviour, we conducted a systematic review of qualitative evidence ($n = 18$ studies), and a semi-structured interview study ($n = 27$ participants) using the Theoretical Domains Framework. To identify the intervention options that we believed would most likely have the potential to change behaviour, we utilised the APEASE (affordability, practicability, effectiveness, acceptability, side effects and equity) criteria, with advisory and stakeholder input. To identify content and implementation options, we initially created a long list of potential Behaviour Change Techniques (BCTs) using various methods and a consensus activity to decide upon a definitive list. We looked at the evidence, and discussed with stakeholders to determine the most effective, practicable and acceptable mode of delivery.

We identified appropriate requesting and appropriate prescribing of antipsychotics by care home staff and GPs respectively, as our target behaviours. Ultimately, we combined five intervention functions and operationalised 12 BCTs to form the Rationalising Antipsychotic Prescribing in Dementia (RAPID) intervention. The RAPID intervention is delivered using face-to-face education and training with care home staff, educational outreach with GPs and an assessment tool within the care home environment.

This study successfully incorporated the voice of people with dementia and carers into the development of a complex intervention, however challenges existed with regards to their involvement as co-researchers. The RAPID intervention is currently undergoing feasibility testing with a view to evaluating the effectiveness of the intervention in a future randomised controlled trial.

References

1. Janus SI, van Manen JG, IJzerman MJ, Zuidema SU. Psychotropic drug prescriptions in Western European nursing homes. *Int Psychogeriatr* 2016; 28(11):1775-90.

2. Michie S, van Stralen MM, West R. The behaviour change wheel: a new method for characterising and designing behaviour change interventions. *Implementation Sci* 2011; 6(1): 42.

Pharmacy Education I

Do community pharmacy placements support the new integrated approach to pharmacy education? Student perspectives from the University of Sunderland

K. Moffitt and K. Davison

University of Sunderland
kathryn.moffitt@sunderland.ac.uk

Clinical practice placements aim to provide learning opportunities in which students can apply knowledge and skills in a 'real-life' setting in order to increase preparedness to provide patient-centred care in today's evolving healthcare environment.[1,2]

The aim of this research was to investigate MPharm student perceptions of community pharmacy placements and how effective they are at preparing students for clinical practice.

A full cohort of MPharm students ($n = 860$) were invited to complete an online questionnaire exploring their opinions towards practice placement provision within community pharmacy. The design of the questionnaire was informed via thematic analysis of a focus group held with a representative sample of MPharm students, wherein the research question evolved. The questionnaire was disseminated to all students via the University's Virtual Learning Environment over a 2-week period.

Anonymous responses were collated electronically and statistically analysed via SPSS V22. Response frequencies within the questionnaire were collated to allow analysis of student perceptions and to identify key themes. Chi-squared statistical comparisons (Cramér's V test) were made between responses.

Free text responses were thematically coded and analysed.

The questionnaire generated a 95% response rate ($n = 816$).

The predominant perception of placements was positive: 80.8% of respondents agreed or strongly agreed that the majority of in practice pharmacist supervisors are enthusiastic and well prepared, while 78.3% believed placements had provided them with a valuable learning experience. Negatively 82.4% agreed or strongly agreed that if they had to undertake their pre-registration year with solely experience from placements, they would struggle.

There were statistically significant associations between the benefits of placements and student experience to date (including the year of study and previous pharmacy work experience). Those students with self-arranged work experience found placements organised by the University less beneficial.

Free text responses supported this, students commented that they often felt out of place and unable to get involved in busy pharmacy environments; this was especially true for students in early years of study or those without previous work experience. These students had also completed fewer placements than those in higher levels at the point of data collection, which may have limited the variety of their experiences.

Work-based learning through clinical practice placements is an essential part of the education and training of pharmacists.[1,2] However community pharmacy environments are often busy and unpredictable. Students from lower stages or without pharmacy experience commented that they felt unable to get involved, particularly in busy workplaces. It is reasonable to suggest that community pharmacy sites with lighter workloads may be better suited to students without prior experience, enabling more contact time with supervisors.

Educators should note that community pharmacy placements are clearly beneficial in shaping student understanding of the role of the pharmacist in clinical practice. However this research demonstrates that students feel that aspects of community pharmacy placements could be improved, which in turn would help to prepare them more effectively for future clinical professional careers.

References

1. Smith, A. Darracott, R. Modernising Pharmacy Careers Programme. Review of pharmacist undergraduate education and pre-registration training and proposals for reform 2011. Report to Medical Education England Board.
2. GPhC Future pharmacists – Standards for the initial education and training of pharmacists. May 2011

Knowledge of paediatric pharmaceutical care, a questionnaire based cross sectional study of final year pharmacy students in Jordan

T. L. Mukattash, A. S. Jarab and R. L. Abu Farha

University of Jordan
tlmukattash@just.edu.jo

Advances in paediatric medicine, increasing complexities of childhood disease, and unique dosing and pharmacokinetic challenges all support a growing need for the education of pharmacists in basic paediatric competencies. This is quite important specifically with the high

prevalence of unlicensed and off-label medicine use in children.

The present study aims to explore the perception and attitudes of final year pharmacy students toward their ability to deal with paediatrics, their treatment, and their doses.

The questionnaire was developed after an extensive literature review of studies that assessed healthcare professionals' knowledge of paediatrics. The questionnaire was assessed for face and content validity by being sent to a panel of experts in the field of paediatrics, pharmaceutical care, and quantitative studies. The questionnaire was the piloted among 20 final year pharmacy students. Those were not included in the final analysis.

After obtaining the required administrative and ethical approvals, the questionnaire was administered to final year pharmacy student's at all ten faculties of pharmacy in Jordan. The questionnaire was administered at the end of lectures that were chosen by the faculty's administration.

The questionnaire consisted of 28 questions and was divided into four sections; the first section collected respondents' demographics, while section two aimed at exploring respondent's knowledge of paediatric treatment and dosing. The third section of the questionnaire explored respondents' perceptions of their ability to deal with paediatric treatment and dosing. The fourth section consisted of real life paediatric cases to assess the real ability of respondents to deal with paediatric patients.

A total knowledge score was calculated by summing the correct answers creating a scale of zero to five, where 5 is the highest knowledge score and zero was the lowest knowledge score.

Of 400 students approached 354 (88.5%) students agreed to take part in the study. The majority of respondents ($n = 337$, 95.2%) were aware of the term ' paediatrics '. Up to one third of respondents ($n = 108$, 30.5%) reported not coming through any paediatric dose calculation courses during their education and more than half the respondents ($n = 197$, 55.6%) were not familiar with the term off-label medicines and have not come across it during their education. Respondents were doubtful and not sure that they will be able to recommend treatment for paediatrics ($n = 120$, 33.9%), calculate paediatric doses ($n = 142$, 40.1%), counsel parents of guardians ($n = 159$, 44.9%), and monitor side effects in paediatrics ($n = 255$, 72.0%).

The majority of respondents had a low knowledge score when faced with real-life paediatric cases. On a scale of five 46 (13%) respondents scored zero, 120 (33.9%) respondents scored one, 100 (28.2%) respondents scored two, 74 (20.9%) respondents scored three, and 12 (3.4%) respondents scored four, and only 2 (0.6%) respondents scored 5. No significance difference in knowledge and attitude was found between pharmacy (BSc) or PharmD students nor public or private university students.

The present study sheds the light on the importance of increasing the paediatric content in the pharmacy curriculum adopted by Jordanian Universities. Pharmacy students should take more formal paediatric education

and extensive training in paediatrics to be able to deal with paediatrics and their treatments.

The current situation may have negative effects on pharmaceutical care in children. Prompt and direct action should be taken to develop paediatric pharmacy education and to enhance paediatric pharmaceutical care.

Though they were informed about the anonymity of the study and the freedom to take part in it; the data collection method through classes could have affected the way respondents answered the questionnaire in terms of feeling obliged to complete the study.

References

1. Aucoin R, Buck M, Dupuis L, et al. Paediatric pharmacotherapeutic education: current status and recommendations to fill the growing need. Pharmacotherapy. 2005;25(9):1277–1282.
2. Paediatric Pharmacy Advocacy Group. Comments on ASHP Guidelines on Providing Paediatric Pharmaceutical Services. 2010 http://www.ppag.org/attachments/articles/6/ASHP_response.pdf. Accessed September 10

Patient Experience

Managing medicines and the role of social networks following hospital discharge: qualitative insights from patients with Chronic Obstructive Pulmonary Disease (COPD)

E. I. Schafheutle, T. Fegan and D. M. Ashcroft

Division of Pharmacy and Optometry, School of Health Sciences, Faculty of Biology, Medicine and Health; The University of Manchester, UK
ellen.schafheutle@manchester.ac.uk

In the UK, unplanned hospital admissions (UHAs) related to Chronic Obstructive Pulmonary Disease (COPD) are a major burden on the NHS. While medication can reduce UHAs,[1] little is known about the role of patients' social networks in supporting medicines-taking. This study aimed to describe the activities and strategies recently discharged COPD patients utilise to manage their medicines, and identify the social network members (SNMs) involved.

Semi-structured, face-to-face interviews (average = 39 min) with COPD patients recently discharged from an acute NHS Trust in the Northwest of England between March and August 2016 were conducted, audio-recorded and transcribed verbatim with consent. Maximum variation sampling was used based on gender, disease severity, and discharge pathway. The topic guide and coding framework were informed by

Cheraghi-Sohi et al.'s[2] conceptual framework for 'medication work' for coronary heart disease (CHD), arthritis and diabetes, which identified four types: medication-articulation, informational, emotional and surveillance work. Data analysis was thematic and facilitated by NVivo (v11). NHS ethical approval was obtained.

Seven males and five females, aged between 56 and 84 years, were interviewed. Participants' social networks were small ($n < 5$) and restricted to immediate family members and healthcare professionals. Participants/SNMs performed similar medication-articulation and surveillance work to patients with CHD, arthritis and diabetes, the inter-dependence between which this study conceptualised as surveillance-articulation, i.e. the need to act on this information. Many participants described how they/a family member organised/repackaged their medicines; this was more burdensome for participants taking higher numbers of medicines. Some participants instructed their community pharmacy to assemble dosette boxes monthly. These activities reduced the time required to take medicines at dose times and helped participants keep track of their progress within a day: pills in compartments indicated medication was due, empty compartments assured participants' doses had been taken. Habit/routine (including placing medicines in frequently visited/visible locations within the home) were described as important to patients/family carers with regards to knowing which medicines to take and when. Disruption to routines such as sleep disturbances and the addition of midday doses impacted on participants' ability to take medicines at the prescribed times of the day. In some cases, immediate family members helped maintain participants' routines by reminding and supporting medicines-taking at prescribed times. Waking/sleeping, meals, beverages and the time of day reinforced these routines and assured participants that they had taken the correct medicines at the correct times. While some participants consulted patient information leaflets to address informational needs; predominantly for new/recently changed medicines, participants infrequently described informational work. Emotional work was also rarely described. After discharge, participants commonly reverted to pre-admission routines and strategies for obtaining medication supplies, organising medicines, keeping track of supplies and progress within daily regimens, and monitoring symptoms and prescribing/dispensing.

This qualitative study identified a fifth type of medication work, surveillance-articulation, which was performed by participants/SNMs to resolve issues identified by surveillance work. This study identified potential intervention points to be addressed before and after hospital discharge, with inter-dependence suggesting interventions must address multiple types of 'medication work'.

References

1. From the Global Strategy for the Diagnosis, Management and Prevention of COPD, Global Initiative for Chronic Obstructive Lung Disease (GOLD) 2017. Available from: http://goldcopd.org.

2. Cheraghi-Sohi S, Jeffries M, Stevenson F, Ashcroft DM, Carr M, Oliver K, Rogers A. The influence of personal communities on the self-management of medication taking: A wider exploration of medicine work. Chronic Illn 2015; 11(2): 77-92.

Patient feedback questionnaires to enhance consultation skills of healthcare professionals: a systematic review

H. Al-Jabr, M. J. Twigg and J. A. Desborough

University of East Anglia, UK
h.al-jabr@uea.ac.uk

Practitioners are increasingly encouraged to seek feedback from their patients and colleagues in order to enhance the quality of interactions[1]. Previous systematic reviews of patient feedback were primarily focused on physicians, therefore, this systematic review aims to describe all the potential patient feedback questionnaires available across all practitioners, and to identify their key attributes.

The aim of this systematic review was to identify patient feedback questionnaires that assess and enhance the development of consultation skills (CSs) of individual practitioners.

A systematic search from inception to January 2017 was conducted using seven databases to identify patient feedback questionnaires that met the following inclusion criteria: self-completed by real adult patients, assess CSs of practitioners following a face-to-face encounter and where feedback results were used to develop CSs of individual practitioners. Practitioners were considered if their encounter with a patient was conducted as a component of healthcare delivery. Studies were rejected if they did not meet the inclusion criteria. Only quantitative study designs were included; qualitative studies and reviews were rejected. The review was Prospero registered (CRD42017055365). Search results were restricted to journals written in English language. Results were checked for eligibility by three authors and disagreements were resolved by discussion. Reference lists of relevant studies and Open Grey were searched for additional studies. Authors of studies were contacted by email where necessary for missing data. Studies with missing questionnaires were rejected following failed attempts to contact authors. As a systematic review, no ethical approval was required.

Of 16,312 studies retrieved, sixteen were included, fourteen of which were cross sectional studies, one quasi-experimental study and one randomised controlled study. Twelve patient feedback questionnaires were described and were mostly designed for physicians. Studies required between six and fifty patients per practitioner (PPP) (mean 28 patients), with eleven studies requiring ≥ 25 PPP. Where reported, questionnaires were administered by practitioners ($n = 6$), or by a third party (e.g. receptionist) ($n = 7$). Most questionnaires had limited data regarding their psychometric properties, except

for the Doctor Interpersonal Skills Questionnaire. Most practitioners received individualised reports constructed from their patient feedback. Most studies conducted follow-up, capturing positive views of practitioners regarding the process ($n = 14$). Three studies repeated the feedback process more than once over varying timeframes and all demonstrated improved patient feedback over time.

This review followed a Cochrane Database of Systematic Reviews approach. Several patient feedback questionnaires are available, showing potential for supporting practitioners' development. However, most identified questionnaires were focused on physicians, and there is no evidence regarding their use with pharmacists. Questionnaires need to be validated with all practitioners before evidence of their impact can be evaluated. As with most included studies, for valid and reliable results, feedback should be collected from at least 25 PPP [2], preferably immediately following the encounter. Feedback results should be reported to practitioners and follow-up should be carried out at regular intervals to detect changes in CSs. Limitations encountered with this review include rejecting studies with missing data (i.e. missing questionnaire), and excluding non-English language journals.

References

1. General Medical Council. Colleague and patient feedback for revalidation: General Medical Council; [cited 2017 24 July]. Available from: http://www.gmcuk.org/doctors/revalidation/colleague_patient_feedback.asp.
2. Campbell J, Narayanan A, Burford B, Greco M. Validation of a multi-source feedback tool for use in general practice. Educ Prim Care. 2010;21(3):165-79.

Beliefs and intentions towards reusing medicines in the future: a large- scale, cross-sectional study of patients in the UK

H. Alhamad, N. Patel and P. Donyai

University of Reading
h.q.m.alhamad@pgr.reading.ac.uk

Medicine reuse is the idea that unused prescribed medicines returned by one patient to a pharmacy would be re-dispensed for use by another – a practice not currently permitted in the UK and for which public opinion remains largely unexplored.

Having developed (1) and validated (2) a structured questionnaire to capture people's willingness to take part in medicines reuse in the future, our aim was to disseminate the questionnaire via a market research company (ResearchNow®) to quantify the views of a cross section of 1,000 patients in relation to medicines reuse.

Participants were recruited via an online platform (Qualtrics®) using purposive sampling to include only those with a long-term condition requiring medication. An internal pilot (10% of the total sample, $n = 100$) was undertaken to review and quality-check data before the full launch in September 2017. During data collection, the representativeness of the sample was monitored for geographical spread, age groups and gender balance but no adjustment to the recruitment strategy was necessary. Ethical approval was obtained via the in-school exemption process. Descriptive analysis was completed with the anonymised dataset using SPSS® (V23).

A total of 1,181 people were invited to complete the questionnaire, with 178 excluded because they reported not having a long-term condition, resulting in 1,003 valid responses. In line with census data, 50.7% ($n = 509$) of respondents were female, 92.4% ($n = 927$) were white British and the largest contribution was from those aged 45–64 years (45.9%; $n = 498$).

Most participants thought reusing medicines in the future would be beneficial (54%; $n = 541$) and worthwhile (59%; $n = 591$), would contribute toward reducing the harmful effect of medicinal waste on the environment (74%; $n = 742$) and reducing NHS medicines spend (79%; $n = 792$). This was juxtaposed with a belief that medicines reuse was more likely to result in receipt of low quality (58%; $n = 582$), unsafe (57%; $n = 572$), or incorrect medication (60%; $n = 602$). Nonetheless, more than half intended (55%; $n = 552$) or wanted (57%; $n = 572$) to reuse medicines in the future with the expectation that medicines offered for reuse would have been subjected to safety (93%; $n = 933$) and quality (92%; $n = 923$) checks, would remain in original sealed blister packaging (87%; $n = 873$), with >6 months remaining shelf-life (85%; $n = 853$).

It can be concluded that although people have concerns about medicines reuse, the idea is not unpalatable provided certain caveats are put in place. Research using panels can be limited by issues relating, for example, to whether members are representative of the target population. This was addressed by using quotas and screening questions resulting in a representative sample. However, the use of an online panel would have excluded people with no internet access. The strength of this research is that it captures viewpoints from a representative sample of the UK patient population, providing robust evidence about patients' beliefs and intentions to take part in medicines reuse. The results can inform any future policy on reducing medicines waste through reuse in the future.

References

1. Alhamad H, Patel N and Donyai P. How do people conceptualise the reuse of medicines? An interview study. *International Journal of Pharmacy Practice*. 2017 (In Press). ISSN 0961-7671 https://doi.org/10.1111/ijpp.12391

2. Alhamad H, Patel N and Donyai P. Validity and reliability testing of the Medication Reuse Questionnaire. Presentation at the 13th UKSBM Annual Scientific Meeting; 2017 Dec 13-14; Liverpool, UK

Prescribing

Prevalence and nature of prescribing errors in a mental health setting: initial analysis of a prospective study

H. Scott[a,b], D. Brown[a] and H. Herrera[a]

[a]University of Portsmouth, UK and [b]Essex Partnership University NHS Foundation Trust, UK
hilary.scott@myport.ac.uk

Research on medication errors, and prescribing errors in particular, has concentrated on the acute sector. Little has been published on these issues in mental health, where the frequency and nature of prescribing errors may be different.

The aim of this study was to investigate the prevalence and types of prescribing errors in prescriptions for inpatients in a mental health setting.

Data were collected by 14 pharmacists as part of their routine duties on 25 wards, using methodology previously used in acute hospitals,[1] during two discrete 48-week periods chosen for convenience. The process was piloted at one site, and face-to-face training provided to each pharmacist. Pharmacists screened newly written prescription items using an established definition of prescribing error, adapted for a mental health setting.[2] Data were collected on the number of newly prescribed, or omitted items, and the corresponding number of errors identified. Pharmacists assessed the potential clinical significance of each error using a visual analogue scale, and were validated by a multi-disciplinary panel of experienced healthcare professionals. Ethical approval was obtained from the University of Portsmouth Science Faculty Ethics Committee.

During the two periods, 13,684 prescription items were reviewed for errors or omissions. At least one error was identified in 690 items, of which 60 were excluded as not meeting the error definition, giving an overall error rate of 4.6% (95% CI 4.3–4.9%). Fifty-nine prescription items were affected by two errors, and 19 by three errors, resulting in a total of 727 errors. Prescriptions were written by 208 individual prescribers; nearly two-thirds made at least one prescribing error (64.0%). Errors most commonly involved incorrect administration times/frequencies (22.3%), strengths or doses (19.5%), and formulations (17.3%). Omission of a medicine from the prescription accounted for 8.1% of errors.

Pharmacists recorded an opinion on the clinical significance for 91.5% of the errors identified. Of these, 4.1% were classified as potentially severe errors, and 28% as potentially moderate errors. Three errors were judged to have resulted in actual patient harm (0.4%). The number of doses given or omitted before the error was identified was provided for 78.8% of errors. The error was identified by the pharmacist and corrected before any doses were administered in 61.1% of cases, and after only one dose had been given in 10.6% of cases. In most cases, the pharmacist resolved the error directly (47.0%), contacting the prescriber in 27.3% of cases.

The overall error rate of 4.6% was lower than the 6.3% recently reported in a similarly designed study, but higher than other studies in UK psychiatric hospitals. The results reflected those of other studies which found that only a small proportion of errors had the potential to be serious, and most were promptly resolved by pharmacy staff. Although this was a single-site study and the finding may not be generalisable, it had a large sample size.. The findings support the need for regular clinical pharmacist involvement in mental health wards where pharmacist input is frequently lower than in acute settings.

References

1. Ryan C, Ross S, Davey P, Duncan EM, Francis JJ, Fielding S, et al. Prevalence and causes of prescribing errors: the PRescribing Outcomes for Trainee Doctors Engaged in Clinical Training (PROTECT) study. PLoS ONE. 2014;9(1):e79802.
2. Dean B, Barber N, Schachter M. What is a prescribing error? Qual Heal Care 2000;9(4):232–7.

Benzodiazepine and Z-drug prescribing in Ireland: a repeated cross-sectional study of national prescribing trends over an 11 year period

C. A. Cadogan[a], C. Ryan[b], C. Cahir[c], C. P. Bradley[d] and K. Bennett[c]

[a]School of Pharmacy, Royal College of Surgeons in Ireland, Ireland [b]School of Pharmacy and Pharmaceutical Sciences, Trinity College Dublin, Ireland [c]Population Health Sciences Division, Royal College of Surgeons in Ireland and [d]Department of General Practice, University College Cork, Ireland
cathalcadogan@rcsi.ie

Guidelines advocate that prescriptions for benzodiazepines should be limited to short-term use (i.e. ≤4 weeks) to minimise adverse outcomes (e.g. dependence). However, guidelines are often not adhered to as long-term benzodiazepine prescribing and use persists worldwide. Long-term benzodiazepine use is potentially inappropriate and can give rise to adverse effects including cognitive and psychomotor impairment, particularly in older people. Many countries have reported limited or no significant reduction in benzodiazepine prescribing levels in recent years. In some instances, changes in

benzodiazepine prescribing have been offset by increases in Z-drug hypnotic prescribing (i.e. zopiclone, zolpidem).[1] However, the lack of evidence of any clinically useful differences between both drug classes in terms of effectiveness, potential for adverse effects, dependence or abuse does not support Z-drug prescribing to reduce benzodiazepine prescribing.[2]

This study aimed to examine prescribing rates and secular trends for benzodiazepines and Z-drugs to patients in Ireland using pharmacy claims dispensing data available from 2005-2015.

This study involved a repeated cross-sectional analysis of publically available pharmacy claims dispensing data obtained from the General Medical Services (GMS) pharmacy claims database maintained by the Health Service Executive-Primary Care Reimbursement Services. The GMS scheme provides free health services to people based on means testing and age (those >70 years have higher means thresholds). The sample comprised all GMS-eligible individuals aged ≥16 years from 2005-2015.

Prescribing rates per 1000 eligible GMS population and 95% confidence intervals (CIs) were calculated for each year. Duration of supply and rates of concomitant prescribing of benzodiazepines and Z-drugs were determined. Age (16-44, 45-64, ≥65 years) and gender trends were investigated. Negative binomial regression was used to examine longitudinal trends in rates across years by gender and age groups. P-values < 0.05 were deemed statistically significant. As the data were anonymised and analysed at group level, ethical approval was not required.

Benzodiazepine prescribing rates significantly decreased from 225.9/1000 population (95% CI 224.9-226.9) in 2005 to 166.1/1000 population (95% CI 165.4-166.8) in 2015 (trend, $P < 0.0001$). Z-drug prescribing rates significantly increased from 95.4/1000 population (95% CI 94.7-96.0) in 2005 to 109.1/1000 population (95% CI 108.6-109.7) in 2015 ($P = 0.048$). Approximately one third of individuals received long-term prescriptions (>90 days) for benzodiazepines or Z-drugs. The proportion of individuals receiving combinations of benzodiazepines and Z-drugs increased from 11.9% in 2005 to 15.3% in 2015. Benzodiazepine and Z-drug prescribing rates were highest for older women (≥65 years) throughout the study.

This study provides the first detailed analysis of national benzodiazepine and Z-drug prescribing trends in Ireland using a large, high-quality dataset. Benzodiazepine prescribing to the GMS population significantly decreased over time, and was coupled with significant increases in Z-drug prescribing. The findings show that benzodiazepine and Z-drug prescribing is common in this population, with a third receiving long-term prescriptions demonstrating the need for targeted interventions to reduce potentially inappropriate long-term prescribing and use. As the dataset represents approximately one third of the Irish population and is over-representative of individuals with a lower socioeconomic status, women and older age, definitive prescribing rates for these medications remain to be determined.

References

1. Alessi-Severini S, Bolton JM, Enns MW, Dahl M, Collins DM, Chateau D, Sareen J. Use of benzodiazepines and related drugs in Manitoba: a population-based study. CMAJ Open. 2014;2(4):E208-16.
2. National Institute for Health and Clinical Excellence. Guidance on the use of zaleplon, zolpidem and zopiclone for the short-term management of insomnia. 2004; London: National Institute for Health and Care Excellence.

Assessment of the quality and safety of foundation doctor prescribing: an observational study

K. Reygate[a], S. Williams[b], J. Allen[c] and G. Fleming[a]

[a]Health Education England London and South East Pharmacy [b]University of Brighton [c]Surrey and Sussex Healthcare Trust
Katie.reygate@hee.nhs.uk

The EQUIP study [1] identified that foundation doctors require training at induction on local practices. In response to this a regional prescribing assessment was created to enable trusts to identify weaker prescribers, informing training and support delivered locally.

The aim of this study was to describe candidate performance within the regional prescribing assessment for newly qualified foundation doctors from 2012 to 2016.

This study was judged to be a service evaluation and did not require ethical approval.

All foundation year 1 doctors on induction to acute trusts, undertook the written assessment consisting of 5 scenarios to be answered using local drug charts and guidelines. They were assessed by senior pharmacists and doctors against a set of standard correct answers. The results were collated. Content analysis was used to determine the nature of serious errors (SEs), which were summarised for frequency of occurrence. An error rate was calculated for each iteration of the assessment by dividing the total number of SEs recorded by the total number of prescription scenario (5) and multiplying by 100.

A total of 2941 participants were included representing five cohorts in up to 15 NHS Trusts per year, full results in Table 1. The majority of doctors had graduated from UK medical schools (95.7%). The assessment has seen an increase in mean percentage scores by participants since 2012 (66.2%) to 2016 (81.4%) but in contrast the total number of SEs scored within each cohort has risen over the 5 years (237 – 924 in 2016) with the maximum number of SEs made by a single participant rising to 17 in 2016.

The limitations of this study were the lack of investigation and consideration of the factors impacting candidate's performance e.g. local resource (drug chart and guidelines) and pre-assessment prescribing teaching variation.

Table **1** Assessment of demographic and participant performance

	2012	**2013**	**2014**	**2015**	**2016**
Total Participants	415	524	557	753	692
Total Trusts	10	13	13	14	15
Participants with UK Medical Qualification (%)	96.4	96.2	97.4	93.2	96.2
Participants with Non-UK Medical Qualification (%)	3.1	3.6	2.1	4.8	3.5
Participants with Qualification not disclosed (%)	0.5	0.2	0.5	2.0	0.3
Mean score	22	24	27	26	28
Mean percentage score	66.2	74.93	76.84	80.26	81.4
Standard Deviation	14.8	11.46	11.82	10.11	10.8
UK Graduate Score Mean	66.8	74.4	77.1	81.8	82.3
Total number of Serious Errors made within assessment	237	392	795	912	924
Error rate	11.4	15.0	28.5	24.2	26.7
Maximum no. of Serious Errors made by a single participant	6	6	8	13	17
Average no. of Serious Errors per participant	1.49	1.61	2.03	2.22	2.21
Total participants with 0 Serious Errors	253 (61.0%)	281 (53.6%)	166 (29.8%)	343 (45.6%)	274 (39.6%)
Total participants making ≥1 Serious Errors	162 (39.0%)	243 (46.4%)	391 (70.2%)	410 (54.4%)	418 (60.4%)
Non-UK Medical Qualification with 0 Serious Errors	6 (46.2%)	4 (21.1%)	1 (8.3%)	9 (25.0%)	3 (12.5%)
Non-UK Medical Qualification making ≥ 1 Serious Errors	7 (53.8%)	15 (78.9%)	11 (91.6%)	27 (75.0%)	21 (87.5%)
UK Medical Qualification with 0 Serious Errors	247 (61.7%)	277 (55.0%)	165 (30.4%)	331 (47.2%)	271 (40.7%)
UK Medical Qualification making ≥ 1 Serious Errors	153 (38.3%)	227 (45.0%)	377 (69.6%)	371 (52.8%)	395 (59.3%)

The results identified a need for the continuation of an applied prescribing assessment upon induction, further development of mechanisms to orientate doctors to the prescribing systems locally on induction and generation of support systems to assist doctors who require further development of prescribing skills.

References

1. Dornan T, Ashcroft D, Heathfield H, Lewis P, Miles J, Taylor D, 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 [cited 2017 18/7/17]; Available from: http://www.gmc-uk.org/FINAL_Report_prevalence_and_causes_of_prescribing_errors.pdf_28935150.pdf.

Electronic Systems

Shared electronic patient record access for community pharmacists - is there a need and what are important considerations for the design, use and implementation?

D. Burns[a], G. Stephens[a] and T. Grimes[b]

[a]School of Computer Science & Statistics, Trinity College, Dublin 2, Ireland and [b]School of Pharmacy & Pharmaceutical Sciences, Trinity College, Dublin 2, Ireland
danburns84@gmail.com

A shared electronic patient record (SEPR), and the Summary Care Record (SCR) is available in England, with community pharmacists (CP) access. In Ireland, a SEPR is under development.

This research sought to:

Create an evidence-based conceptual framework to inform the development of SEPRs.

Survey CPs in England and Ireland to describe their views on SEPRs, based on the conceptual framework, and generate recommendations to inform iterative development.

A literature review was conducted, basic thematic analysis was applied and a conceptual framework was developed to inform questionnaire design. CPs were surveyed in Ireland to assess readiness and willingness for SEPR access and in England to learn about their experience of SCR access and views on system implementation. The survey sampling frame was CPs in Ireland and England. Participants were recruited via email invitation and social media containing a hyperlink to the anonymous questionnaires. Ethics approval was granted by the University. Data were analysed using descriptive statistics, and categorical responses were compared using χ^2 test.

The conceptual framework identified four themes to be addressed in SEPR development: Need, Design, Use and Implementation. There were 201 responses in Ireland and 57 in England. As is common with online questionnaires [1], the denominator was unknown and therefore response rate could not be calculated. In Ireland, CPs identified the need for access to patient information about medication history (92%), allergies (92%), diagnoses (91%) and rationale for therapy changes (91%). The most prevalent expected barriers to accessing SEPRs for CPs in Ireland were workload burden (66%), fear of litigation (51%) and concerns about data security (48%).

CPs in England reported that training on SCR was good or very good (59%) and the majority (71%) said it was tailored to their role. Access to information through SCRs was perceived to improve quality of care (92%),

level of involvement in care (83%), service efficiency (69%) and job satisfaction (63%). Reported improvement in service efficiency was greater among frequent users (91%) than infrequent users (50%), χ^2 (1, $n = 34$) $=7.95$, $P < 0.05$. Medication history information in SCRs was reported as being most useful. The speed of accessing SCRs was reported as average or worse by 82%, with the majority (72%) in favour of write-access being extended to users other than GPs.

A greater proportion of CPs in Ireland than England indicated willingness to share information with other community pharmacists (96% v's 83%, χ^2 (1, $n = 258$) $=10.59$, $P < 0.05$), hospital pharmacists (96% v's 84%, χ^2 (1, $n = 258$) $=8.24$, $P < 0.05$) and hospital doctors (95% v's 86%, χ^2 (1, $n = 258$) $=4.30$, $P < 0.05$).

SEPR design should consider the user interface and experience, content of the record and access security. There are many uses for CP access to SEPRs and initial improvements may be anticipated in efficiency of care and access to information out-of-hours. Implementation involves large-scale sociotechnical change and should be carefully planned, with consideration of training, evaluation and impact on role. Small sample size and self-select recruitment may have introduced sampling and extreme response biases.

References

1. Eysenbach, G. (2004). Improving the Quality of Web Surveys: The Checklist for Reporting Results of Internet E-Surveys (CHERRIES). *Journal of Medical Internet Research*, 6(3), e34. https://doi.org/10.2196/jmir.6.3.e34

What are the benefits and challenges of customising a commercial electronic prescribing system? A qualitative study

C. L. Tolley[a,b], N. W. Watson[b], A. Heed[b], A. K. Husband[a], D. W. Bates[c,d,e] and S. P. Slight[a,b,c]

[a]School of Pharmacy, Newcastle University, UK [b]Newcastle upon Tyne hospitals NHS Foundation Trust, UK [c]The Centre for Patient Safety Research and Practice, Division of General Internal Medicine, Brigham and Women's Hospital, Boston, MA, USA [d]Harvard Medical School, Boston, MA, USA and [e]Harvard School of Public Health, Boston, MA, USA
clare.brown@newcastle.ac.uk

A qualitative study to explore how a commercial ePrescribing system has been customised and what the benefits and challenges were.

The National Health Service's (NHS) Integrated Digital Care Fund and the Safer Wards, Safer Hospitals Technology Fund has increased the implementation of commercial electronic prescribing (ePrescribing) systems in hospitals across the UK. Once implemented, these systems are often customised according to the needs of users to help improve their usability, and the safety and quality of care delivered to patients.

The aim of this study, was to explore how a commercial ePrescribing system had been customised in a large UK teaching hospital, and what the benefits and challenges were.

After obtaining all relevant NHS ethical and organisational approvals, a range of ward staff (e.g., doctors, nurses, pharmacists) across four adult wards in a UK teaching hospital and members of the hospital's system development team were recruited. One researcher conducted 33 semi-structured interviews between Mar '15 and Aug '16, lasting between 17–70 min and performed 35 h of observations of users using the system. Users were asked about their experiences of using the system and any customised features. All interviews were transcribed and checked for accuracy. These data were analysed using the Framework Approach.(1) Qualitative data analysis software NVivo version 10 was used; a list of themes were developed inductively, and explanations for recurring patterns in these data were sought, refined and presented.

Participants highlighted a number of key benefits and challenges with customisation of the system: 1) some users changed the layout of the medication list to improve the visibility of an important information e.g., a medication's stop date. However, this came at a cost, as other information (e.g., prescriber details) was now no longer visible; one nurse was concerned she was *"missing drugs and doses" (P4; Nurse)*. 2) The organisation developed order sentences and order sets to improve the safety and efficiency of certain tasks. For example, prescribing regimes that were error prone, which was *"a really good way of preventing that error from happening again" (P30; Pharmacist)*. However, some users had difficulties remembering the 'key trigger words' to identify them. 3) Users reported insufficient use of Clinical Decision Support (CDS) functionality and actively requested that more alerts e.g., drug-drug interactions be switched on. 4) The organisation also modified the system to enable patient's blood glucose levels and insulin to be reviewed and prescribed electronically. However, if prescribing remotely, decisions could be made in the absence of important information not available on the system. 5) The organisation also developed a pharmacy task list, which helped users work more efficiently, but lacked the sensitivity to identify all 'high-risk' patients.

Users described several key benefits of customising the system. However, issues with the design of the medication list and a lack of CDS prevented users from realising the system's full potential. This study took place at one U.K. hospital Trust, and therefore may not be generalisable. Further research should focus on whether similar problems have emerged with other systems and organisations and how these could be addressed.

References

1. Pope C, Ziebland S, Mays N. Analysing qualitative data. BMJ: British Medical Journal. 2000;320(7227):114-6.

Improving safe and appropriate anticoagulant use through electronic health record integration: a proof of concept

F. O'Shaughnessy[a,b], B. Kehoe[c], E. Higgins[c], D. Archer[d], S. Carvell[d], G. Garvan[e], J. Donnelly[a,b], S. Cooley[a], F. Ní Áinle[a,f,g] and B. Cleary[a,b]

[a]Rotunda Hospital, Dublin, Ireland [b]Royal College of Surgeons in Ireland, Dublin, Ireland [c]MN-CMS National Back Office, Dublin, Ireland [d]Common Time, Derby, UK [e]eHealth Ireland, Dublin, Ireland [f]University College Dublin, Ireland and [g]Mater Misericordiae University Hospital, Dublin, Ireland
Foshaughnessy@rotunda.ie

Identifying indications for, and contraindications to anticoagulant therapy are critical steps in ensuring safe and appropriate use. Inaccurate risk assessment may put patients at risk of adverse outcomes from over- or under-use. Accessing electronic health data at the point of care can promote accurate assessment of risk, and encourage safe and effective anticoagulant use.

Our aim was to determine the feasibility of integrating a novel venous thromboembolism risk assessment (VTE-RA) tool into a national Electronic Health Record (EHR).

A collaborative, inter-disciplinary team was established to undertake this proof of concept (PoC) within an EHR virtual testing environment. An existing Microsoft Excel based VTE-RA tool was used as a template[1]. Relevant clinical information which could be extracted from the EHR environment and pre-populated into the VTE-RA tool was identified, defined and agreed (Table 1).

A prototype VTE-RA app was developed using SMART on FHIR*, an emerging standards framework that allows the development of interchangeable healthcare applications[2]. Integration was assessed by validating the accuracy of risk assessments carried out by the app in a sample of virtual patients ($n = 10$). Ethical approval was not deemed to be required.

Through interdisciplinary collaboration and use of innovative technologies a prototype electronic VTE-RA app was successfully developed and interfaced with the EHR in a virtual testing environment. In all test cases ($n = 10$), relevant clinical information was accurately retrieved from the patient's EHR and automatically populated into the appropriate field in the VTE-RA app, resulting in an accurate assessment of VTE risk. The JavaScript code used by the app to calculate the risk score was validated using 1000 sample cases.

We demonstrated that it is possible to interface a VTE-RA app with an EHR. Seamless access to clinical information in real time, at the point of care has the potential to promote accurate VTE-RA, encourage rational use of anticoagulant therapy and therefore effectively prevent VTE.

At a broader level, scalable development and adoption of SMART on FHIR apps across the spectrum of

Table **1** Sources of selected VTE risk factor information within the Cerner EHR environment

| VTE Risk factor | Location of data point within EHR | | |
	Category	Variable	Example of data code
Age ≥ 35 years	Observation > Social History	Date of birth	N/A
Parity ≥ 3	Observation > Social History	Parity	SNOMED Code: 440425000
Body Mass Index (BMI)	Observation > Vital Signs	Height	N/A
		Weight	N/A
		BMI	N/A
Smoking status	Observation > Social History	Smoking status	SNOMED Code: 449868002
Systemic infection	Observation > Vital Signs	White Cell Count	LOINC Code - Leukocytes: 6690-2
		Temperature	LOINC Code –Temperature: 8331-1
		Heart Rate	LOINC Code – Heart Rate: 8890-6
		Respiration Rate	LOINC Code - Breaths: 9279-1
	Medications > Medication Order	Prescription of antimicrobial agent	RxNorm Code - Ciprofloxacin: 2551
Caesarean delivery	General Clinical > Procedure	Procedure	SNOMED Code - Emergency Caesarean Section: 274130007
	General Clinical > Procedure	Procedure	SNOMED Code - Elective Caesarean Section: 177141003
Instrumental delivery	General Clinical > Procedure	Procedure	SNOMED Code – Forceps delivery: 302383004

health services has the potential to deliver smarter, safer, and patient-centred care, ultimately contributing to improved patient outcomes.

* SMART on FHIR: Substitutable Medical Apps, Reusable Technology and Fast Healthcare Interoperability Resource

References

1. O'Shaughnessy F, Donnelly JC, Cooley SM, Deering M, Raman A, Gannon G, et al. Thrombocalc: Implementation and uptake of personalized postpartum venous thromboembolism risk assessment in a high throughput obstetric environment. Acta obstetricia et gynecologica Scandinavica. 2017.
2. Mandel JC, Kreda DA, Mandl KD, Kohane IS, Ramoni RB. SMART on FHIR: a standards-based, interoperable apps platform for electronic health records. Journal of the American Medical Informatics Association. 2016;23(5):899-908.

General Practice

Clinical pharmacists in general practice pilot: semi-structured interviews to explore GP and pharmacist perspectives

R. Mullen, M. Merriman, C. W. Morecroft, R. Prescott and M. Matharu

Liverpool John Moores University, UK
r.mullen@ljmu.ac.uk

Pharmacists have worked in general practice for over 20 years. Their role has strengthened more recently with the 'Clinical Pharmacist in General Practice Pilot', launched in 2015[1], in response to declining GP numbers, and the need for effective multidisciplinary team working. Research on the role of the pharmacist in general practice has historically focused on the impact of pharmacist-led interventions on patient outcomes. Emerging research has explored pharmacist-led care in general practice from the GP perspective[2].

This study aimed to explore the experiences of pharmacists in their new pilot clinical pharmacist role, and gain an understanding of the GP the perspective.

A qualitative approach was undertaken, using face-to-face, semi-structured interviews with a convenience sample of four GPs and eight pilot pharmacists from a multi-partner GP surgery and satellite surgeries. The interviews explored pharmacists as part of the primary care team, their preparedness for the role and activities undertaken. Interviews were audio-recorded, transcribed verbatim and analysed in NVivo 10 using a constant comparison approach. Ethical approval was obtained from the School of Pharmacy Research Ethics Committee.

Three main themes were identified, including, role, integration, training and support. Pharmacists described their role as being largely undefined. While this allowed for pharmacists and GPs to develop the role in line with practice needs and pharmacist skills, it also created uncertainty around expectations of the pharmacist, from the perspective of the GPs, practice staff and pharmacists themselves.

Respondents held mixed views about pharmacist integration into the practice team. Although they felt accepted and valued, some pharmacists did not feel fully integrated because of the newness of a role that is undefined, and time needed to bed into the team. For example, pharmacists were unintentionally excluded from practice meetings where they felt they could contribute and learn about patient and practice matters. In contrast, one GP considered the pharmacist as having a definite place in the team.

Practice-specific training was felt to be lacking and both pharmacist and GP felt that an induction programme would benefit pharmacists new to the practice, particularly those from hospital and community pharmacy that are also new to the setting. Clarification of the pharmacist's role was also considered to be an important part of their induction to ensure they and the practice team understood the pharmacist's responsibilities. Alongside training on the clinical system, it was important for the pharmacists to understand the operational aspects of each practice – which often lacked policies and procedures to refer to – to help them prepare for the role.

Although this is a small-scale study, which limits the findings, it provides an insight into pharmacist and GP perceptions of the pilot clinical pharmacist role. While undefined roles, mismatched expectations of the pharmacists' responsibilities and in some cases lack of integration were identified; it must be recognised that this pilot clinical pharmacist role is in its infancy and requires time to develop. However, these findings may help prepare future waves of pilot sites.

References

1. NHS England. Clinical Pharmacists in General Practice Pilot. Available from: https://www.england.nhs.uk/gp/gpfv/workforce/building-the-general-practice-workforce/cp-gp/ (accessed 5th October 2015)
2. Rokib T. Pharmacist led care in general practice (PLAGE Study). London: Pharmacy research UK; 2017. Available from: https://pharmacyresearchuk.org/wp-content/uploads/2017/01/Pharmacist-led-care-in-General-Practice.pdf (accessed 25th January 2018)

Evaluating the feasibility of an academic detailing intervention with GPs in primary care: a mixed methods study

D. O. Riordan[a], E. Hurley[b], C. Sinnott[c], R. Galvin[d], K. Dalton[a], P. M. Kearney[e], J. D. Halpin[f] and S. Byrne[a]

[a]Pharmaceutical Care Research Group, School of Pharmacy, University College Cork, Ireland [b]Centre for Health Policy and Management, Trinity College Dublin, Ireland [c]Cambridge Centre for Health Services Research, Department of Public Health and Primary Care, Cambridge Institute of Public Health, Cambridge, UK [d]Department of Clinical Therapies, Health Research Institute, University of Limerick, Ireland [e]Department of Epidemiology & Public Health, University College Cork, Ireland and [f]Department of Elderly Medicine, University Hospital Limerick, Ireland
davidoriordan@ucc.ie

Academic detailing or educational outreach is a form of continuing medical education (CME) in which a trained health professional, such as a doctor or pharmacist, visits prescribers in their practice to provide unbiased evidence-based information [1]. While academic detailing has been adopted in Australia and the United States, this strategy is not routinely used in Ireland.

The aim of this study was to assess the feasibility and acceptability of a pharmacist-led academic detailing intervention with a sample of practising GPs in a region of southern Ireland.

Ethical approval was obtained for this study. Prior to commencing GP recruitment, a meeting was arranged with three GPs to discuss a topic for the intervention. The intervention was delivered to GPs between June and September 2016. A mixed methods feasibility study was conducted, utilising quantitative data from patient medical records in those ≥65 years with urinary incontinence and qualitative data from focus groups with GPs who participated in the intervention. The focus groups were transcribed verbatim and analysed using thematic analysis. The medical records for all patients aged ≥65 years who were attending a participating GP with a diagnosis of urinary incontinence were retrieved and analysed using a before-after approach. The measures of prescribing assessed before and after the intervention were: lower urinary tract symptoms-Fit fOR The Aged (LUTS-FORTA) criteria, Drug Burden Index, and the Anticholinergic Cognitive Burden scale.

The topic of urinary incontinence was selected by GPs as they reported a desire to become more knowledgeable about this condition. Twenty-three GPs participated in the academic detailing intervention and 14 attended focus groups. The mean number of participants per focus group was 3 (range 2–4). They described the educational materials as being of high quality, clearly presented, and easy to follow. Participants appreciated the succinct nature of the information but would have preferred a more easily retrievable format, such as an online version rather than paper-based. The medical records of 154 patients were analysed. The mean age (±SD) of patients was 75 (7.2) years. The proportion of females was 72.1%. There was minimal or no change in any of the prescribing measures used.

This study demonstrated that a pharmacist-led academic detailing intervention was acceptable to GPs in a selection of different types of general practice in Ireland. Overall, participants highly valued the evidence-based approach of academic detailing. Nine of the GPs who participated in the intervention weren't available to attend the focus group. All participating GPs were contacted in advance about the focus groups; however, some were on holidays on the scheduled date while others who agreed to participate had to cancel at the last minute due to time constraints during work or emergency situations that arose with patients. There was no control group used in the study, and as a result this limited the comparison between the GPs who received the intervention and those who didn't. The findings from this study will inform the planning and design of larger studies, enhancing their likelihood of success.

References

1. Allen M, Ferrier S, O'Connor N, Fleming I. Family physicians' perceptions of academic detailing: a quantitative and qualitative study. *BMC Medical Education* 2007; 7:36. 1-9.

A comparison of electronic primary care medication records as sources for medicines reconciliation

E. K. Smallwood, S. James and A. J. Basey

Royal Liverpool University Hospital, UK
Emma.smallwood@rlbuht.nhs.uk

Electronic summary care records (SCR) are routinely used in hospitals to assist accurate medicines reconciliation[1]: two records used within an English Hospital Trust are the national SCR and Egton Medical Information System (EMIS). Despite both theoretically containing identical GP data, some differences have been noted locally.

The aim of this study was:
(1) To compare SCR and EMIS as sources for medicines reconciliation.
(2) To determine the accuracy of medication records.
(3) To identify medication discrepancies.
(4) To assess the quality of allergy information.

This study was classified as an audit; ethical approval was not required.

Patients who were prescribed a minimum of four repeat medicines and had a medicines reconciliation completed by a pharmacist using at least two sources[1] were recruited. Patients who were unable to consent to access to their electronic medication records were excluded. The final pharmacist medicines reconciliations

were used retrospectively as the 'gold standard' for comparison with SCR and EMIS records. Discrepancies identified were classified in accordance with the UKMI tool[2].

Hundred and five medicines reconciliations were audited; 83 (79%) had used EMIS/SCR. SCR records were available for 102(97%) patients and EMIS for 71 (68%) had they been needed.

Of the 102 SCR records 33(31%) matched the pharmacists medicines reconciliation exactly; 228 discrepancies were identified (2.2 per patient). For EMIS 24(23%) records matched exactly; 133 discrepancies were noted (1.9 per patient).

Discrepancies included 93 medicines not listed in SCR/EMIS, 46 incorrect doses, 25 incorrectly discontinued and 4 incorrect medicines. Approximately 70% of discrepancies could have resulted in the omission of a medicine; 28% were classified as severe (e.g. insulin), 32% moderate (e.g. antidepressants) and 40% minor (e.g. laxatives) as per UKMI critical medicines tool[2].

SCR had 78% of patient reported allergies recorded with reaction details for 35%; EMIS had 75% with details for 9%.

The results show that neither SCR nor EMIS reliably reflect all medication currently being taken by patients and therefore should be used to inform the medicines reconciliation process rather than being relied upon as being comprehensive sources. A number of discrepancies were identified in primary care records which, if unnoticed, could have caused unnecessary deterioration in the patient's condition. In line with WHO guidance a minimum of two sources should be used for medicines reconciliation whenever possible[2].

It is unclear why discrepancies occur but possible reasons include medicines being accidentally discontinued on the SCR/EMIS records by the GP, hospital only medicines not being recorded on SCR/EMIS and hospital letters either not being received by the GP or not acted upon.

Allergy information for many patients was incomplete which could lead to life-threatening events if patients are inadvertently administered medication to which they are allergic. In the future with increasing polypharmacy it is imperative that there is one shared comprehensive electronic medication record.

This study involved only two primary care systems, the results may not be representative of other available systems. The pharmacists' medicines reconciliations were used as the gold standard, however, on occasion errors may have occurred due to the complexity of the process.

References

1. NHS Specialist Pharmacy Service. Improving the Quality of Medicines Reconciliation. A best practice resource and toolkit Version 1. SPS 2015.
2. UKMI. NPSA Rapid Response Report: Reducing Harm from omitted and delayed medicines in hospital. A tool to support local implementation. London Medicines Information Service 2010.

Potentially Inappropriate Prescribing

A prospective observational study investigating the association between potentially inappropriate prescribing, as identified by the PROMPT criteria, and adverse drug reactions contributing to hospitalisation in middle-aged patients

T. Smeaton[a,b], L. McKenna[a], R. Nevin[a], K. S. Ahmed[a], A. Beirne[a], P. McElwaine[a], H. Cooney[a], J. Cullen[a], E. Deasy[a], M. Widdowson[a] and T. Grimes[b]

[a]Tallaght Hospital, Dublin, Ireland and [b]School of Pharmacy and Pharmaceutical Sciences, Trinity College Dublin, Ireland
terry.smeaton@amnch.ie

Potentially inappropriate prescribing (PIP) is common among middle-aged adults (45-64 years) in primary care.[1] Little is known about adverse drug reactions (ADRs) in middle-age, and how they relate to PIP. In order to determine the risk posed by PIP and ADRs in middle-age, data is needed on their prevalence, clinical significance and association in this cohort specifically.

The aim of this study was to explore the relationship between potentially inappropriate prescribing (PIP), as identified by the PROMPT (PRescribing Optimally in Middle-aged People's Treatments) criteria, and adverse drug reactions contributing to hospitalisation (cADRs) in middle-aged patients.

A prospective observational study was undertaken. The sampling frame was middle-aged patients presenting to the Acute Medical Assessment Unit (AMAU) of the study hospital. Patients using ≥3 medicines pre-admission were included. Those who required an interpreter or presented with deliberate self-harm were excluded. The PROMPT criteria were applied to each pre-admission medication list to identify PIP. Patients were screened for potential ADRs present at hospital presentation. Potential ADRs were assessed for strength of causality (Naranjo algorithm) and those identified as possible, probable or definite were categorised as ADRs. These were assessed for preventability (Hallas criteria), severity (Hartwig severity scale) and relationship to hospitalisation (senior physician assessment). The association between PIP and both ADR and cADR was investigated using the Pearson' Chi-squared test. Multi-variate logistic regression analyses were undertaken for PIP and ADR exposure [adjusted for gender, age, Charlson Co-morbidity Index (CCMI) score and polypharmacy]. A sample size of 100 patients was required for multi-variate regression analysis, assuming a PIP prevalence of 50% (dependent variable) with five independent variables [2]. Research ethics approval was granted by the study hospital.

One hundred patients were recruited. Median age was 57 years [Inter-quartile range (IQR) 52-61], median

CCMI score was 0 (IQR 0-1) and median number of pre-admission medicines was 8 (IQR 5-10). Prevalence of PIP was 48% of patients. 23 ADRs involving 38 drugs were detected in 21% of patients. A total of 14% of patients had a cADR, and 7% had a preventable cADR. Of the 23 ADRs, the majority ($n = 14$) were categorised as moderate in severity. There was no association identified between the presence of PIP and occurrence of cADRs (x^2=3.58, $P = 0.06$). Having PIP was associated with occurrence of any ADR [adjusted odds ratio (aOR) 3.7, 95% CI 1.1-11.8] and with hospital admission from the AMAU (aOR 3.8, 95% CI 1.2-12.4).

Presence of PIP was not associated with cADRs in this study. However, it was associated with any ADR occurrence and hospital admission. Additional research is needed to further explore the relationship between PIP and ADRs in middle-aged hospitalised populations, and to identify the risk factors for same. Policymakers should consider the burden which PIP and ADRs place on limited healthcare resources in middle-age, and how this may change as this population grows older. A potential limitation of this study was its small sample size, which may not have been sufficiently powered to detect the association between PIP and cADRs.

References

1. Moriarty F, Cahir C, Bennett K, Hughes C, Kenny RA, Fahey T. Potentially inappropriate prescribing and its association with health outcomes in middle-aged people: a prospective cohort study in Ireland. BMJ open. 2017;0(e016562).
2. Di Giorgio C, Provenzani A, Polidori P. Potentially inappropriate drug prescribing in elderly hospitalized patients: an analysis and comparison of explicit criteria. Int J Clin Pharm 2016;38(2):462-8.

Prescriber acceptance of STOPP/START recommendations for hospitalised older adults: pharmacist versus physician – secondary analysis of data from two randomised controlled trials

K. Dalton[a], D. O'Mahony[b,c], D. O'Sullivan[a], M. N. O'Connor[c] and S. Byrne[a]

[a]Pharmaceutical Care Research Group, School of Pharmacy, University College Cork, Cork, Ireland [b]Department of Medicine, University College Cork, Cork, Ireland and [c]Geriatric Medicine, Cork University Hospital, Cork, Ireland
kieran.dalton@ucc.ie

Two randomised controlled trials (RCTs)[1,2] conducted in the same hospital in Southern Ireland have shown that STOPP/START-based recommendations from a physician or pharmacist can result in the reduction of in-hospital ADRs for older adults (≥65 years). Both physician and pharmacist applied STOPP/START criteria to older patients' medication lists and used their clinical judgement to ensure only clinically relevant recommendations were made. The patient numbers (intervention and control) were similar in the physician-led RCT ($n = 360$ and $n = 372$) and the pharmacist-led RCT ($n = 361$ and $n = 376$). The physician's intervention focused solely on STOPP/START recommendations, whilst the pharmacist's intervention addressed issues relating to STOPP/START, renal dose adjustment, medication reconciliation, and other prescribing criteria. Prescribers accepted 83.4% of the physician's recommendations and 54.8% of the pharmacist's recommendations respectively – this difference provided a rationale for analysing the acceptance of STOPP and START recommendations, as these were common to both interventions.

The aim of this study was to compare the prescriber acceptance rates of STOPP and START recommendations in these two RCTs, and provide a narrative summary of the cost and clinical outcomes.

This was a secondary analysis study of data from two RCTs, which were stored locally in Microsoft Access databases. The percentage (%) prescriber acceptance rates of recommendations made, based on STOPP/START criteria version 1, were calculated. The chi-square statistic was used to compare these prescriber acceptance rates between the two intervention patient groups. Ethical approval was granted for the RCTs to be conducted and data analysis to be performed by our research group. Consent was obtained from patients for their data to be analysed.

Prescriber acceptance of the STOPP and START recommendations made by the physician were 81.2% and 87.4% respectively, which was significantly higher than those made by the pharmacist (39.2% and 29.5%), $P < 0.0001$. Prescriber acceptance of the pharmacist's recommendations regarding medication reconciliation was significantly higher than the acceptance of STOPP/START recommendations (77.1% versus 37.8%), $P < 0.0001$. A greater absolute risk reduction in patients with ADRs was shown with the physician's intervention compared to the pharmacist's intervention (9.3% versus 6.8%).

The greater acceptance rate for the physician's recommendations may be due to having a narrower intervention focus, communicating the recommendations in both oral and written form, and the physician having an already recognised prescribing role within the hospital. Despite greater clinical effectiveness observed in the physician-led RCT, economic evaluations of these RCTs have shown the multifaceted pharmacist intervention to be cost-effective, whereas the physician's intervention was not. A noted limitation of this study is that the pharmacist's intervention did not exclusively focus on STOPP/START recommendations which may weaken some of the conclusions drawn from direct comparison of these RCTs. Future research should aim to identify the barriers to prescriber acceptance of pharmacist recommendations in the hospital setting, with a focus on recommendations targeting medication appropriateness. Further studies are also required to

establish the best methods of communicating STOPP/START-based recommendations in routine clinical practice.

References

1. O'Connor MN, O'Sullivan D, Gallagher PF, Eustace J, Byrne S, O'Mahony D. Prevention of Hospital-Acquired Adverse Drug Reactions in Older People Using Screening Tool of Older Persons' Prescriptions and Screening Tool to Alert to Right Treatment Criteria: A Cluster Randomized Controlled Trial. *J Am Geriatr Soc*. 2016;64(8):1558-1566.
2. O'Sullivan D, O'Mahony D, O'Connor MN, Gallagher P, Gallagher J, Cullinan S, O'Sullivan R, Eustace J, Byrne S. Prevention of Adverse Drug Reactions in Hospitalised Older Patients Using a Software-Supported Structured Pharmacist Intervention: A Cluster Randomised Controlled Trial. *Drugs Aging*. 2016;33(1):63-73.

Non-medical Prescribing

Influences on noteworthy prescribing decisions by non-medical prescribers: a qualitative exploration

T. McIntosh, D. Stewart, K. Forbes-McKay, D. McCaig and S. Cunningham

Robert Gordon University, UK
t.mcintosh@rgu.ac.uk

Non-medical prescribers (NMPs) are making increasing contributions to patient care; their prescribing decision-making is subject to complex and contradictory influences[1].

The aim was to explore and describe influences on NMPs' prescribing decisions which they considered noteworthy.

Seven pharmacist prescribers and five nurse prescribers working in community pharmacy and primary and secondary care in one Scottish Health Board area, treating acute and long-term conditions, were participating in a wider programme of research into influences on their prescribing [1]. They were given digital recorders and asked to identify and reflect on one or two of their prescribing decisions which they considered noteworthy in some way. No other guidance was given on the reflection. Recorders were returned to the research team and reflections transcribed *verbatim*. Individual semi-structured interview schedules were prepared based on each reflection, the Theoretical Domains Framework (TDF)[2] and findings from earlier research[1]. Participants were interviewed at their workplaces by a trained researcher and the interviews recorded, transcribed *verbatim* and analysed thematically by two independent researchers. Earlier findings including the domains of the TDF were used as the initial coding framework. Approval was received from a university ethics committee and NHS Research and Development department; NHS Ethic's approval was not required.

Participants recorded 24 reflections on noteworthy prescribing decisions; subsequent interviews lasted between 5 and 33 minutes Participants described most of their decisions as involving vulnerable patients, multiple morbidities, lack of information and/or the need for creative thinking to optimise patient outcomes. Decisions ranged from treatments of long-term conditions to an acute life-threatening medicine-related event and often involved multidisciplinary working. Several concerned antibiotic prescribing. Knowledge of the condition, the patient and of medicines were important influences. Participants described using a range of skills, particularly communication skills but also physical assessment and calculation skills, and balancing complex, conflicting responsibilities. Participants' roles as nurses, pharmacists and prescribers were also influential as were previous experiences. Participants valued the opportunity as prescribers for more direct patient care but reported being acutely aware of attendant additional responsibilities. Beliefs about the consequences of their prescribing decisions for patients and for others were influential; participants put patients at the heart of their prescribing decision-making. They described taking a careful, rigorous and step-wise approach although heuristics played a part in familiar situations and previous experience was important. Most reflections evidenced participants feeling very capable and competent in prescribing but they were aware of their limitations and knew when to seek help from other members of the multidisciplinary team, in primary care most often from GPs. The social influence of patients and occasionally patients' families was sometimes important: demands for antimicrobials were hard to resist. The medical hierarchy was problematic for one participant.

NMPs' noteworthy prescribing decisions were subject to multiple influences; complexity was a feature and an influence in many. While findings in this small-scale study may not be transferrable they endorse NMPs' prescribing practice but suggest that additional education and training may be needed to support evidence-based antimicrobial prescribing.

References

1. McIntosh, T., Cunningham, S., Stewart, D., Forbes-McKay, K. and McCaig, D., 2017. Influences on prescribing decisions by non-medical prescribers: a qualitative study. International Journal of Pharmacy Practice, 25(S1), pp. 35-36.
2. Cane J, O'Connor D, Michie S. Validation of the theoretical domains framework for use in behaviour change and implementation research. *Implementation Science* 2012; 7(1):37-53.

Preparation for future non-medical prescribing roles: survey analysis of pharmacy trainee's perceptions in the prescribing safety assessment pilot

K. Davison, J. P. Hardisty, L. Statham, G. Fleming, P. Hambleton, S. Maxwell and L. Bollington

University of Sunderland
kathryn.davison@sunderland.ac.uk

The role of non-medical prescribing is becoming increasingly important and we must adequately prepare pharmacy trainees to undertake this role; this has been explored across multiple sites using the Prescribing Safety Assessment.

The aim was to assess whether pharmacy trainees perceived current MPharm and Pre-registration training curriculums as adequate preparation for the Prescribing Safety Assessment (PSA) and to examine what scope of prescription writing practice students have had during their training.

Final year MPharm and preregistration pharmacist trainees undertook an abridged Prescribing Safety Assessment[1] from March to May 2017. This aimed to assess the equivalent level of knowledge and skill as the PSA exam undertaken by final year medical students, differing in assessment length (reduced number of questions) with some modified content. Six regional pre-registration providers (London and South East, East of England, Thames Valley, East Midlands, Yorkshire and Humber, and North East) and seven schools of pharmacy (Bradford, Durham, Keele, Manchester, Nottingham, Portsmouth and Sunderland) recruited final year pharmacy undergraduate students and pre-registration pharmacy trainees with both hospital and community pharmacy employers to take part. Consent was obtained from candidates and full ethical approval was gained from the University of Sunderland. On completion of the exam, candidates were asked to complete a standard feedback form provided by the PSA team. Thematic analysis was applied to free-text comments and quantitative data collated.

Feedback was obtained from 1059 candidates, (response rate 94%). 42% of candidates ($n = 445$) agreed or strongly agreed that their pharmacy course had prepared them to undertake the PSA whilst 27% ($n = 289$) felt it had not; the remaining having a neutral opinion. 78% ($n = 822$) of candidates reported having written less than five prescriptions throughout their pharmacy training. Thematic analysis of free-text comments obtained in response to the questions 'were any particular items [on the assessment] unclear or unreasonably difficult?' and 'do you have any comments regarding the PSA or prescribing education?' revealed three emerging themes: (i) Relevance of the assessment to pharmacy trainees (ii) Content and breadth of pharmacy training (iii) Clinical experience and exposure.

Stakeholders involved in the planning and delivery of pharmacy education may find the results from the candidate feedback from the PSA pharmacy pilot enlightening and could potentially use this insight to inform future curriculum content and in practice training. The majority of pharmacy trainees claimed to have only had the opportunity to write less than five prescriptions in their 4 or 5 years of training at the point the assessment was undertaken. The marked differences in responses may be explained by trainees interpreting "writing on a prescription chart" variably ranging from simulation through to direct observation. Furthermore, there appeared to be a lack of understanding of the relevance of prescribing for pharmacy trainees, both from the perspective of them directing others to prescribe (e.g. medical prescribers) and as potential future non-medical prescribers themselves. There is scope to improve the preparation and awareness of pharmacy students for future prescribing roles.

References

1 Maxwell SRJ, Cameron IT, Webb DJ. Prescribing safety: ensuring new graduates are prepared. Lancet 2015; 385: 579-581

Pharmacy Education II

An exploration of social media and eprofessionalism in pharmacy practice

A. Brown, K. MacLure, B. Addison, S. Pedersen and D. Stewart

Robert Gordon University, Aberdeen, UK
alyson.brown@rgu.ac.uk

To date, the literature on the use of social media (SoMe) within pharmacy has a distinct lack of focus on use by registered pharmacists, with the main body of evidence relating to pharmacy students.[1,2] Literature suggests a need for professional guidance to support individuals in their use of social media, with references being made to eprofessionalism and fitness to practise. A systematic review (SR) of professional body and regulatory organisation guidance for healthcare professionals carried out by the research team showed a lack of consistency of approach to professional guidance and a focus on what not to do rather than shedding light on appropriate online behaviours. In addition, caution is advised with regards to social media use and, in particular, with regard to blurred boundaries between personal and professional personas.

This study sought to explore how eprofessionalism and 'appropriate' online behaviour is defined and characterised and to explore when online behaviour 'crosses the line' and becomes 'inappropriate'.

Four activity based workshops were conducted at two pharmacy conferences (BPSA, HSRPP) and two Royal Pharmaceutical Society workplace venues. Activities were developed around defining eprofessionalism, gauging personal/professional use of social media, exploring (in) appropriate behaviours and responding to case scenarios. Each was informed by existing literature, a previous SR and pilot study. Themes were inducted from analysing the textual content of the focus groups and responses to other activities collated and synthesised. The research was approved by the School of Pharmacy and Life Sciences Ethical review panel.

A total of 101 participants representing pharmacy practice, pharmacy students, academics and administrators consented and took part. No single definition of eprofessionalism emerged, but common themes relating to appropriate online behaviour (not just social media) emerged such as respecting others, keeping all communication 'professional' and maintaining a professional persona similar to that in an off-line environment. A wide range of uses of social media were noted for both personal and professional roles. Inappropriate behaviours were identified with a focus on activities deemed to be not appropriate online such as swearing, bullying/trolling and sharing of inappropriate or non-factual information. Appropriate behaviours focussed on activities such as sharing photographs, evidence-based information and providing encouragement/being polite. However, there was little consensus on the appropriateness of the behaviours described in the cases with participants viewing (in) appropriate behaviours and fitness to practice issues differently. This will be further explored in the next phase of research.

The lack of shared definition of eprofessionalism and appropriateness of online behaviours highlights the need for a clearer understanding amongst healthcare professionals and the wider population. With no consensus on how to engage positively with SoMe or where the line between (in) appropriate lies further research is indicated. A further phase of research is underway using a nominal group technique aiming to gain consensus on appropriate behaviours and inform recommendations on the provision of guidance.

References

1. Benetoli A, Chen TF, Aslani P. The use of social media in pharmacy practice and education. Research in Social and Administrative Pharmacy. 2015 Feb 28;11(1):1-46.
2. Grindrod K, Forgione A, Tsuyuki RT, Gavura S, Giustini D. Pharmacy 2.0: a scoping review of social media use in pharmacy. Research in Social and Administrative Pharmacy. 2014 Feb 28;10(1):256-70.

A quantitative investigation of MPharm students' study habits and where they turn for academic support

H. Hull, D. Brown and J. Portlock

University of Portsmouth, UK
helen.hull@port.ac.uk

Students' transition to university is often a daunting experience;[1] increased student numbers have affected the pedagogy of science in higher education and the provision of personalised contact between students and academic tutors in becoming increasingly problematic.

The aim of this study was to investigate MPharm students' study habits and determine where they turned for academic support with their studies.

A questionnaire with a mix of eight open and ten closed questions, was developed to gather data about students' perceptions of their academic workload, opinions of university study support services and where they turned for academic study support. Following piloting, Stages 2, 3 and 4 MPharm students, potentially 365 students, were recruited opportunistically by distributing questionnaires at the end of a lecture, and invited to participate by submitting their completed questionnaires as they left the lecture theatre. Stage 1 were excluded as it was deemed too early in the course to gather reliable data. Data was input into Microsoft Excel for analysis; descriptive statistics were used to analyse the closed questions and responses to open questions were analysed using content analysis. This study underwent institutional ethics approval.

A total of 234 questionnaires were returned. Students' perceptions of workload varied according to gender and ethnicity, more non-white students (Chi-square = 17.2132, $P < 0.001$) and female students (Chi-square = 6.5498, $P = 0.0149$) reported heavier workloads. Students stated they preferred unofficial study support networks such as their peers and higher year students as opposed to contacting lecturers or using official university support services. Only 39% ($n = 224$) of respondents reported accessing university study support services and yet a high proportion of non-users 75% ($n = 146$) reported their workload as either heavy or too much. More students reported they had failed more exams in Stage 1 of their MPharm degree than in any other academic year of their course (Chi-square = 123.9447, $P < 0.001$). Meanwhile exam performance was affected by nerves, last minute revision and focusing their revision on other subjects. Students' perceptions of the helpfulness and relevance of university support provision influenced their decision upon whether to seek such support. A large majority (88% $n = 234$) thought higher year student mentors could support new students with their studies and thought mentors would be more approachable than lecturers.

Students in this study preferred to seek academic support from peers or higher year students as opposed to

using official university study support services. Their decisions to access official academic support services were influenced by their perceptions of the relevance and helpfulness of the support being provided. The introduction of a peer mentor programme could help new students to manage their workload and prepare for assessments. A limitation is that this study was conducted in a single school of pharmacy, which may limit generalisability to all student pharmacists in different settings and different degree programmes.

References

1. Fitgerald P. Easing the transition to university: successful student induction 30th April 2014. Available from: https://www.heacademy.ac.uk/resources/detail/resources/detail/stem-conference- 2014/Post_event_resources/Bioscience/Easing_the [Accessed 05 October 2017].

Urgent Care

Medicines use in the emergency department: exploring professionals' perceptions

S. Akudu[a], D. Greenwood[a], A. Physick[b], D. Steinke[a] and S. Martin[a]

[a]University of Manchester, UK and [b]Lancashire Teaching Hospitals NHS Foundation Trust, UK
somakudu@gmail.com

Medicines are a common emergency department (ED) medical intervention. Due to their expertise, there is an increased focus on the potential role for pharmacists in the ED.[1] The use of medicines in this setting (prescribing, dispensing, administration and monitoring) has historically been the concern of doctors and nurses.[2] With ED pharmacist roles seemingly becoming more commonplace, it was important to better understand the use of medicines in the ED and therefore how pharmacists could best support their use.

To investigate ED professionals' perceptions of medicines use in the ED.

Semi-structured interviews with six doctors and six nurses took place in the two EDs of Lancashire Teaching Hospitals (LTH) after obtaining ethical approval. The topic guide was structured according to the four-stage medicines use process. Further topics for discussion were identified from a review of relevant literature and an observation visit to the Royal Preston Hospital. Interviews were recorded, transcribed verbatim and analysed thematically.

There were clear differences and similarities between doctors' and nurses' perceptions of the four major areas of the medicines use process. Most of their perceptions were linked to patients, staff or resources.

A majority of participants think prescribing in the ED is "simple" and "straight-forward" and most of them said they use the British National Formulary to support prescribing. However, one doctor did express their frustrations with the lack of prescribing guidelines and support immediately available in the ED for elderly or obese patients. Participants explained why appointing an ED pharmacist would be "beneficial" to medicines use and described pharmacists as "helpful" and "fantastic".

At LTH, the pharmacy's dispensing services are not available 24/7. Participants recalled times when they would discharge patients from the ED without their discharge medicines and patients would come back the "following day" to get them. Many participants said they would "run out" of medicines either when the pharmacy is closed, over the weekend or during bank holidays.

The overall consensus was that the documentation of medicines use is done frequently. Whenever medicines are administered another person would document it and sign for it. One participant believes documentation in the ED is "better than on certain wards". However, participants did mention that there are sometimes "delays" in the administration of medicines during hectic times.

ED professionals sometimes monitor patients' response to medication. The nature of monitoring depends on the type of medication given and the patient's condition. Monitoring is done "regularly" but when the ED is "busy", a few doctors admitted that monitoring patients is "difficult". One nurse explained how poor communication from doctors led to patients being unmonitored.

This study has provided a foundation for further research of medicines use in the ED and highlighted areas requiring pharmacy input. Data saturation was not reached so more ED professionals could have been interviewed. However, using semi-structured interviews helped reveal new and valuable information that can be used to support development of ED pharmacist roles which are of value to both patients and professionals.

References

1. Health Education England. Pharmacists in emergency departments
   A commissioned study by Health Education England. Date accessed: 27.08.2017. Available at: https://hee.nhs.uk/sites/default/files/documents/PIED%20National%20Report.pdf
2. Tully M, Franklin B. Safety in Medication Use. Boca Raton: CRC Press, Taylor & Francis Group; 2016.

A pilot study of pharmacists working in an advanced role in the urgent care centre (UCC), emergency department (ED): a quantitative study

S. Ganasan, J. Khalid and R. S. Cholia

Queen's Hospital, Romford, UK
Shalini.Ganasan@bhrhospitals.nhs.uk

The 5-year forward view highlights the significant workforce shortage in the ED. Pharmacists can be upskilled to bridge this gap and meet the evolving healthcare demands[1]. This study aims to determine if pharmacist advanced clinical practitioner trainees (PACPt) equipped with advanced skills such as clinical assessment and diagnostic interpretation are able to manage patients.

To determine the extent of how pharmacists with advanced skills can manage patients in the UCC.

To determine the proportion of patients presenting to the UCC that were seen by pharmacists. To determine levels of investigation, establish diagnosis, adequacy of current skills to perform tasks and re-attendance rates in patients seen.

A retrospective, quantitative study of patients attending the primary care area of the UCC at Queen's Hospital and managed by PACPt. Data on the number of patients seen over a 3 month period was collated following an initial pilot. Diagnosis by clinical grouping, investigations and re-attendance figures were sought. Assessments were made on whether PACPt were equipped to manage patients in the UCC or if additional skills were required. Ethics approval was not required, as the research department in the hospital deemed the study a service development initiative.

A total of 1252 patients presented to the UCC during the study period. The PACPt managed 32.7% ($n = 410$) patients under the supervision of the UCC general practitioner (GP) lead. Of these, 72.4% were adult and 27.6% were paediatric patients. The PACPt were able to manage 82% of these patients with their current skillset and required additional skills in 18% of cases. Investigations were requested for 24.4% of these patients prior to making a formal diagnosis. Musculoskeletal disorders were the most common diagnosis. The re-attendance rate was 9% from the 410 patients seen by the three PACPt. From the 9% who re-attended, 24.3% were due to a similar presenting complaint and were managed identically.

Pharmacists with advanced skills were able to manage 32.7% of the workload. This is comparable to results from a similar study[2]. This sets a baseline for future work and demonstrates the ability of PACPt to manage patients presenting with minor injuries, long term conditions and acute emergencies.

A limitation of the study was level of training, as trainees were approaching the halfway point of the university programme and had not completed their training. Some investigations were being ordered unnecessarily at triage prior to consultation. An element of subjectivity was introduced as additional skills required to manage patients were determined by the trainees. Re-attendance figures may not be a true reflection of PACPt input, as all patients were reviewed by the GP.

A re-audit towards the end of training focusing on the accuracy of diagnosis and management plan, patient satisfaction and breakdown of specialist skills used is recommended. This would shed light on the ability of pharmacists with advanced skills to work autonomously and safely.

References

1. Maruthappu M, Sood HS and Keogh B. The NHS Five Year Forward View: implications for clinicians, BMJ 2014; 349: g6518
2. Hughes E, Terry D, Huynh Chi et.al. Future enhanced clinical role of pharmacists in Emergency Departments in England: multi-site observational evaluation, Int J Clin Pharm 2017; 39: 960-968

Prescribing II

Retrospective longitudinal study of patients and prescriber characteristics associated with new DOAC prescriptions in a CCG without restrictions to DOAC use

K. Medlinskiene[a,b], M. Fay[c] and D. Pettya[a]

[a]School of Pharmacy and Medical Sciences, University of Bradford, UK
[b]Medicine Management and Pharmacy Services, Leeds Teaching Hospitals NHS Trust, UK and [c]The Willows Medical Centre, Queensbury, UK
k.medlinskiene1@bradford.ac.uk

Direct oral anticoagulants (DOACs) uptake for stroke prevention in atrial fibrillation has been slow.[1] This study aimed to profile the prescribing of DOACs over 3 years to identify factors associated with DOAC prescribing in a Clinical Commissioning Group (CCG) without restrictions to DOACs use. The objectives were to identify:

(1) Characteristics of patients prescribed oral anticoagulant (OAC) in a sample of general practices;
(2) Who initiated the prescribing of OAC?
(3) Recorded reasons for prescribing a DOAC rather than warfarin;

This retrospective longitudinal study of OAC prescribing in adults used anonymous data submitted from nine general practices in Bradford, England. Ethical approval was granted by the University of Bradford. Practice pharmacists extracted anonymised data from

Table 1 Summary of the baseline characteristic of patients newly prescribed OAC in Bradford, from 1/4/2012 to 31/3/2015. *Other: can't attend warfarin clinic, needle-stick phobia, or drug interaction with warfarin.

	1/4/2012-31/3/2013 (n=140)		1/4/2013-31/3/2014 (n=138)		1/4/2014-31/3/2015 (n=146)	
	Warfarin (n=120)	DOACs (n=20)	Warfarin (n=84)	DOACs (n=54)	Warfarin (n=58)	DOACs (n=88)
Age (years), mean (SD)	76 (11)	77 (10)	76 (10)	76 (10)	76 (10)	76 (10)
<66 (number of cases)	18	2	12	7	15	9
66-75 (number of cases)	27	6	26	15	18	20
>75 (number of cases)	75	12	46	32	25	59
Sex, male	56%	65%	56%	59%	45%	45%
OAC split	86%	14%	61%	39%	40%	60%
Initiator						
Community	77%	80%	66%	74%	66%	83%
Hospital	21%	15%	32%	26%	34%	17%
Not stated	2%	5%	2%	0%	0%	0%
Started as 1st line	85%	9%	60%	23%	38%	40%
Reason for choosing as 1st line:						
Patient choice	1%	18%	1%	44%	2%	46%
Not stated	99%	73%	99%	56%	98%	45%
Other*	N/A	9%	N/A	0%	N/A	9%
Switching (number of cases)						
Aspirin to warfarin or DOAC	59	9	33	16	17	17
Warfarin to DOAC	N/A	8	N/A	27	N/A	40
DOAC to warfarin	0	N/A	5	N/A	2	N/A

the TPP-SystemOne clinical software by running pre-defined searches to identify new OAC prescriptions. Data was descriptively analysed with Excel and SPSS.

The results are summarised in Table 1. The proportion of DOAC prescribing significantly increased over time ($x^2(2)$ =63.538, $P < 0.01$). There were no statistically significant differences between age, gender and type of OAC and who initiated the OAC. However, the majority of DOACs were initiated in the community showing general practitioners' increasing confidence in DOAC prescribing. Documentation of reasons for choosing a particular OAC was poor and almost non-existent for warfarin. Patient choice was increasingly stated as a reason to prescribe a DOAC indicating greater patient involvement in a shared decision-making.

One third of patients were switched from aspirin to an OAC over time and they were statistically more likely to be initiated on warfarin than a DOAC ($x^2(1)$ =13.923, $P < 0.01$). This observation was significant only in the community initiated prescribing ($x^2(1)$ =12.693, $P < 0.01$). The effect decreased over time. Changing between OAC over the study period was more common for patients prescribed warfarin (29%) than a DOAC (4%). The main reason for switching from warfarin was inadequate control of time in the therapeutic range.

Results of this study will be used to inform a larger study on the organisational barriers to DOACs prescribing. The main limitation was inclusion of surgeries with practice pharmacists only. This work was made possible with unrestricted educational grant from Bayer Pharmaceuticals.

References

1. ABPI SAFI. One year on- Why are patients still having unnecessary AF-related strokes? 2016. http://www.abpi.org.uk/our-work/library/medical-disease/Documents/SAFI_One_Year_On.pdf (accessed 6 September 2017).

Exploring hospital pharmacists' perceptions of their medication communication with prescribers

M. Lloyd[a], S. D. Watmough[b], S. V. O'Brien[c], N. Furlong[a] and K. Hardy[a]

[a]St. Helens and Knowsley Teaching Hospitals NHS Trust, UK [b]Edge Hill University, UK and [c]St. Helens Clinical Commissioning Group, UK
Michael.lloyd@sthk.nhs.uk

Prescribing errors are common and problematic in hospital settings in the UK. [1] Pharmacists have been described as integral in the interception of prescribing errors, with effective medication communication between pharmacists and prescribers important to resolve and optimize prescribing outcomes. However, poor communication between healthcare professionals, including pharmacists and prescribers, is considered a leading cause of prescribing error. [1]

Pharmacists' medication communication with prescribers has been reported as limited in the literature, whilst they have been described as working independently to doctors. Additionally, pharmacists have

previously described communication apprehensions with doctors, [2] with these apprehensions creating barriers to effective medication communication with prescribers.

The aim of this study was to explore the perceptions and views of hospital pharmacists on their medication communication with prescribers.

The study was undertaken in a large acute teaching hospital in the North West of England. All (*n* = 37) hospital pharmacists were eligible to participate. An invitation to participate was communicated verbally at a departmental meeting and via e-mail.

In-depth, semi-structured, face-to-face interviews were used to explore pharmacists' perceptions of medication communication with prescribers. The topic guide was informed by the literature and previous research to explore how pharmacists communicate with prescribers about medications, and how they have learnt inter-professional medication communication skills.

All interviews were digitally recorded and transcribed by the researcher. Interviews lasted an average of 32 minutes (21–48 minutes) and data saturation was achieved by the fifteenth interview. A thematic analysis was performed manually by the researchers with initial codes discussed and consensus achieved through regular meetings.

Relevant hospital and University of Liverpool ethics committees' approval was obtained before commencing this study.

Twenty-nine pharmacists volunteered to participate and were interviewed. A range of pharmacist grades (Agenda for change band 6–8b) were recruited.

Three key themes emerged from the data: Communication skills training, medication communication with prescribers, and pharmacist as a communicator. Pharmacists reported that training in medication communication with prescribers was limited with these skills developed mainly through postgraduate experience and reflection. Medication communication was inconsistent between pharmacists with a range of written and verbal communication reported. Barriers to medication communication with prescribers included pharmacy service provision, workload, perceived urgency of the medication issue, prescriber rapport and communication anxiety. Expectations of junior pharmacists were considered unrealistic and contributed to unnecessary medication communication apprehensions with prescribers. The limited medication communication reported appeared to contribute to a sense that hospital pharmacists worked in parallel to the clinical team. The need for greater contextualized training in inter-professional communication was reported to prepare pharmacists for the challenges of hospital practice.

This is a qualitative case study with limited generalizability, although a wide range of pharmacists were interviewed typical of a UK hospital pharmacy department. This is the first known UK study exploring pharmacist-prescriber medication communication in a hospital setting in-depth, and has raised awareness of barriers to effective medication communication, and the need for enhanced communication-skills training to support the hospital pharmacist workforce.

References

1. Dornan T, Ashcroft D, Heathfield H, Lewis P, Miles J, Taylor D, Tully M, Wass V. An in-depth investigation into causes of prescribing errors by foundation trainees in relation to their medical education. EQUIP Study. General Medical Council, 2009. Available from http://www.gmc-uk.org/about/research/research_commissioned.asp accessed 12th September 2017
2. Lloyd M, Watmough SD, O'Brien SV, Furlong N, Hardy K. Exploring Attitudes and opinions of pharmacists towards delivering prescribing error feedback: A qualitative case study using focus group interviews. *Research in Social and Administrative Pharmacy*, 2016;12:461-74. https://doi.org/10.1016/j.sapharm.2015.08.012

Deprescribing practice at a UK teaching hospital: reactive or proactive?

S. Scott[a,b], A. Clark[a], C. Farrow[b], H. May[b], M. Patel[b], M. J. Twigg[a], D. J. Wright[a] and D. Bhattacharya[a]

[a]University of East Anglia, UK and [b]Norfolk and Norwich University Hospital NHS Foundation Trust, UK
sion.scott@uea.ac.uk

Deprescribing is the process of identifying and discontinuing inappropriate medicines and has been associated with positive patient outcomes in certain circumstances[1]. Deprescribing a medication may be in response to present observed harm (reactive) or future gains being unlikely/preventing future harm (proactive). A hospital admission, where routine medicines reconciliation and physiological monitoring are undertaken may present an opportunity to develop a deprescribing intervention. Understanding current deprescribing practice in hospital is a key precursor to intervention development.

The aim of this study was to describe the extent and nature of hospital deprescribing practice.

After confirmation as a service evaluation from the University of East Anglia Research Ethics Committee, a retrospective analysis of Electronic Prescribing and Medicines Administration (EPMA) data pertaining to pre-admission medicines at a large UK teaching hospital was undertaken in February 2017. Patient demographics, medicine details and prescriber's rationale for medication discontinuation (selected from a pre-defined list of reasons on EPMA) were analysed. Medicine discontinuations associated with reasons not consistent with deprescribing, such as "prescribed in error" were excluded. A stratified sample of 200 discontinued medicines were further analysed by reviewing medical records to determine the prescriber's rationale. This was used to categorise the deprescribing activity into proactive and reactive as previously defined. These data were extrapolated in order to estimate the total proportion of

pre-admission medicines deprescribed and the proportion which were reactive and proactive. Descriptive statistics were used to report the findings.

From 24552 pre-admission medicines prescribed for 2309 patients, 977 discontinuations were recorded of which 682 (69.8%) were consistent with deprescribing according to the selected EPMA reason. These discontinuations were distributed across 415 patients with a median (IQR) age of 79.0 (66.0, 86.0) years. Of the 200 sampled discontinuations, 137 (68.5%) were not consistent with proactive or reactive deprescribing as defined in the introduction and 15 (7.5%) were undeterminable from the medical records. The remaining 48 (24.0%) confirmed deprescribing activities were categorised into 10 (20.8%) proactive and 38 (79.2%) reactive. Extrapolation of this sample data to the 682 discontinuations yielded 22.7% (95% confidence interval 19.5%-25.9%) consistent with deprescribing which was 0.63% (95% confidence interval 0.32%–0.94%) of all pre-admission medicines.

This evaluation demonstrates very limited deprescribing activity is taking place in this one hospital. The proportion of pre-admission medicines prescribed in hospital which are inappropriate is estimated at almost 30%[2], suggesting that opportunities to deprescribe are being missed. There may therefore be significant scope for increasing deprescribing activity in hospital and a role for hospital pharmacists to either facilitate or implement this, but the extent to which deprescribing is acceptable and feasible is as yet unknown. Dominance of reactive behaviour suggests prescribers require evidence of present harm to prompt deprescribing.

The large proportion of the sampled medication discontinuations that had been assigned an incorrect EPMA reason by the prescriber limits the utility of the electronic prescribing data. However, this limitation of data quality was overcome by extrapolation of data from the manual review of medical records in order to estimate the prevalence of deprescribing activity.

References

1. Johansson T, Abuzahra ME, Keller S, et al. Impact of strategies to reduce polypharmacy on clinically relevant endpoints: a systematic review and meta-analysis. *Br J Clin Pharmacol*. 2016:532-548. https://doi.org/10.1111/bcp.12959.
2. Page AT, Clifford RM, Potter K, Schwartz D, Etherton-Beer CD. The feasibility and the effect of deprescribing in older adults on mortality and health: A systematic review. *Br J Clin Pharmacol*. 2016.

Community Pharmacy

A mixed methods evaluation of factors impacting on the community pharmacist's role in providing access to palliative medicines in Sheffield, UK: incorporating pharmacist, GP and other healthcare professional views

E. Miller[a], J. D. Morgan[b], C. Wong[a] and A. Blenkinsopp[b]

[a]Sheffield Teaching Hospitals Foundation Trust, Sheffield, UK and [b]University of Bradford, Bradford, UK
Elizabeth.miller@sth.nhs.uk

Accessing Palliative Medicines (PMs) towards the end of life is critical to achieving effective symptom control, however there is little published research on community pharmacists' (CPs) role in providing access to PMs within the context of community pharmacy in England.

The aim of this study was to determine factors impacting on the CP's role in supporting access to PMs.

The objectives in this study were to:
(1) Investigate factors facilitating or hindering access to PMs in community pharmacies.
(2) Examine views of CPs and community healthcare professionals on the CP's role in accessing PMs.

A sequential mixed methods study collecting anonymised prescription data from a purposive sample of five community pharmacies in Sheffield followed by in-depth individual semi-structured interviews with 16 community healthcare professionals was undertaken. Two of the five pharmacies provide access to PMs under a Locally Commissioned Service (LCS). Here we focus on the qualitative study. Participants consented to a 1:1 interview exploring factors facilitating timely access and the CP's role. Interviews were transcribed verbatim and analysed using the Framework method. [1] Analysis followed an inductive and iterative thematic process. Ethical approval was obtained from the University of Bradford.

Interviews were completed with CPs (5), GPs (3), community nurses (5), palliative care team (2), and intermediate care team (1). Three themes emerged (i) environment and resources, (ii) communication and collaboration, (iii) skills and knowledge. (i) CPs reported providing a primarily reactive role when faced with a prescription for PMs with little advanced planning. They described practical issues including: controlled drug cabinet size; national stock shortages; ordering processes; and prescriptions for items not on the local formulary. Having stock of PMs in the pharmacy was the main facilitator supporting timely access with nurses wanting more pharmacies to keep some basic PMs in stock. (ii) Community healthcare professionals indicated they may contact the pharmacy to check availability, but

palliative care needs were not discussed in advance with CPs due to concerns about sharing confidential information. There was poor understanding of the LCS, the CP's professional role, and pharmacy services of potential benefit to palliative care patients. Examples where CPs working with GPs or nurses to support access to PMs relied on effective communication and face to face relationships. (iii) Community healthcare professionals expressed concern that CPs were not familiar with pre-emptive prescribing or understand the urgency in which PMs were needed.

Despite the national direction to increase the CPs involvement in palliative care[(2)] they lack clinical information and integration into primary care teams. It is suggested that better integration and sharing of information between primary care team members will support timely access to treatments. Findings may be limited due to variations in commissioning and geographical location. Further research on CP integration using modern technologies is warranted.

References

1. Gale NK, Heath G, Cameron E, Rashid S, Redwood S. Using the framework method for the analysis of qualitative data in multi-disciplinary health research. *BMC Med Res Methodol* 2013; 13:117. Available from www.biomedcentral.com/1471-2288/13/117
2. Joint Statement Breaking down the barriers - how community pharmacists and GPs can work together to improve patient care [press release]. London: Royal Pharmaceutical Society of Great Britain and Royal College of General Practitioners, 2011.

Organisational factors associated with patient experience, clinical effectiveness and patient safety in English community pharmacies

S. Jacobs[a], M. Hann[b], F. Bradley[a], R. Elvey[c], T. Fegan[a], D. Halsall[d], K. Hassell[e], A. Wagner[f] and E. Schafheutle[a]

[a]Centre for Pharmacy Workforce Studies, Division of Pharmacy and Optometry, Faculty of Biology Medicine and Health, University of Manchester, UK [b]Centre for Biostatistics, Division of Population Health, Health Services Research and Primary Care, Faculty of Biology Medicine and Health, University of Manchester, UK [c]Collaboration for Leadership in Applied Health Research and Care Greater Manchester, Centre for Primary Care, Division of Population Health, Health Services Research and Primary Care, Faculty of Biology Medicine and Health, University of Manchester, UK [d]NHS England (North Region) Cheshire and Merseyside, Liverpool, UK [e]College of Pharmacy, California Northstate University, USA and [f]NIHR Comprehensive Research Network – Eastern, Norwich, UK
sally.jacobs@manchester.ac.uk

English NHS policy emphasises improving healthcare quality across three dimensions – patient experience, clinical effectiveness and patient safety – with a systematic review suggesting that all three are consistently positively associated.[1] In community pharmacy, medicines use reviews (MURs) which have faced recent scrutiny with the suggestion that some organisations may prioritise the quantity of service provision over quality.[2]

Part of an NIHR-funded study of clinical productivity in English community pharmacies, this paper aims to determine the organisational factors associated with patient experience, clinical effectiveness and patient safety.

Following National Research Ethics Service approval (13/WM/0137), two surveys were undertaken: one of community pharmacies in nine diverse primary care administrative areas of England capturing organisational and patient safety characteristics (PSCQ; 24 items e.g. "All staff are constantly assessing risks and looking for improvements"), and one of patients in receipt of NHS services (dispensing/MURs) in 39 participating pharmacies capturing data on satisfaction with pharmacy visits (15 items e.g. "My concerns were taken seriously") and information about medicines (SIMS; 16 items e.g. "Have you received enough information about how to take your medicine?"), and medication adherence (MARS; 5 items e.g. "I alter the dose"). Regression analysis explored associations between these outcomes and service volume, patient-, pharmacy- and areal-specific demographic, socio-economic and health-needs variables, obtained from the NHS Business Services Authority, patient and pharmacy surveys, and national datasets. Data were linked by unique NHS organisational identifier and postcode.

Pharmacy survey (valid response rate 277/800 (34.6%)): pharmacies had a significantly less favourable safety climate where the organisational culture was more closely aligned to quantity, the medicine and technical work than to quality, the patient and professional work, where the pharmacist worked longer hours, and who employed an accuracy checker. Safety climate (PSCQ) was significantly associated with pharmacy type (large multiples/supermarkets had more favourable organisational learning scores but less favourable working conditions scores) but not service volume.

Patient survey (valid response rate 971/2087 (46.5%)): greater satisfaction with pharmacy visit was significantly associated with the employment of a pharmacy technician, having more reasons for choosing to visit a particular pharmacy, and continuity of advice-giver. Older patients were significantly more satisfied with the information they received about medicines and more likely to be self-reported adherers. Higher SIMS scores were also associated with continuity of advice-giver and weaker belief in medicines overuse. Regular use of locums was associated with poorer self-reported medicines adherence as was stronger belief in medicines overuse. Neither satisfaction, SIMS nor MARS scores were associated with pharmacy type or service volume.

These findings, although limited by a low response rate, non-participation of five of the nine largest pharmacy chains, and the limited availability of validated

outcome measures for community pharmacy, have identified a number of organisational and patient factors associated with NHS service quality in community pharmacy. In particular, they suggest that pharmacies should focus on staffing and skill-mix to improve quality. Whilst the importance of quality is clearly recognised by policy makers, further research is needed to identify and validate quality indicators in community pharmacy.

References

1. Doyle C, Lennox L, Bell D. A systematic review of evidence on the links between patient experience and clinical safety and effectiveness. *BMJ Open* 2013;3: e001570.
2. Chakrabortty A. How Boots went rogue. *The Guardian*, Wednesday 13th April 2016. https://www.theguardian.com/news/2016/apr/13/how-boots-went-rogue [Accessed 05/10/17]

A qualitative systematic review of community pharmacies' staff assessment and diagnostic performance in patient consultations

V. Sinopoulou, M. Gordon and P. Rutter

University of Central Lancashire, Preston
VSinopoulou@uclan.ac.uk

Promotion of self-care has led to an increase in patients seeking advice at pharmacies. To facilitate staff establishing a diagnosis, mnemonic standardised protocols have been developed and promoted. These tend to be easily remembered and used, however, their usefulness has not been proven. Clinical reasoning, a combination of evidence-based knowledge, professional experience and practice, is a more complex process, however, it can be more accurate and improve diagnostic ability. It has not been established how mnemonic and clinical reasoning criteria are used in literature assessing pharmacy consultations which require a diagnostic assessment.

The primary aim of this review was to summarise the criteria authors use to assess pharmacy staff's diagnostic performance and to what degree they conform with a clinical reasoning and a mnemonic framework. A secondary aim of the review was to characterise staff performance in the studies, based on the author's comments of their results.

Three online databases were searched to identify suitable papers for review. After an initial scoping, a search algorithm was decided and two rounds of searches were carried out. Two of the authors performed the screening while the third author acted as an arbitrator. Only peer-reviewed studies that used simulated patients or vignettes to assess and describe staff performance were included. All study designs were acceptable for inclusion. Data were extracted about how each study's criteria conformed to clinical reasoning and mnemonic

frameworks. For this, each framework was broken down into 4 characteristics based on researchers' assessment of staff's decision-making process. Study texts were qualitatively analysed and coded for passages that corresponded to each characteristic. A value of one was assigned for each characteristic exhibited, meaning each study could score between 0 and 4. No ethical approval was needed for this review.

Sixty-eight studies from 29 countries, published between 1989 and 2017, were included in the review. Based on our scoring system, the studies had an average score of 2.71/4 for elements of mnemonic criteria in their frameworks and an average score of 0.96/4 for clinical reasoning elements. Fifty-one of the studies reported negative comments in their assessment of staff performance, 9 used positive comments and 8 used a mix of positive and negative comments.

On average, studies utilise more mnemonic than clinical reasoning elements when assessing community pharmacies' staff diagnostic performance. Performance, as reported by study authors, was generally poor. Researchers should include more clinical reasoning criteria in their assessment frameworks, which will allow for the relevance of the gathered information to be assessed, as well as staff's evidence-based knowledge and experience and their ability to interpret and synthesise information. Furthermore, community pharmacy staff should receive appropriate training for the quality of the consultations to improve. Strengths of this review include the low risk of interviewer and recall bias, however, there's bias risk due to the exclusion of grey literature and studies not written in English.

Clinical Practice (Dementia)

A qualitative study of healthcare professionals' perceptions of barriers and facilitators to successful medicines management for people with dementia in primary care

H. E. Barry[a], M. McGrattan[a], C. Ryan[b],
A. P. Passmore[c], A. L. Robinson[d],
G. J. Molloy[e], C. M. Darcy[f], H. Buchanan[g]
and C. M. Hughes[a]

[a]School of Pharmacy, Queen's University Belfast, UK [b]School of Pharmacy & Pharmaceutical Sciences, Trinity College Dublin, Ireland [c]Centre for Public Health, Queen's University Belfast, UK [d]Institute for Ageing and Health, Newcastle University, UK [e]School of Psychology, NUI Galway, Ireland [f]Western Health and Social Care Trust, Northern Ireland, UK and [g]Belfast, Northern Ireland, UK
H.Barry@qub.ac.uk

People with dementia (PWD) face unique challenges in their ability to successfully manage their medicines,

requiring the development of pragmatic interventions to improve patient outcomes. Intervention development should be both theory- and evidence-based, and include those who will be involved in intervention delivery, i.e. healthcare professionals (HCPs). The 14-domain Theoretical Domains Framework (TDF)[1] can be used to understand HCPs' behaviour; key domains may be mapped to Behavioural Change Techniques (BCTs) which are considered 'active components' of an intervention.

This qualitative study aimed to explore general practitioners' (GPs') and community pharmacists' views of medicines management in PWD, their approach to prescribing and dispensing for these patients, and their perceptions of barriers and facilitators to successful medicines management for PWD, using a theory-based approach.

Face-to-face interviews were conducted between October 2015–March 2016. GPs were recruited from a purposive sample of ten practices across Northern Ireland. Pharmacists were sampled from community pharmacies which dispensed >75% of prescriptions from the aforementioned practices. Written informed consent was obtained prior to commencing data collection. Each semi-structured interview used a topic guide based on the 14-domain TDF[1]. All interviews were digitally recorded, transcribed verbatim, checked for accuracy and anonymised. Data was analysed using NVivo 10. Transcripts were analysed using both the framework method (utilising TDF domains as coding categories) and content analysis (to identify barriers and facilitators to successful medicines management within each theoretical domain). Ethical approval was obtained for this study (15/EE/0103).

Thirty HCPs were interviewed to reach data saturation ($n = 15$ GPs, $n = 15$ pharmacists). Interviews lasted 49 min on average. A holistic knowledge of patients' personal and social circumstances was regarded as a facilitator to successful medicines management by both GPs and pharmacists, however pharmacists' limited access to patient records was felt to be a barrier to this ('Knowledge' and 'Environmental context and resources' GPs felt they lacked confidence ('Beliefs about capabilities') and awareness ('Knowledge') of dementia drugs which are usually initiated in secondary care, management of behavioural and psychological symptoms, and pain. Whilst all aspects of medicines management (prescribing, dispensing, conducting medication review, monitoring adherence, counselling) were discussed by participants, many remained concerned that they 'lost control' over the medicines management process once the PWD left the GP surgery/pharmacy ('Beliefs about consequences'). There was a clear disparity between GPs and pharmacists with respect to conducting medication review; whilst both HCP groups talked about the importance of this for PWD, each thought the other professional group should assume responsibility for it ('Social/professional roles and identity') due to various work environment-related barriers ('Environmental context and resources').

This study has identified a number of barriers and facilitators that may be targeted as part of an intervention to improve medicines management for PWD. However, findings only reflect participants' perceptions of the influences on their clinical behaviour. Task group workshops[2] will be held with HCPs to obtain their input on pragmatic intervention development and mapping of key theoretical domains to BCTs, followed by a small feasibility trial of the intervention.

References

1. Cane J, O'Connor D, Michie S. Validation of the theoretical domains framework for use in behaviour change and implementation research. *Implementation Science* 2012; 7: 37
2. May CR, Finch TL, Cornford J, Exley C, Gately C, Kirk S, Jennings KN, Osbourne J, Robinson AL, Rogers A, Wilson R, Mair FS. Integrating telecare for chronic disease management in the community: what needs to be done? *BMC Health Services Research* 2011; 11: 131

Evaluating pharmacy interventions targeted to people affected by dementia: a systematic review of identified interventions to inform the development of a new community pharmacy tool

E. Dann-Reed and D. Wright

University of East Anglia, UK
e.reed@uea.ac.uk

One of the recommendations within the recent review of community pharmacy in England [1] is the development of chronic disease management services. People with dementia, which is a chronic life limiting disease, may benefit from such a service. Medical Research Council guidance on the development and evaluation of complex interventions is to firstly undertake a systematic review of the relevant literature.

The aim of this review is to identify and evaluate trialled interventions aimed towards patients affected by dementia that utilise a member of the pharmacy team.

The PICOS (Population, Intervention, Comparator, Outcome, Setting) method was used to set the inclusion criteria, as suggested by Cochrane [2]. Studies were included if there was a pharmacy team member with a key role in the intervention, there was a ≥70% prevalence of dementia and the research was completed. Sources searched included Ovid MEDLINE, EMBASE, CINAHL, Opengrey, NHS evidence and the references of included studies. Two researchers screened independently, then discussed disagreements. Studies were quality assessed based on the GRADE approach also recommended by Cochrane [2] and consisted of each

study being rated from high to very low taking into consideration a number of elements such as study design, limitations (and risk of bias) and imprecision.

The total records identified from all sources was 1120 which led to a total of 29 studies being included in this review. There were 21 service evaluations, 3 cross-sectional studies, 2 case studies, 1 audit, 1 randomised controlled trial and 1 non-randomised intervention study with five being set in community pharmacy. Sixty nine percent of the interventions were medication related which included medication reviews and the discontinuing of targeted medicines such as antipsychotics, benzodiazepines and anticholinergics. Other interventions included memory screening services and the education of patients or staff. Twenty four of the interventions involved other healthcare professionals and 26 studies were graded as low or very low quality largely due to observational study designs.

This review identifies a variety of interventions which could be utilised in a community pharmacy setting for the benefit of people affected by dementia. Although a limitation to this review was that several conference abstracts were included (which led to minimal information being able to be extracted), this reinforces the message that limited research has currently been conducted within this field and more robust research needs to be performed.

References

1. Murray, R., *Community Pharmacy Clinical Services Review*. 2016, NHS England.
2. *Cochrane Handbook for Systematic Reviews of Interventions*, S.G. Julian PT Higgins, Editor. 2011, The Cochrane Collaboration.

Withdrawing antidementia medications in advanced dementia: an analysis of informal caregiver discussions in an online chat forum

C. Parsons and S. Gamble

School of Pharmacy, Queen's University Belfast, Northern Ireland
c.parsons@qub.ac.uk

Considerable uncertainty exists surrounding if, how and when to discontinue treatment with antidementia drugs, particularly as dementia progresses and patients approach end of life [1, 2]. Experiences of informal caregivers of people with advanced dementia after withdrawal of antidementia medications are unknown.

The aim of this study was to investigate the experiences of informal caregivers of people with advanced dementia when antidementia medications (acetylcholinesterase inhibitors and/or memantine) were stopped. Study objectives were to systematically search the discussion threads and posts of the online Talking Point discussion forum, hosted by the Alzheimer's Society for anyone affected by dementia, to explore the experiences of carers and family members of people with advanced dementia when antidementia medications are withdrawn.

Qualitative analysis of archived discussion threads and posts of the Talking Point online forum. All archived threads between 2005 and February 2017 were searched using combinations of the following search terms: 'cholinesterase inhibitor(s)', 'acetylcholinesterase inhibitor(s)', 'donepezil', 'rivastigmine', 'galantamine', 'memantine', 'NMDA antagonist', 'withdrawal', 'discontinuation', 'removal' 'cessation', 'deprescribing', 'drug holiday', 'advanced dementia', 'dementia', 'drug withdrawal', 'medication withdrawal', and 'drug guidance'. This yielded 95 relevant threads which were analysed thematically using the Framework Method. The School of Pharmacy Ethics Committee, Queen's University Belfast, granted ethical approval for the study and Alzheimer's Society granted permission for use of archived discussions from the Talking Point website.

Seven key themes emerged from data analysis: (1) opinions of others including healthcare professionals, family, friends or other Talking Point members; (2) method of withdrawal (weaning versus immediate withdrawal); (3) no change in clinical condition upon withdrawal; (4) improvement in clinical condition upon withdrawal; (5) worsening in clinical condition upon withdrawal; (6) complexity/uncertainty regarding change in clinical condition following withdrawal; and (7) the effect of medication withdrawal on caregivers.

The strength of this study lies in the analysis of an online chat forum, representing an innovative form of data collection from what can be considered to be a large, naturally occurring, floating focus group and offering an unusual opportunity to tap into public opinion as it formed. Limitations must be considered in interpreting the study findings; one website was analysed, and those who posted on the Talking Point forum may represent a biased subset of the caregiver population. Generalisability or transferability to a wider population cannot be assumed.

The emergent themes highlighted the value caregivers ascribed to the advice and experiences of healthcare professionals, family, friends or other Talking Point members, concern regarding the method of withdrawal of antidementia medications, the varying consequences of withdrawal on their loved one's clinical condition, and uncertainty regarding the benefits and consequences of stopping antidementia medications. These findings emphasise the need for patient-centred, highly individualised treatment and further research into the withdrawal and optimal use of antidementia medications.

References

1. Parsons C, Hughes CM, Passmore AP, Lapane KL. Withholding, discontinuing and withdrawing medications in dementia patients at the end of life: a neglected problem in the disadvantaged dying? *Drugs and Aging*. 2010; 27(6): 435-49

2. Parsons C, McCorry N, Murphy K, Byrne S, O'livan D, O'Mahony D. Assessment of factors that influence physician decision-making regarding medication use in patients with dementia at the end of life. *International Journal of Geriatric Psychiatry*. 2014; 29 (3): 281-90

Pharmaceutical Care

Using adapted focus group technique to explore how hospital clinical pharmacists perceive and experience suboptimal pharmaceutical care

A. McLean[a,b], V. Paudyal[c], D. Stewart[b] and M. Kinnear[a]

[a]NHS Lothian, UK [b]Robert Gordon University Aberdeen, UK and [c]University of Birmingham, UK
a.p.mclean@rgu.ac.uk

The activities of clinical pharmacists in hospitals are described under the umbrella term pharmaceutical care, which is a model of pharmacy practice where pharmacists work in partnership with patients and other health and social care professionals to achieve optimal outcomes with medicines.

The research aims to understand what hospital clinical pharmacists perceive to be suboptimal pharmaceutical care in the context of their own practice.

For the purpose of this research, pharmaceutical care was described to participants as being a continuum, ranging from harm →suboptimal →optimal.

A qualitative approach was adopted, using focus groups [1]. Participants were recruited by email sent to all hospital clinical pharmacists within the division (5 hospital pharmacies). Ethical approval for the research was obtained. All research participants consented to their inclusion in the study. Each focus group of 3–5 hospital clinical pharmacists lasted 55–65 min, and was audio recorded to provide context to the output if needed. Reflective accounts were kept by the PI and facilitator. Each group were given post-it notes to document their responses to the question "what would suboptimal pharmaceutical care look like", using the patient-focussed pharmaceutical care activities of medicines reconciliation and medicine/Kardex review.

Prompts were provided using the headers of team, task, individual, and policies and procedures, used in quality improvement methodologies. The responses will be mapped to the theoretical domains framework [2] during data analysis.

A total of 22 participants took part. The majority were female ($n = 16$). A total of 78 ideas on the theme of suboptimal pharmaceutical care were generated and written onto post-it notes; the majority were for the topic of medicines reconciliation ($n = 45$). This output was exemplified for suboptimal pharmaceutical care in medicines reconciliation by statements like "incomplete" and "using wrong/out of date sources", and for medicines review by statements like "time pressures" and "access to computer".

Focus groups generated ideas and themes for suboptimal pharmaceutical care in medicines reconciliation and medicines review. The focus group setting may have hindered the disclosure of personal accounts of suboptimal pharmaceutical care. This will be addressed by future work with in-depth one-to-one interviews with hospital clinical pharmacists.

References

1. Kitzinger, J. Introducing focus groups. BMJ 1995; 311; 299-302 [2] Cane, J., O'Connor, D. and Michie, S. Validation of the theoretical domains framework for use in behaviour change and implementation research. Implement Sci. 2012; 7; 27-37

A descriptive study exploring the use of pharmaceutical care acuity tools in UK hospitals

A. Abuzour, M. P. Tully, D. Steinke, S. Williams and P. J. Lewis

University of Manchester, UK
Aseel.abuzour@manchester.ac.uk

Patient safety is at the forefront of clinical pharmacy services. Current financial pressures within the NHS have led pharmacy teams to devise new, more efficient methods to prevent patient harm. One approach is the development of acuity tools to identify patients at most risk of harm from medicines and the targeting of pharmacy services to those patients who would most benefit. However, such service developments are rarely formally disseminated and little is known about acuity tools in practice

The aim of this study is to understand current practice regarding the use of pharmaceutical care acuity tools in UK hospital pharmacy services.

University research ethics approval was obtained in June 2017. A national survey was circulated to chief pharmacists of acute NHS hospitals in the UK to elucidate whether hospital pharmacies had adopted mechanisms for prioritising patients. Where such mechanisms exist, respondents were asked to participate in a 30 min semi-structured telephone interview exploring the development, evaluation and application of their tool. Participants were also asked to share any relevant documentation. Documents were analysed using documentary analysis by organising information such as 'risk factors' into categories related to acuity assessment and levels. Interviews were transcribed verbatim and thematically analysed.

To date, 78 out of 169 acute trusts in the UK responded to the online survey (46% response rate). Thirty-six interviews were conducted. The majority of tools had been developed in-house or adapted from other trusts and had not been evaluated. Preliminary findings show that current tools are often a combination of pharmacy service prioritisation (such as identifying patients who require medicines reconciliation) and patient acuity (based on the complexity of their condition and medication use). Communication with the inter-professional team, application of the pharmacists' clinical judgement and local context were described as key to the appropriate use of acuity tools.

Interviewees discussed the benefits of acuity tools including enhanced continuity of care and workload prioritisation. The ability to risk-assess and stratify patients based on a set criteria instilled confidence in pharmacists by ensuring that they would not 'miss' high risk patients. Furthermore, tools facilitated the management of pharmacy service resources by providing surveillance of service demand.

Potential disadvantages of tools included the sensitivity of acuity tools on wards which commonly use high risk medicines and the potential for rigid application of tools without professional judgement. In addition, pharmacists were not clear on their legal stance if patients were selected as a priority, but were not seen by a pharmacist due to shortage in staff or lack of time. Pharmacists also believed allocating high acuity levels to experienced pharmacists might lead to the de-skilling of junior pharmacists.

Acuity tools were seen to be useful for prioritising workload and ensuring the right patients are seen at the right time. However, they are not without their limitations and few trusts had formally evaluated their acuity tools. In order to address this limitation, future work will include the systematic development and evaluation of an acuity tool, grounded in evidence and practice.

A quality improvement project addressing peri-operative medication reconciliation and administration in elective surgical patients using five or more medications pre-admission

V. Bhagwan[a,b], C. Kirke[b], F. Meehan[b], M. Hickey[b], E. Kinlan[b] and T. Grimes[a,b]

[a]Trinity College Dublin, UK and [b]Tallaght Hospital Dublin, UK
tagrimes@tcd.ie

Medication reconciliation is recommended at care transitions. Little is known about the rate of unintentional discrepancies or missed doses at elective surgical admission.

This study sought to quantify the rate of unintentional discrepancies and clinically inappropriate missed doses, and to apply quality improvement (QI) methods to reduce these rates, at elective surgical admission of patients using ≥5 medications pre-admission.

This study combined QI with an observational study. A multidisciplinary QI team was assembled. Following Deming's System of Profound Knowledge,[1] Plan-Do-Study-Act (*PDSA*) and Langley's Model for Improvement,[2] a QI project was undertaken, employing standard QI techniques: weekly meetings held to brainstorm; process map; set goals; generate, appraise and apply tests of change, review measurement of goal attainment. A prospective observational study was employed to measure rates (*Study*) of: (1) unintentional discrepancy (UD) (2) clinically inappropriate missed doses (CIMD). The sampling frame was adults using ≥5 medications, scheduled for surgical admission who attended the pre-assessment clinic (PAC). Patients were randomly selected. The investigator took a best possible medication history, performed medication reconciliation, reviewed the prescription and administration chart and identified UDs and CIMDs. UDs were confirmed as unintentional by consultation with clinicians. CIMDs were assessed for potential to cause harm.[3] Rates of UD and CIMD were analysed using statistical process control (SPC) to identify variation. This enabled the plotting of run charts to display weekly rates of UD and CIMD. Findings were fed-back to the team weekly[1]. Research ethics approval was granted by the study hospital.

Over 20 weeks, 140 patients were recruited. Patients used median 8 (range 5-20) pre-admission medications, median age 61 (range 19-91), half (51%) were male. Agreed goals were absence of UD and CIMD. Applied tests of change (*Plan and Do*) included: 1) [Week 4] Design of, with patient involvement, a My Medicines Form with instructions to record a pre-admission medication list. This was posted to planned admissions; 2) [Week 14] Design of a multidisciplinary medication reconciliation form for use during PAC and anaesthetic review; 3) [Weeks 10-20] Training PAC nurses to undertake comprehensive medication history taking. Non-applied changes were deployment of pharmacist to Day of Surgery Admission (DOSA) lounge and use of mobile text message reminders to patients. Data were collected regarding UD on all 140 patients, and CIMD for 121 patients commencing week 4. Some 65% of patients experienced ≥1 UD by 24 h after admission (weekly rate range 36-85%). 79% (weekly rate ranged 50-100%) experienced ≥1 CIMD by 24 h after admission, the majority (90%) minor, 10% moderate, none severe. SPC identified no evidence of variation for either outcome over the study period, indicative that no improvement had occurred.

UD and CIMD were commonly experienced. QI should continue (Act). A weakness was the short duration (20 weeks), which potentially limited observation of any change effect, because the lag time between PAC and admission may be months. Small sample sizes limited reliability of analysis. Complementary qualitative research may support improvement.

References

1. Chiarini A. Japanese total quality control, TQM, Deming's system of profound knowledge, BPR, Lean and Six Sigma: Comparison and discussion, International Journal of Lean Six Sigma, 2011:2(4):332-355.
2. Langley GL, Moen R, Nolan KM, Nolan TW, Norman CL, Provost LP. The Improvement Guide: A Practical Approach to Enhancing Organizational Performance (2nd edition). San Francisco: Jossey-Bass Publishers; 2009.
3. Dean BS, Barber ND. A validated, reliable method of scoring the severity of medication errors. American Journal of Health-System Pharmacy. 1999 Jan 1;56(1):57-62.