NATIONAL MEDICINES SYMPOSIUM 2021
EVALUATING QUALITY USE OF MEDICINES:
How do we know if we're making a difference?
18 May 2021 virtual event

100

Improving antibiotic prescribing for cellulitis: an impactful collaboration between three rural-regional health services

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Background: An analysis of the National Antimicrobial Prescribing Survey (NAPS) data indicated that antibiotics for cellulitis were more often inappropriately prescribed in regional and remote hospitals compared to major-city hospitals (25.7% v 19.0%, p = <0.001). Given that antibiotic therapy for cellulitis is well established, this represented an evidence-practice gap.
Objective: To improve the appropriateness of antibiotic prescribing for cellulitis by implementing a cellulitis management plan developed through a collaboration between three Victorian rural-regional health services.
Method: An adult lower limb cellulitis management plan incorporating advice on antibiotic prescribing was co-designed by three rural-regional Victorian health services. Adults with ICD-10-AM codes for lower limb cellulitis or erysipelas admitted as inpatients of the three hospitals between 1 May 2019 to 30 November 2019 (baseline) and 1 March 2020 and 31 October 2020 (post-implementation) were included. Patients were excluded if they were admitted to ICU during their admission. Antibiotic prescriptions on Day 1 were assessed using the NAPS appropriateness definitions.
Key findings: Overall, 29% (37/127) of patients with lower limb cellulitis were commenced on the cellulitis management plan. The overall appropriateness of antibiotic prescribing at Day 1 was similar in the baseline and post-implementation groups (79% and 82% respectively). In the post-implementation group, there was a non-statistically significant increase in antibiotic appropriateness when the cellulitis plan was initiated (88% v 79%, 95% CI -5.6% to 19.8%, p=0.20).
Implications & lessons learnt: Cross-organisational collaborations present unique challenges, particularly in rural-regional health services where resources and staffing structures can vary considerably. This study showed that a collaboration between three independent rural-regional health services can conceptualise, design and implement shared resources. Reduced duplication in resource development between health services and across jurisdictions is urgently required. Greater clinician-researcher skills in implementation science methods may improve the adoption and integration of evidence-based prescribing in health services.

NATIONAL MEDICINES SYMPOSIUM 2021
EVALUATING QUALITY USE OF MEDICINES:
How do we know if we're making a difference?
18 May 2021 virtual event

101

Improving medicine information on discharge summaries via a pharmacy-medical collaborative process

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Background: The generation and distribution of an accurate medication at transitions of care is a requirement of the Australian National Safety and Quality Health Service Standards - Second Edition. At our Victorian metropolitan health network, a doctor prepared discharge summary includes the medication list. Historical auditing from November 2019 identified that discharge summary medication lists provided on discharge from one of the General Medicine units had an accuracy rate of 16%. Currently, clinical pharmacy services reconcile the discharge prescription but not the doctor prepared discharge summary medication list.
Aim: To assess whether a pharmacy-medical collaborative process results in higher accuracy rates of discharge summary medication lists compared to historic workflow.
Methods: Between 22 July 2020 and 31 July 2020, patients receiving clinical pharmacy services at discharge from the General Medicine ward received an intervention where an intern pharmacist reconciled pharmacist-screened discharge prescriptions against the medication list on patients' discharge summaries. Any discrepancies were relayed to the medical doctor via a written note and the doctor was prompted to correct the discrepancies and notify the intern pharmacist when this was done. The intern pharmacist then reconciled the pharmacist-screened prescription against the medication list a second time and determined the percentage of discharge summary medication lists that contained no discrepancies between the pharmacist-screened prescription (accuracy rate). The accuracy rate of the discharge summaries that received the collaborative process was then compared to historical data.
Results: Twenty two patients received the intervention. The accuracy rate of the collaborative process was 82% (18/22) compared to 16% (5/13).
Conclusion: The intervention was shown to significantly improve accuracy rates of discharge summary medication lists. This study opens up the potential for pharmacists to collaborate with medical doctors in the generation of medications lists to improve accuracy.

NATIONAL MEDICINES SYMPOSIUM 2021
EVALUATING QUALITY USE OF MEDICINES:
How do we know if we're making a difference?
18 May 2021 virtual event

102

Supporting safe practices for low-dose methotrexate

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Background: Council of Australian Therapeutic Advisory Groups (CATAG) is a national collaboration of jurisdictional drug and therapeutics committees (DTCs) with responsibility for acute care sector medicines governance and management. Through expert, consensus-based collaboration CATAG aims to standardise and improve medicines use. Inconsistent practices and information about the use of low-dose methotrexate for inflammatory diseases results in unfounded patient and health professional concerns, which can influence therapy decisions and adherence. In Australian public hospitals, methotrexate is often listed as a chemotherapeutic agent, and precautions for handling high-risk chemotherapeutic agents may be required, no matter the dose. Health professional attitudes, handling and provision of medicines information to patients can cause confusion, fear and stigmatization, effecting patient adherence to treatment.
Objective: To provide implementable, consistent, evidence-based information for DTCs on dispensing and administering low-dose methotrexate (oral and subcutaneous dosage forms) and provide health professionals with a resource to reassure patients undergoing low-dose methotrexate treatment.
Methodology: The development was informed by a review of literature, publicly available policies and a survey of Australian DTCs. An expert advisory group (EAG) collaborated to refine the position statement. Consensus was gained from EAG and CATAG members and the statement was sent for review and comment by external stakeholders. Comments were collated and incorporated into the document, with a final version published in November 2020.
Outcome: The Position Statement provides recommendations relating to best practice on the use of low-dose methotrexate in hospitals for DTCs and clinicians. The statement was disseminated to stakeholders and jurisdictional members. It is published online and is referenced on consortium member websites including the ARA, NPS MedicineWise and SHPA.

This work was funded by the Australian Government Department of Health through the Value in Prescribing – bDMARDs Program Grant. The authors acknowledge the assistance provided by Targeted Therapies Alliance in reviewing the abstract.

103

Evaluating Quality Use of Medicines: How do we know if we're making a difference?

Dr Penelope Bergen
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The Consumers Health Forum was engaged and funded by NPS MedicineWise to carry out Consumer Health Literacy Segmentation Research.

The research included a series of statements to explore the attitudes of nearly 1500 people in relation to the Quality Use of Medicines.

The findings revealed the need for a coordinated approach to identifying and addressing health literacy, medication literacy and the QUM needs of higher-risk population segments.

Significant social problems require multiple, multi-faceted approaches working in a coordinated way to achieve a collective impact.

The research identified a suite of indicators from across the sector that can support the assessment of the impact of programs that aim to improve consumer health literacy.

It asks the questions: how we can know if we're making a difference? How do we identify what we should measure? How do we plan to measure it? And how can we measure it? We know that to make a sustained impact, we need to do more and work differently. This talk presents some tangible steps already being taking to progress some of the key findings of recent research.

NATIONAL MEDICINES SYMPOSIUM 2021
EVALUATING QUALITY USE OF MEDICINES:
How do we know if we're making a difference?
18 May 2021 virtual event

104

Perceptions and experiences of health professionals and orthopaedic patients on pain management and opioid use in orthopaedic inpatients

Ms Valerie Sim[1], Ms Sally Marotti, Ms Stephanie Fontanarosa, Ms Sonia Bushby, Mr Peter White, Dr Sarah Hunter, Dr Constance Kourbelis, Mr Jonathan Beacham
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Background: Opioids are high risk medicines most commonly prescribed for analgesia. These medicines may cause adverse effects including respiratory depression, sedation, constipation, and have the potential to produce tolerance and dependence, even at prescribed doses. Inappropriate prescribing of opioids on hospital discharge has been identified as a significant contributor to opioid misuse.
Aim: The aim of the research was to explore perceptions and experiences of health professionals and orthopaedic patients around pain management and opioid use, with the goal to identify recurring themes and areas for improvement. This information is intended to stimulate further research into developing and implementing strategies to improve hospital practices, thereby improving patient outcomes and reducing patient harm associated with these medicines.
Methods: Over a 3 month period, 20 health professionals and 20 patients were interviewed to evaluate their perceptions and experiences prior to, and during hospital admission. Open ended questions were used to explore their understanding of the role of opioids in pain management, barriers and enablers to appropriate prescribing, and drivers for opioid prescribing. Additionally, participants were asked to describe their experiences and expectations with pain management and suggestions to improve this.
Results: Upon analysis of the interview data, recurring themes identified as potential areas for improvement include:
•Delayed and inconsistent medication education between elective and emergency admissions
•Minimal patient participation and discussion in pain management plan (e.g. analgesic options, non-pharmacological strategies, weaning of opioid use prior to discharge, long-term risks of opioids)
•Goals and expectations surrounding duration of opioid therapy and timeline for post-operative pain improvement
•Assumption that community healthcare providers have training in post-operative pain management
Conclusion: The project identified key areas for improvement with the use of opioids in this setting. The results provided a pathway for translational research to develop targeted interventions to improve inter-professional pain management in this population.

NATIONAL MEDICINES SYMPOSIUM 2021
EVALUATING QUALITY USE OF MEDICINES:
How do we know if we're making a difference?
18 May 2021 virtual event

105

Inaccurate QT interval estimation in people taking antipsychotics: are we contributing to misinformed treatment decisions?

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Antipsychotics have the potential to prolong the electrocardiogram (ECG) QT interval, which is associated with cardiac events and increased mortality. Measurement of the QT interval can be performed manually or automatically by the ECG machine. Additionally, the QT interval must be corrected (QTc) for antipsychotic-induced tachycardia such that QT interval in patients with varied cardiac cycles can be accurately interpreted. ECG machines automatically measure the QT interval and correct (QTc) using the Bazett's formula.

This project aimed to investigate the mean QT and QTc interval of people taking antipsychotics to determine any differences using a) manual vs automated QT interval measurement and b) QTc correction using Bazett's, Fridericia's, Framingham's and Hodges' formulae. We will explore the impact of these methods in determining the number of patients with a prolonged QTc interval

This project was an observational retrospective data analysis and chart review. We audited the charts of all consecutive patients taking antipsychotics with an ECG record, who were admitted to the psychiatric ward of a large tertiary hospital in Brisbane between 1st March 2017 and 23rd February 2018.

Of 377 audited patients, the mean (±SD) QT values were 352.28 ± 34.5 ms for manual and 371.62 ± 34.1 ms for automatically measured; a difference of 19.34 ms.

The mean manually-measured QTc values were 411.6 ± 25.0 ms for Bazett's, 390.4 ± 22.9 ms for Fridericia, 391.9 ± 21.1 ms for Framingham, and 393.9 ± 21.5 ms for Hodges' formulae.

There were more patients with a prolonged QTc using Bazett's formula (28) than Fridericia's (6), Framingham's (6), or Hodges' (5) formulae.

Using ECG machines which manually measure QT interval and correct using Bazett's formulae overestimates the risk of QTc prolongation in patients taking antipsychotics. This may provoke unnecessary treatment changes or cessation, leading to potential adverse psychiatric outcomes.

NATIONAL MEDICINES SYMPOSIUM 2021
EVALUATING QUALITY USE OF MEDICINES:
How do we know if we're making a difference?
18 May 2021 virtual event

106

Measuring awareness of quality use of medicines among Australian consumers

Ms Leanne Atkins[1], Ms Jemma Gonzalez[1]
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Background: As a steward of quality use of medicines (QUM) in Australia, NPS MedicineWise is committed to developing activities to increase consumer awareness of QUM, to improve health outcomes for Australians. An important component of implementing these activities is monitoring trends and evaluating changes over time in consumer QUM awareness.
Method: We developed an online National Consumer Survey to measure baseline QUM awareness. Fifteen survey indicators were identified from health literacy research, conducted by the Consumers Health Forum of Australia, and agreed in consultation with consumer organisations and representatives. Consumers were asked to indicate their level of agreement with each indicator, on a 5-point Likert scale. A mean score was calculated across all indicators to identify an average for each respondent and a mean rating across all respondents. A categorisation of high, medium and low awareness was applied.
The survey was implemented in October 2020 with a random sample of consumers aged over 16 years, representative of the Australian population. It was completed by 2,028 consumers.
Findings: Respondents commonly exhibited a medium level of QUM awareness, with a mean of 3.8/5. The level of QUM awareness increased with age and several other demographic differences were observed. Most respondents understood why they were taking medicines, how to safely store medicines and that some medicines could be addictive. Three-quarters of respondents had a regular trusted doctor and knew that medicines had benefits and risks. Fewer respondents were aware of possible interactions between medicines and other substances or understood that medicines shouldn't be shared or used beyond their expiry date. Respondents were also less certain about how to access trustworthy information to manage their own health and medicines.
The National Consumer Survey will be repeated in 2021 to identify any changes in consumer QUM awareness and to inform future consumer activities.

NATIONAL MEDICINES SYMPOSIUM 2021
EVALUATING QUALITY USE OF MEDICINES:
How do we know if we're making a difference?
18 May 2021 virtual event

107

Utilisation of pre-exposure prophylaxis (PrEP) against HIV in Australian general practice.

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Background

PrEP became available through the Australian Pharmaceutical Benefits Scheme (PBS) on 1 April 2018 for HIV infection prevention in patients ≥18 years at medium to high HIV risk, as defined by Australian guidelines. We investigated patterns of PrEP utilisation in the general practice setting since PBS listing, and factors associated with discontinuation of therapy.

Methods

This longitudinal study included patients aged 18-74 years attending general practices participating in MedicineInsight, a large-scale national database of deidentified electronic health records, between October 2017 and September 2019.

Results

PrEP utilisation increased 10-fold following PBS listing. On average, patients had 9.7 prescriptions for PrEP recorded per year, giving a medication possession ratio of 80.8%. Of the 762 patients first prescribed PrEP after 1 April 2018, most were male (98.3%) and aged between 25 and 50 years (68.9%). At the end of the study, 65.1% of these patients were on active therapy, 19.2% had discontinued therapy and 15.7% were lost to follow-up. Patients who discontinued were more likely to attend low PrEP caseload practices (adjusted OR 1.7; 95% CI: 1.0–2.9, p=0.047) or live in more disadvantaged socioeconomic areas (adjusted OR 1.8; 95% CI:1.1–2.9, p=0.012).

Conclusions

Following PBS listing PrEP utilisation increased and discontinuation of therapy was associated with socioeconomic and practice factors.

Implications

This information highlights a need to implement strategies to improve discontinuation rates among low caseload practices and disadvantaged areas (where the prevalence of gay men is low). PrEP health promotion should be expanded to these areas, to achieve elimination of HIV transmission.

NATIONAL MEDICINES SYMPOSIUM 2021
EVALUATING QUALITY USE OF MEDICINES:
How do we know if we're making a difference?
18 May 2021 virtual event

108

Challenges of developing indicators of misuse of medicines in real-time prescription monitoring systems

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The NSW Real-Time Prescription Monitoring (RTPM) Program seeks to address the key problems of non-medical use, inappropriate prescribing (whether negligent or inadvertent), for opioids, benzodiazepines and other medicines with high risk of misuse. An RTPM system, which has been advocated by professional groups, consumer groups, coroners, police and regulators, will provide a tool that prescribers and pharmacists can use to ensure patient safety and aid in preventing diversion of monitored medicines to non-medical uses.
Objectives:

- To work with the data elements that are captured in the national data exchange (NDE) to create meaningful indicators of misuse of high-risk medicines
- To understand the limitations of transaction data captured by the NDE to act as proxy measures of inappropriate use of high-risk medicines
- To create alerts and notifications to clinicians that are impactful, useful and can improve patient safety through better use of high-risk medicines

Key lessons: NSW Health convened an expert panel of clinicians, academics and pharmacologists to advise on selection of medicines to be monitored in NSW. They also advised on the risk thresholds that would trigger alerts to clinicians, that were either patient or medicine related. The NDE only captures data on the prescriber, the medicine and the dispensing transactions, not clinical information such as reason for use. This limits the type and degree of decision support that can be provided at point of care. The Panel agreed on key principles to guide the development of these alerts. They were:
Alerts are focused on preventing harm
Alerts are intended to support clinical decision making and enhance clinician judgement
Alerts are focused on presenting insights from a new data set, rather than replicating functionality provided in other clinical systems
Alerts will be specific and sensitive, focus on the highest risk scenarios and aim to limit false positives

NATIONAL MEDICINES SYMPOSIUM 2021
EVALUATING QUALITY USE OF MEDICINES:
How do we know if we're making a difference?
18 May 2021 virtual event

109

Measures in practice: evaluating Virtual Clinical Pharmacy Services (VCPS) at rural and remote hospitals

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Background: Patients in a rural and remote area of NSW covering almost 450,000km2 have reduced access to clinical pharmacy services. Onsite clinical pharmacy services are only available in eight of 46 hospitals resulting in increased medication-related error risk. Virtual clinical pharmacy services using telehealth was designed, implemented and evaluated with aims to improve the quality use of medicines for rural and remote patients.
Aim: To use routinely collected health data to demonstrate the efficacy of telehealth clinical pharmacy.
Methods: Experienced health researchers reviewed routinely collected health data to identify appropriate evaluation measures. Processes and systems were reviewed and documented in a data management guideline to ensure high quality data collection. A biostatistician was utilised from the design stages to ensure the study was powered to detect a difference. 2.1FTE clinical pharmacists delivered a new clinical service using the electronic medical record, electronic medication chart and wireless teleconferencing to inpatients at eight hospitals over eleven months
Results: The primary outcome was improvement in admission and discharge medication reconciliation as collected from the Electronic Health Record (eMR). Secondary outcome measures included length of stay, readmission (from Health Information Exchange), falls and detection of medication errors (from Incident Management Systems). Process measures included number of pharmacy reviews, number of mediation lists provided and uptake of pharmacy recommendations. Key performance indicators (KPI's) were reported back to sites monthly. Early process measures indicate feasibility and acceptability and the efficacy evaluation is currently in progress.
Implications: Access to high quality data and understanding system limitations is critical to project success. This research can improve access to hospital pharmacy services, provide a model for virtual pharmacy delivery and evaluation in rural and remote locations and inform best practice. We intend to publish the results in open access peer-reviewed academic journals.

NATIONAL MEDICINES SYMPOSIUM 2021
EVALUATING QUALITY USE OF MEDICINES:
How do we know if we're making a difference?
18 May 2021 virtual event

110

Evaluating the Antimicrobial Stewardship Clinical Care Standard in Australia: Are we making a difference?

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In 2014, the Antimicrobial Stewardship (AMS) Clinical Care Standard (CCS) became a requirement for health service organisations (HSOs) being assessed against the National Safety and Quality Health Service (NSQHS) Standards for accreditation. The Australian Commission on Safety and Quality in Health Care objectives were to ensure a consistent national approach to AMS, optimise patient outcomes, minimise the risk of adverse effects and the development of antimicrobial resistance.

When the CCS was revised in 2020, a review was conducted to evaluate the uptake of the CCS, its relevance, feasibility to implement, and use by key stakeholders. In total 213 survey responses were received, with 79.3 % of respondents indicating the CCS was relevant, 67.4 % had changed practice for the better, and 67.1 % were using it in their organisation.
Ten semi-structured interviews (quality managers, clinicians, and consumers) suggested that the CCS was current, high quality and fit for purpose.

NSQHS assessments show that in 2020, 98% of HSOs met the requirements of the AMS CCS (Action 3.15d), compared to 36% in 2015. Review of antimicrobial prescriptions with point-of-care interventions and direct feedback to prescribers increased considerably (89% versus 29% respectively).

Data from the Hospital National Antimicrobial Prescribing Survey indicate improvements have been made in indicators such as documentation of indication and review dates. However, other aspects of antimicrobial prescribing appropriateness, remain of concern. For example, compliance with therapeutic guidelines or local guidelines, which declined from 72.1% in 2013 to 65.3% in 2019.

While the CCS remained largely appropriate, the revised CCS includes a new quality statement for allergy assessment. The CCS was endorsed by 25 key Australasian professional organisations.
The implementation of AMS supported by the NSQHS with specific CCS has been an important approach for improving antimicrobial use. Challenges remain in translating this to community healthcare settings.

111

Cost benefit analysis of the NPS MedicineWise 2015 'Blood pressure: measure, manage, monitor' program

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Background: Cardiovascular disease (CVD) remains a major health problem in Australia, affecting an estimated 5.6% of Australian adults. Hypertension, or elevated blood pressure (BP), is a well-established and important modifiable risk factor for CVD.
Objective: In March 2015, NPS MedicineWise launched the Blood pressure: measure, manage and monitor visiting program with the aim of improving the quality use of antihypertensive medicines and overall cardiovascular health outcomes for people managed in Australian primary care. One of the key objectives of the program was to reduce the proportion of patients who are prescribed a fixed-dose combination (FDC) BP- lowering medicine as initial therapy.
Method: We explored the impact of the program on GP prescribing and costs and savings to the health care system at the population level by applying interrupted time series methodology to Pharmaceutical Benefits Scheme (PBS) dispensing data over the period from January 2010 to June 2019.
Findings: The program was estimated to reduce dispensing volumes of single-ingredient and FDC antihypertensives by an average of 3.0% and 4.6% per year respectively after the program launch. The resulting financial savings to the PBS as a result of the program was estimated at $17.35 million for FDC medicines and $15.35 million for single-ingredient medicines, for a total of $32.7 million of PBS cost savings between March 2015 and June 2019.
The total cost of the NPS MedicineWise program was estimated at $4.1 million. The analysis of the PBS savings resulted in an estimated $25.6 million in net benefit, with a benefit to cost ratio of $7.19 gained for every dollar spent.
Implications: The program was of value to the health system and to the funder, the Department of Health. It also led to reduced prescribing of FDC anti-hypertensive medicines, and improvements in the quality use of medicines.

NATIONAL MEDICINES SYMPOSIUM 2021
EVALUATING QUALITY USE OF MEDICINES:
How do we know if we're making a difference?
18 May 2021 virtual event

112

Systems-based approaches to opioid deprescribing: an overview of systematic reviews

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Background: Clinical practice guidelines recommend that opioid analgesics should only be prescribed when necessary, in the lowest effective dose, and for the shortest duration. Deprescribing (dose reduction or cessation) of prescribed opioids can be challenging and systems-based interventions to support deprescribing in clinical practice may be of value to health care professionals, patients and policymakers.
Objective: An overview of systematic reviews was performed to synthesise and evaluate evidence examining the impact of systems-based interventions on opioid deprescribing.
Methods: Comprehensive searches in CINAHL, Cochrane Library, EMBASE and MEDLINE were undertaken to identify systematic reviews which examined system-based interventions for prescribed opioid reduction or cessation. Peer-reviewed systematic reviews, published in the English language from May 2010 to May 2020 were eligible for inclusion. The primary outcome was dose reduction in opioids, measured in morphine milligram equivalents (MME). Secondary outcomes included pain scores, physical and psychological function, quality of life measures, adverse events and healthcare utilisation.
Findings and implications: Four systematic reviews were identified which examined system-based opioid deprescribing approaches. Interventions were heterogeneous in nature and included legislation and policies, clinical practice guidelines, prescription drug monitoring programs, patient and provider education and pain management programs. All strategies observed reductions in opioid prescribing, ranging from 7.6 to 212.3mg MME. Multi-dimensional intervention strategies, such as legislation coupled with co-interventions showed greater reductions than uni-dimensional strategies. Decreases in aberrant drug behaviours, opioid overdoses and frequency of presentation to emergency departments were also reported. It is not clear however if these reductions resulted in improved patient-centred outcomes. Studies were predominately from the United States of America which may impact on the transferability of findings to other jurisdictions.

NATIONAL MEDICINES SYMPOSIUM 2021
EVALUATING QUALITY USE OF MEDICINES:
How do we know if we're making a difference?
18 May 2021 virtual event

113

Opioid stewardship in Australian residential aged care facilities: A collaborative approach to quality opioid medication use

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Opioid stewardship models are developing across Australian primary and secondary care settings; however, limited data describe models in residential aged care facilities (RACF) despite a 93% prevalence of chronic pain in this setting. Our objective was to develop and evaluate a role for a non-dispensing pharmacist as part of an integrated general practice team, in a RACF opioid stewardship approach to improving quality use of opioid medications.

Our general practice implemented an opioid stewardship model to optimise and monitor opioid usage for our patients located across 12 RACF in Canberra between March 2019 and September 2020. The primary outcome was the development of a multi-disciplinary chronic pain care plan to document treatment and monitoring strategies for optimising pain control. Secondary outcomes were opioid usage based on daily oral morphine equivalence, and pain scores to monitor for any potential harm associated with opioid stewardship.

The pharmacist reviewed and documented existing pain management strategies in a care plan and discussed recommendations for optimisation with the general practitioner. The general practitioner implemented accepted recommendations and distributed finalised care plans to the RACF.

One hundred and sixty seven residents were identified using our medication record system as having required opioid analgesia for pain management and received a care plan. Residents were then scheduled for a follow up care plan after 6 months, which was achieved for 100 residents (60%). Scope for optimising opioid therapy was identified for 47 residents (28%) at baseline and 23 residents (23%) at follow up. Mean opioid usage and pain scores were reduced at follow up; 19.4mg (SD 40.8) vs 13.4mg (SD 22.8), and 4.2 (SD 2.3) vs 3.9 (SD 2.0) respectively.

Our findings suggest that a systematic, multi-disciplinary opioid stewardship approach can identify scope for improving the quality use of opioid medicines use by optimising pain management plans.

114

Supporting change in dementia and changed behaviour care

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Background: The Royal Commission into Aged Care highlighted a number important of issues facing the aged care sector including an over-reliance on psychotropic medicines, particularly antipsychotics, to control changed behaviours in people living with dementia. Antipsychotics and benzodiazepines are commonly prescribed despite their limited role in the management of changed behaviours. Non-pharmacological strategies are first-line but are frequently underutilised by healthcare staff due to perceived barriers including lack of time and resourcing limitations.
Objective: The NPS MedicineWise 'Dementia and changed behaviours' program aims to improve the management of changed behaviours across primary and aged care settings by promoting the use of person-centred care while reducing reliance on antipsychotics and benzodiazepines.
Method: A system-based approach to program interventions saw educational visiting extended beyond general practice to include nurse champions and pharmacists working in residential aged care facilities (RACFs). A novel and evidence-based train-the-trainer framework was used and nurse champions were also provided upskilling in micro-training and feedback so that learnings could be communicated to others in the RACF care team.
Process (e.g., participation and reach), impact (e.g., audience surveys of satisfaction, knowledge, confidence and health literacy) and outcome evaluations are being performed.
Findings: Program evaluation is ongoing and preliminary findings are positive. Participants have welcomed the multi-tiered education and support being delivered, particularly around prescribing and how to disseminate information to other members of the care team in a way that encourages positive work culture and sustained change.
Lessons learnt and implications: A cross disciplinary, system-based approach that targets not just prescribers but multiple members of the care team can facilitate QUM and more sustained change in this space. The train-the-trainer model has proven to be a useful approach in settings with high staff turnover such as RACFs.

NATIONAL MEDICINES SYMPOSIUM 2021
EVALUATING QUALITY USE OF MEDICINES:
How do we know if we're making a difference?
18 May 2021 virtual event

115

Consumer Feedback on medication use in Residential Aged Care - Important data on how we can manage medication better

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Background: For the past 5 years medication-related complaints have been the top-ranked complaint in residential aged care facilities (RACFs) reported to the Aged Care Quality and Safety Commission (ACQSC). Complaint data provides unique consumer-centred feedback and when aggregated also highlights problematic trends. This is the first dedicated analysis of medication-related complaint data in Australian RACFs.
Objectives: To determine the aspects of medication management most frequently criticised in RACFs; to evaluate if these complaints were more prevalent in certain health conditions and identify medications involved.
Methods: An anonymised national complaints-database was compiled from July 2019 to June 2020 and all medication-related feedback identified. A coding framework with 13 categories was developed to classify each complaint. The framework was based on the '6 Rights of medication administration' and other aspects of medication management.
Key findings: A total of 1,224 complaint issues related to medication use, with 45% of complaints relating to administration alone. Three categories received over 60% of complaints, namely:
1. Not receiving medication at the right time (27%)
2. Poor medication management policies and procedures (22%), and
3. Chemical restraint (14%).

Nearly half described an indication or medical condition. These were, in order; pain management, sedation, infectious disease, diabetes and Parkinson's disease. Opioids were the most common agents reported, followed by risperidone and insulin.
Lessons learned: Most of the medication-related complaints relate to basic aspects of care such as delayed medication administration and poor policies and procedures. Many relate to inadequate management of pain, diabetes and Parkinson's disease; conditions where medication timing is critical for effect and quality of life.
Implications: These findings strongly suggest a deficit in the quality of medication management in some RACFs. This may reflect inadequate governance, training and guidance provided to staff. This initial complaint analysis can also serve as a benchmark in the future

116

COVID-19 and hydroxychloroquine prescribing in general practice

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Background: After media coverage hydroxychloroquine was being trialled as a potential treatment for COVID-19, there was a reported rapid increase in patient demand for the medicine. This study describes hydroxychloroquine prescribing in primary care at the beginning of the pandemic.
Method: We analysed de-identified prescribing data from patients attending one of 471 general practices participating in the national general practice program MedicineInsight between May 2018 and May 2020. Weekly prescribing rates during March–May 2020 were compared with rates pre-pandemic. Conditions that may explain hydroxychloroquine use were investigated via patient medical history.
Results: The hydroxychloroquine prescribing rate in March 2020 was double the average monthly prescribing rate pre-pandemic (1.36 scripts vs 0.72 scripts per 1,000 encounters; risk ratio 1.9; p<0.0001). Among patients prescribed hydroxychloroquine during the pandemic, 80% had previously been prescribed hydroxychloroquine. Half of the 20% newly prescribed hydroxychloroquine had a medical history that might explain its use for non-COVID-19 reasons (eg, rheumatoid arthritis, malaria). Compared to patients prescribed hydroxychloroquine pre-pandemic, patients new to therapy were more likely to be male (33% vs 21%), younger (30% vs 18% aged 20–49 years), reside in major cities (66% vs 54%) and the most socioeconomically advantaged quintile (34% vs 20%).
Discussion: Hydroxychloroquine prescribing rates increased in Australian general practices from March. Most patients had previously been prescribed hydroxychloroquine, suggesting the increase may be attributable to stockpiling. Among patients new to therapy, half had a relevant indication for therapy recorded in their medical history suggesting there may have been some potentially inappropriate prescribing.
Implications for practice: Most hydroxychloroquine prescribing during the initial pandemic period was appropriate. However, the initial increase in prescribing rates highlights the challenges and uncertainties that GPs face during this pandemic, and the need to support GPs in the face of rapidly changing clinical evidence and pressure to prescribe.

NATIONAL MEDICINES SYMPOSIUM 2021
EVALUATING QUALITY USE OF MEDICINES:
How do we know if we're making a difference?
18 May 2021 virtual event

117

Data science and the quality use of medicines: a tool for large scale understanding, improvement, and assessment

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An increasing array of data is collected in routine clinical care, including large amounts of prescribing and prognostic data, but very little is utilised currently. The field of quality use of medicines has the potential to benefit more than most from harnessing these data, in order to understand the nature of real-world issues, to target improvements, and to assess responses to interventions. Unfortunately, such data are often not easily or sufficiently accessible, analysable, or interpretable.

Better harnessing of data has been essential for our health service-based program, which addresses local issues within prescribing and pharmacy practice. While this previously was not readily possible, a number of steps have made this achievable now: accessing a clinical data warehouse with regularly updated raw data, establishing basic low-cost physical and virtual data science infrastructure, upskilling project staff in data science skills, and engaging a clinician data scientist to support our program.

This embrace of data science has provided benefits across multiple domains. Understanding our own local data has proven necessary to understand patterns of problematic prescribing and use on a hospital, department, and individual level, which ensures interventions are relevant and understood as truly necessary by end users. We have been able to systematically identify individual patients at increased risk of poor medication-related outcomes in real-time, so that prescribers can be provided with that information as they prescribe, and we have utilised machine-learning algorithms to better detect adverse drug reactions. Finally, we have started to identify meaningful but easily measurable metrics based on real-world prescribing to track the impact of interventions. This talk will illustrate examples.

Data science could and should be a key part of the future of quality use of medicines. By building it at the core of interventions, applicability and impact can be improved for the betterment of patients.

NATIONAL MEDICINES SYMPOSIUM 2021
EVALUATING QUALITY USE OF MEDICINES:
How do we know if we're making a difference?
18 May 2021 virtual event

118

Evaluating Quality of Antimicrobial Use in Australian Residential Aged Care Facilities using Aged Care Quality and Safety Commission Consumer Feedback

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Background: Over 240,000 people are cared for in Australian residential aged care facilities (RACF). Antimicrobial resistance is a global threat; RACF residents are a vulnerable population.
Objective: The Aged Care Quality and Safety Commission (ACQSC) is the primary point of contact for consumers and providers in relation to quality and safety. Reviewing and identifying themes in consumer feedback around medication issues is a way to understand poor practice around antimicrobial use in RACF and can ensure that consumers are considered in development of improvement initiatives
Methods: Complaints entered into an anonymised database from July 2019 to June 2021 were examined to identify medication-related complaints using a coding framework of 13 categories based on the "6 Rights of Medication Administration", and more specifically antimicrobial-related complaints.
Results: Of medication-related complaints
-10% related to infectious diseases; the third most common complaint after pain/palliative care and sedatives
-Most common amongst infectious diseases complaints were in relation to urinary tract infection diagnosis or treatment
Key findings and Lessons Learned:

- ACQSC complaints around antimicrobial prescribing reflects issues identified from other data sources such as Aged Care National Antimicrobial Prescribing Survey
- These initiatives are in place to improve quality of antimicrobial use:

(1) Changes to PBS repeat prescribing of commonly prescribed antibiotics
(2) Pharmacist labelling of prescriptions to include defined number of days
(3) Addition of medication management to the National Aged Care Mandatory QI program (from July 2021); https://www.agedcarequality.gov.au/consumers/national-aged-care-mandatory-quality-indicator-program

- Future initiatives that should be considered include implementing evidence-based, aged-care specific Antimicrobial Stewardship policies to assist providers, aged care staff and pharmacists, and promoting further antimicrobial consumer information specific to aged care setting.

https://www.agedcarequality.gov.au/consumers/national-aged-care-mandatory-quality-indicator-program

NATIONAL MEDICINES SYMPOSIUM 2021
EVALUATING QUALITY USE OF MEDICINES:
How do we know if we're making a difference?
18 May 2021 virtual event

119

Predicting Recurrent Readmission for Targeted Medication Intervention Using Artificial Intelligence

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Recurrent, unplanned hospital readmissions are a major economic and healthcare problem both in Australia. Interventions to prevent readmission often entail targeted, community-based programs for patients with specific disease comorbidities or other risk factors. Furthermore, identifying patients at risk has proven challenging and mostly restricted to the identification of specific, often weak risk factors.

We propose an artificial intelligence algorithm for the prediction of recurrent readmission (>2 unplanned readmissions in the subsequent 12 months) in patients newly discharged from hospital. Our algorithm uses over 400 variables, related to patient demographics, discharge medications, pathology results and diagnoses, to predict those at risk of recurrent readmission. Our algorithm is a modification of the TabNet model,[1] a deep neural network algorithm using attention mechanisms to identify unique combinations of variables that predict individual risk. This architecture can be exploited to not only predict risk of recurrent readmission, but to identify the contributing risk factors, including potential targets for deprescribing efforts.

After excluding recurrent readmissions to oncology/haematology, dialysis, and palliative care, 395,872 admissions between January 2013 and February 2020 were identified for inclusion. 5.9% of patients experienced recurrent readmissions in the 12 months after index admission. The final algorithm was tested on 10% of the data held out of algorithm training. On this data, the model achieved an area under the receiver operating characteristic (AUC) of 0.84. At the optimum cut-point, this represents a sensitivity of 90% and specificity of 60%.

We propose an algorithm for the accurate prediction of recurrent readmission. Moreover, for each individual at risk of recurrent readmission, our algorithm can identify the contribution of discharge medications (and combinations) to overall risk, including opioids, sedatives and other medications designated for targeted deprescribing.

1. Arik SO, Pfister T. TabNet: Attentive Interpretable Tabular Learning [Internet]. arXiv [cs.LG]. 2019. Available from: http://arxiv.org/abs/1908.07442

NATIONAL MEDICINES SYMPOSIUM 2021
EVALUATING QUALITY USE OF MEDICINES:
How do we know if we're making a difference?
18 May 2021 virtual event

200

Developing and implementing a protocol to manage diabetes pre- and post-bariatric surgery

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Bariatric surgery is increasingly being used as an effective weight loss strategy that may also result in remission of Type 2 diabetes mellitus (T2DM), which is common in obese patients. More than 40% of patients undergoing bariatric surgery have been characterized as having impaired glucose tolerance or T2DM. Pre- and post-surgery management of patients with T2DM poses a number of challenges with the initial implementation of dietary changes and subsequent physiological and surgical changes that are expected to impact glycaemic control. Optimal perioperative glycaemic control reduces risk of hypoglycaemia and is also associated with improved long-term outcomes such as remission.

Currently there is limited guidance for the management of perioperative antidiabetic agents or insulin in patients undergoing bariatric surgery.

Pharmacists have an important role to play and can support the management of patients undergoing bariatric surgery due to their expertise in pharmacotherapy and can assist patients achieve glycaemic goals through safe and effective use of medicines. A management protocol involving a pharmacist as part of the multidisciplinary care team was developed and implemented.

Patients preparing for bariatric surgery were referred for a comprehensive medicines review with a pharmacist and follow up appointments were scheduled for before and after surgery or as clinically indicated. Fifty six percent of the referrals over the 9-month period from initiation of trial were for patients with T2DM. Follow up with close monitoring and communication with patients and bariatric general practitioners resulted in early detection of adverse effects, helped support improved control of T2DM and is anticipated will lead to long term positive outcomes.

NATIONAL MEDICINES SYMPOSIUM 2021
EVALUATING QUALITY USE OF MEDICINES:
How do we know if we're making a difference?
18 May 2021 virtual event

201

Acetazolamide use in ocular conditions within a specialist emergency department

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Acetazolamide is a diuretic and carbonic anhydrase inhibitor that is often used in the treatment of various medical conditions. The use of acetazolamide either via oral or intravenous route within The Royal Victorian Eye and Ear Hospital (RVEEH) is common practice for ocular conditions given the nature of the specialist hospital.

The RVEEH has comprehensive clinical practice guidelines that staff utilise when managing patients requiring this medication. Due to the pharmacology of the drug and its adverse effects, a number of precautions and contraindications need to be thoroughly explored before a patient is provided with this medication.

This audit undertaken in the emergency department of the RVEEH aims to discuss the ocular indications, contraindications and side effects with the administration of acetazolamide to help improve patient outcomes. As acetazolamide is not frequently used in other hospitals, this audit further provides an educational overview for clinical staff.

NATIONAL MEDICINES SYMPOSIUM 2021
EVALUATING QUALITY USE OF MEDICINES:
How do we know if we're making a difference?
18 May 2021 virtual event

202

Antibiotic prescribing for upper respiratory tract infections and bronchitis: a longitudinal analysis of general practitioner registrars

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Background: Increasing antibiotic resistance is directly correlated to the use of antibiotics. The majority of antibiotic prescribing occurs in primary care. The great majority of prescribing for upper respiratory tract infections (URTI) and acute bronchitis is considered inappropriate. GP registrars develop prescribing habits that last into the future. Therefore, it is important to understand their antibiotic prescribing behaviour for these conditions.
Aims/Objectives: To determine how Australian GP registrars' antibiotic prescribing has changed over time for bronchitis and URTI.
Methods: A longitudinal analysis of the Registrars Clinical Encounters in Training (ReCEnT) cohort study from 2010 to 2019. Registrars from five Australian states recorded a variety of details of their consultations. Prescribing and patient characteristic data for consultations related to new diagnoses of URTI and acute bronchitis were extracted. The outcome variable in multivariable analysis was whether or not an antibiotic was prescribed, with the main variable of interest being year of prescribing.
Findings: 28,372 diagnoses of URTI and 5,289 diagnoses of acute bronchitis were recorded from 2010-2019. Year of prescribing was significantly associated with less antibiotic prescribing for both URTI (OR 0.90; 95% CI: 0.88-0.93) and acute bronchitis (OR 0.92; 95%CI: 0.88-0.96). Prescribing for URTI decreased from 24% in 2010, to 12% in 2019. Similarly, prescribing for bronchitis decreased from 84% to 72%.
Implications: GP registrars' prescribing for bronchitis and URTI has decreased over the 9-year period, however prescribing for bronchitis still remains high (72%;95% CI: 0.68-0.76). Further interventions to reduce antibiotic prescribing are warranted.

NATIONAL MEDICINES SYMPOSIUM 2021
EVALUATING QUALITY USE OF MEDICINES:
How do we know if we're making a difference?
18 May 2021 virtual event

203

Prescribing of secondary prevention medicines according to mental health status in patients with a history of cardiovascular disease

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Background: Patients with mental illness may be less likely to have their physical health needs managed adequately. We explored whether prescribing of secondary prevention medicines among general practice patients with diagnosed cardiovascular disease (CVD) varied according to whether they also had a long-term mental illness. Secondary prevention guidelines recommend that patients with CVD are treated with both blood pressure (BP)-lowering and lipid-lowering medicines, unless contraindicated or clinically inappropriate.
Methods: This was a descriptive cross-sectional study, using MedicineInsight data from patients who attended 481 general practice sites at least once during financial year 2018–19. Patients with valid age and sex and who had any record of CVD were eligible for inclusion. Patients were defined as having a long-term mental illness if they had any record of schizophrenia or bipolar disorder or if they had two records of depression or anxiety disorder at least six months apart over two consecutive years between 1 July 2016 and 30 June 2019. Prescriptions for BP-lowering and lipid-lowering medicines were identified using Anatomical Therapeutic Chemical (ATC) codes.
Results: Of the 149,112 patients with a history of CVD seen during 2018–19, 9,905 (6.6%) also had a history of long-term mental illness. A lower proportion of patients with both CVD and long-term mental illness (50.4%) were prescribed both a BP-lowering and lipid-lowering medicine compared with 56.4% of those with CVD but without a long-term mental illness. Patients with long-term mental illness were also significantly more likely to have a BP-lowering medicine only, or a lipid-lowering therapy only, than patients without a long-term mental illness.
Conclusions: While most patients with CVD and long-term mental illness had at least one preventive medicine recorded, they were less likely than their counterparts without mental illness to be prescribed both a lipid-lowering and a BP-lowering medicine, as recommended in guidelines for secondary prevention.

NATIONAL MEDICINES SYMPOSIUM 2021
EVALUATING QUALITY USE OF MEDICINES:
How do we know if we're making a difference?
18 May 2021 virtual event

204

Prescribing of potentially inappropriate medicines in stage 3 or 4 chronic kidney disease

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Background: Certain medicines should be avoided or require dose adjustment in patients with chronic kidney disease (CKD). We looked at data from Australian general practice patients with a record of stage 3 or 4 CKD to explore potential inappropriate prescribing.
Methods: This descriptive study used MedicineInsight data from adult patients with stage 3 or stage 4 CKD who attended one of 403 general practice sites at least three times between January 2018 and December 2019. Patients were included in this analysis if they had at least one record of a prescription that should be used cautiously in CKD during the study period. The first prescription issued during the study period was examined. Potentially inappropriate prescribing was defined as receiving either a contraindicated medicine or a medicine at an inappropriately high dose according to the patient's renal function. Medicines were selected with reference to guidelines and recent literature, and included sitagliptin, rosuvastatin, dabigatran, rivaroxaban, pregabalin and duloxetine.
Results: In the 29,015 patients identified with stage 3 or stage 4 CKD, pregabalin (12%) was the most common medicine prescribed at least once during the study period. However, more than 97% of the first pregabalin prescriptions issued in the study period appeared to be appropriately prescribed. In 544 patients (1.8% of all patients) prescribed sitagliptin almost half (47.4%) were prescribed a potentially inappropriate dose. Of the 558 patients with stage 4 CKD who were prescribed rosuvastatin, 217 (38.9%) were prescribed a potentially inappropriate dose. For other medicines examined, fewer than 100 patients were prescribed potentially high or contraindicated doses.
Conclusions: This study found some evidence of potentially inappropriate use of certain medicines that should be avoided or reduced in dose in people with stage 3 or 4 CKD. However the number of patients affected was low.

NATIONAL MEDICINES SYMPOSIUM 2021
EVALUATING QUALITY USE OF MEDICINES:
How do we know if we're making a difference?
18 May 2021 virtual event

205

Collaborating for safety - How to administer liquid medications in patients on dysphagic diets

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In response to a Root Cause Analysis relating to an adverse outcome for a patient with aspiration pneumonia likely due to the administration of thin fluids, a guideline on "Prescribing and Administration of Liquid Medications in Patients on Thickened Fluids" was developed. Suspensions, effervescent and dispersible tablets, granules, oral gels, elixirs, powders and syrups were mapped against the International Dysphagia Diet Standardisation Initiative (IDDSI) framework by Pharmacy and Speech Pathology. The IDDSI framework provides common terminology for fluid thickness to improve safety for patients with dysphagia. 77 medications were mapped according to compliancy with mild, moderate or extremely thickened fluids diet.

Mixing liquid medication with thickened fluids may alter the viscosity of the fluid therefore increasing aspiration risk. The IDDSI testing method indicates that a ratio of 1 part liquid medication: 5 parts thickened fluid retains the recommended viscosity. Studies have highlighted that thickened fluids may affect bioavailability of medications by reducing/delaying absorption and subsequently resulting in sub-therapeutic levels. This method is appropriate for drugs where its efficacy can be monitored via blood test or patient's response to treatment.

For drugs which cannot be mixed with thickened fluids, SHPA Don't Rush to Crush Handbook recommends crushing the tablet/opening the capsule and mixing with yogurt or apple puree as this method does not severely delay absorption of most drugs. Some medications cannot be manipulated as occupational exposure may be harmful. Example, ciclosporin capsule cannot be opened and the liquid is an aspiration risk. IDDSI flow test experiments were conducted and different ratios of ciclosporin liquid to apple puree were established depending on the level of thickened fluids required.

This guideline is available as a pop-up in eMEDs prescribing when clinicians prescribe medications which are non-compliant with a dysphagic diet and support decision making to avoid adverse outcomes for patients with dysphagia.

NATIONAL MEDICINES SYMPOSIUM 2021
EVALUATING QUALITY USE OF MEDICINES:
How do we know if we're making a difference?
18 May 2021 virtual event

206

A modified medication self assessment tool for identifying gaps in medication management systems for out-of-hospital services

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Local health networks provide a range of hospital, community and home-based services across multiple sites. Completion of a medication safety self-assessment is a core component of the NSQHS Medication Safety Standard. The Medication Safety Self-Assessment (MSSA®) for Australian Hospitals is designed for assessment of medication safety systems in hospitals and does not meet the needs of other service sites such as long stay mental health units and Out-of-Hospital Mental Health and Aboriginal Health services.

A modified medication safety self-assessment tool was developed with endorsement by the local Drug and Therapeutics Committee (DTC) for use at these sites. This tool focuses on 6 key areas of medication management: Type of medicines use at site, Medicines procurement and storage, Patient's own medicines, Medicine prescribing and administration, Medicines supply and Medicines management.

This tool was used for medication safety self-assessment at 12 different sites across Mental Health and Aboriginal Health services and was successful in identifying several areas for improvement at these sites. These areas include clarity in documentation of processes, maintenance of medication rooms (including environmental monitoring, storage of look-a-like medications and access to medication resources), restricting patient access to medication trolleys, prescribing within local formulary restrictions, using appropriate medication charts, incident reporting, and the availability of clinical pharmacy services. An action plan was subsequently developed for all relevant areas, and categorised into risk/priority ratings to address the issues identified. Findings from the self-assessments were reported to local safety and quality meetings and DTC. This tool will now be used routinely at these sites for ongoing monitoring of quality use of medicines.

The modified medication self-assessment tool is a useful and appropriate tool in identifying gaps in medication management systems for out-of-hospital services where the MSSA® for Australian Hospitals is not fit for purpose.

NATIONAL MEDICINES SYMPOSIUM 2021
EVALUATING QUALITY USE OF MEDICINES:
How do we know if we're making a difference?
18 May 2021 virtual event

207

Influence of Knowledge and Attitude in Quality of Life Type2 Diabetes Mellitus Patients from Private Specialist Hospitals in Malaysia

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Objectives: The study aims to evaluate the influence of knowledge and attitude towards the quality of life of patients type 2 diabetes mellitus (DM) in private hospitals in Malaysia
Methods: A cross sectional survey of the knowledge, attitude and quality of life (QoL) towards the patient with type 2 diabetes in two private hospitals were carried out from February to June 2020. The study was conducted using a validated questionnaire comprises of three sections: Section A: Socio demographic, Section B: Assessment of the knowledge and attitude toward diabetes and Section C: Identification of the QoL of the patient with type 2 DM. The data was analyzed using the Statistical Package of Social Science (SPSS).
Results: A total of 80 patients with type 2 DM participated in this study. The mean age of patients was 59.4 ±10.86 years old. Majority (95%) of patient had good score of knowledge and only 5% had poor knowledge. 70% patients were with good attitude and 30% with low attitude. Male participants have significantly poorer attitude towards diabetes management compare to female participants (p=0.014). While 47.5 % of patients had use insulin presently. 84.2% of patients do not double up the dose in the situation of missing dose. And 58.8% patient had good score in QoL and 41.3% moderate score QoL. There was no significant association of the patient knowledge and attitude toward diabetes with QoL (p= 0.1) and (p= 0.143) respectively.
Conclusions: This study concluded there was no association of knowledge and attitude with quality of life of type 2 DM. This research may be useful for optimizing diabetic care commitment preparation approaches as maintaining high quality of life score as well as minimizing the morbidity and mortality rate of chronic disease

NATIONAL MEDICINES SYMPOSIUM 2021
EVALUATING QUALITY USE OF MEDICINES:
How do we know if we're making a difference?
18 May 2021 virtual event

208

A collaborative effort in general practice by the pharmacist and practice nurse to enhance transitions of care

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Introduction: Medication changes during transition points-of-care are common and prone to unintended changes in medication regimes and other medication errors especially in the general practice setting.
Objective: To collaboratively develop a system in general practice to methodically review transition of care correspondence and respond accordingly.
Method: Patients were identified from the correspondence log at the general practice each week and contacted by the general practice pharmacist or practice nurse for follow-ups. The data presented was collected over 6 months from September 2020 to February 2021. 753 patient file reviews were conducted based on correspondence received which include hospital discharge summaries, specialist letters and After-Hours-Care reports.
Results: 31% of the patients were contacted for follow-up. The decision to contact the patient was based on the magnitude of the issues identified and pre-existing appointments.
1 in 4 patients contacted resulted in general practitioner appointment bookings and 3 in 4 patients were appreciative of the additional advice, reassurance, and follow-up service. Advice given was mainly primary care issues like wound care, bowel care, and simple analgesia of which they were referred onto community pharmacies.
More than 27% of patients had medicine-related interventions such as medication reconciliation, updating medication list and medical history, drug interactions, updating allergies and adding recalls. A total of 557 of these interventions were recorded which had an average of 2.7 interventions per patient.
All eight patients on dose administration aids upon hospital discharge had medication discrepancies when compared to the practice list. Their packing pharmacy was contacted to ensure medication changes during hospitalization were actioned.
Conclusion: This approach is reliant on timely and accurate written communication between healthcare providers. By having a collaborative system in general practice to review correspondence between healthcare professionals and providing patient-centred follow-up services, medication misadventure can be avoided by facilitating this transition.

NATIONAL MEDICINES SYMPOSIUM 2021
EVALUATING QUALITY USE OF MEDICINES:
How do we know if we're making a difference?
18 May 2021 virtual event

209

National Quality Use of Medicines (NQUM) Indicators: review of use and relevance and potential for automation

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Background: Clinical indicators to measure and monitor QUM in Australian hospitals and guide quality improvement (QI) were published in 2007. They were reviewed and expanded in 2014. The Indicators require periodic review for relevancy, utility and feasibility. QI will be more achievable with more efficient data collection, such as harnessing routinely collected data from electronic medical records (eMR).
Objectives: To: 1) determine the overall utilisation and relevance of the NQUM Indicators; 2) identify clinician preferences for automated NQUM Indicators; and 3) investigate potential improvements to NQUM Indicators.
Methods: Six online questionnaires were distributed to clinicians with an understanding of QUM activities in Australian health service organisations. The surveys addressed: a) use of the NQUM Indicators; b) prioritisation for their automation into eMR; and, c) suggested improvements.
Results: Responses were received from 186 respondents (approximately 30 per survey) across all Australian jurisdictions. All NQUM Indicators had been used since their update in 2014.The most frequently used indicators aligned with measures used in other programs. Nine of the top ten most frequently used NQUM Indicators provide evidence for Standards 3 and 4 of the National Safety and Quality Health Service Standards. Respondents prioritised indicator automation according to their status as a high risk medicines; availability of relevant data in eMR; and inter-operability of electronic systems. Practice change, resolved evidence-based gaps and new QUM emerging gaps identified potential new QUM indicators.
Conclusion: NQUM indicators are useful tools to measure QUM and are used relatively frequently by a broad range of health service organisations. Review and update of the indicators is periodically required. A review process involving relevant stakeholders has commenced which will make recommendations regarding future direction of the NQUM Indicators and consider funding models to facilitate the update. A proof of concept project using eMR for NQUM Indicator measurement is progressing.

NATIONAL MEDICINES SYMPOSIUM 2021
EVALUATING QUALITY USE OF MEDICINES:
How do we know if we're making a difference?
18 May 2021 virtual event

210

Older patients' knowledge of medicines - with a focus on Direct Oral Anticoagulants (DOAC)

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Background: Current literature examining elderly patient's knowledge regarding their oral anticoagulant (OAC) treatment is poorly described. OAC knowledge is postulated to have a close relationship with adherence to these medications, as well as associated health outcomes. The use of direct oral anticoagulants (DOACs) is of interest as these medications inherently carry a higher risk of harm, especially in elderly populations.
Objective: To investigate relationships between anticoagulant knowledge, self-reported adherence, and other factors such as age and medication burden in elderly populations receiving direct oral anticoagulant (DOAC) therapy for long-term indications.
Methods: A cross-sectional survey was conducted in patients receiving DOAC therapy in a hospital in-patient setting. Surveys were conducted via face-to-face interview with each patient. The Anticoagulation Knowledge Tool (AKT) and the Morisky Medication Adherence Scale (MMAS) were used to assess DOAC knowledge and self-reported adherence respectively.
Results: General knowledge surrounding DOAC therapy was deemed to be somewhat adequate among the twenty participants. Key gaps in participant knowledge pertained to potential side effects of DOAC therapy, and ways to reduce risk of side effect occurrence. Only one of the twenty participants correctly identified 'bleeding' as the most important side effect of their anticoagulant therapy; three other participants identified that the 'blood becoming too thin' was the most important side effect. MMAS scores were not a reliable indicator of DOAC knowledge.
Conclusion: Results echo previous findings in the area in that knowledge of side effects related to DOAC therapy is poor among elderly populations. This suggests that education surrounding anticoagulation therapy may need to be tailored to the needs of elderly patients. Regular reinforcement of DOAC therapy may be of benefit in these patients, with hospital admissions being a perfect opportunity for this.

NATIONAL MEDICINES SYMPOSIUM 2021
EVALUATING QUALITY USE OF MEDICINES:
How do we know if we're making a difference?
18 May 2021 virtual event

211

Geriatric Medicine and Aged Care Clinical Pharmacy Services

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Background: The use of medications in older people in all settings is complex and high-risk, with well-documented evidence of inappropriate polypharmacy. They face barriers to accessing pharmacy services to support safe medication management and are exposed to medication errors during, and after transitions of care. Geriatric Medicine Pharmacists (GMPs) must be embedded in all healthcare services where medications are used to support safe transitions of care. GMPs work in collaboration with doctors and nurses to ensure that treatment is safe, cost-effective and aligned with the person's healthcare goals.
Action: Medications are essential in treating chronic health conditions in older people however, if overprescribed, poorly monitored and mismanaged, medications can cause adverse effects and great harm. It is vital that governance systems for hospitals and aged care are reoriented to support the work of GMPs alongside aged care teams, to ensure medication safety for older Australians.
Proposal: Up to 30% of hospital admissions of older people are medication-related and half are preventable.
These collaborative interventions identified by a group of geriatric medicine expert pharmacists, will mitigate risks of inappropriate medication use and achieve better health outcomes in older people:

1. Employment of GMPs in all settings that provide care for older people.
2. Inclusion of hospital-led geriatric medicine outreach pharmacy services.
3. Use of Interim Medication Administration Charts (IMAC)for transitions of care between hospitals and aged care.
4. Implementation of Psychotropic Stewardship programs involving GMPs in hospitals and aged care.
5. Integration of GMPs in multi-disciplinary teams conducting comprehensive assessments at entry to aged care.

Lessons:

- Hospital-led outreach medication review services have shown 25% reduction in hospital admissions in patients 51-65 years.
- Use of IMAC at transition points reduce missed/delayed doses by 15.6%.
- Psychotropic Stewardship is based on best practice stewardship models such as Antimicrobial and Opioid Stewardship.

NATIONAL MEDICINES SYMPOSIUM 2021
EVALUATING QUALITY USE OF MEDICINES:
How do we know if we're making a difference?
18 May 2021 virtual event

212

A review of prescribing patterns of tapentadol in a medium-sized hospital 7 years after its PBS listing in Australia

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Background: Tapentadol is a new oral analgesic with less clinician familiarity and more costly than older drugs; a review of tapentadol's role in pain management in the hospital setting is needed. Hospital guidelines allow use of tapentadol slow release (SR) formulation for management of chronic pain and immediate release (IR) for acute post-operative pain. Following the Pharmaceutical Benefits Scheme (PBS) listing an increase in use has been observed. Review of tapentadol prescribing would inform the adherence to quality use of medicines (QUM) principles.
Objectives: This study aimed to review the current prescribing patterns of tapentadol in a medium-sized hospital in Brisbane. Firstly, we reviewed the usage and cost of tapentadol over last seven years (2014-2020) and compared it with other first-line opioids; secondly, we conducted a retrospective review of one month of tapentadol prescriptions in hospital.
Methods: The project was approved as quality assurance activity. Stock usage reports of opioids were obtained from the hospital dispensing software (iPharmacy). A retrospective audit of 93 patient records where tapentadol was prescribed during hospital stay in October 2020 was conducted. Data collected from the patients' electronic medical record (iEMR) included: patient's demographics, admission type, tapentadol: SR/IR drug form, was it new/continued therapy and if prescribed within approved indications.
Results: Tapentadol usage increased 9-fold between 2018 and 2020. In 2020, tapentadol constituted 10% of opioid prescriptions but 28% of the cost. Over half (53%) of tapentadol prescribed was outside approved hospital formulary indications. 44% and 3% of tapentadol SR and IR respectively were prescribed as patients' continued medicine.
Conclusion: Further monitoring and review of tapentadol prescribing according to approved indications is required.
Lessons learned: It is common to see an increased use and pharmaceutical cost of new agents post-PBS listing. Post-marketing, QUM monitoring is a useful tool to enhance clinician familiarity with newer agents.

NATIONAL MEDICINES SYMPOSIUM 2021
EVALUATING QUALITY USE OF MEDICINES:
How do we know if we're making a difference?
18 May 2021 virtual event

213

Evaluation of a real-world education program to improve quality use of opioids

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Background: NPS MedicineWise develops and implements evidence-based educational programs on the quality use of medicines (QUM) and medical tests in primary care. We use process, impact and outcome evaluation to assess program effectiveness at achieving objectives. The program 'Opioids and the bigger picture when treating chronic pain' was launched in October 2019 to address QUM issues associated with using opioids for chronic non-cancer pain (CNCP). Its goal was to improve quality use of opioids in primary care and reduce harms for Australians with CNCP.
Objective: To evaluate the impact of the Opioids program on the quality use of opioids.
Methods: Process evaluation measured participation, satisfaction and program reach using surveys and routinely collected data. Short-term impact was measured via health professional (HP) and consumer surveys.
Findings: Over 31,000 general practitioners (GPs) received a PBS Practice Review on opioid prescribing and 12,500 HPs were engaged in additional interventions, including educational visiting and audit and feedback. The program received positive feedback and was widely promoted by NPS MedicineWise and partners. We saw significant increases in HP knowledge, confidence and practice following participation. GP confidence increased in discussing initiation and opioid tapering plans with patients and identifying patients at risk of harm from opioids. Participating GPs were more likely to use non-pharmacological and non-opioid treatments first-line for patients with CNCP, and appropriately manage the tapering process including discussion with patients. Pharmacists reported increased confidence discussing the opioid tapering process with patients and were more likely to discuss opioid harms with patients and recommend non-pharmacological strategies.
Implications: Program objectives were achieved in the short-term, demonstrating the value of QUM education programs to improve real-world practice. We will evaluate long-term outcomes on changes to opioid use and health in 2022. We recommend that ongoing education on the quality use of opioids will ensure sustained impact.

NATIONAL MEDICINES SYMPOSIUM 2021
EVALUATING QUALITY USE OF MEDICINES:
How do we know if we're making a difference?
18 May 2021 virtual event

214

Pharmacist Led Rural Multidisciplinary Medication Outreach Service (rMMOS)

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SYSTEM FAILURE. SYSTEM EVOLUTION. SYSTEM SUCCESS.
Following significant system stress to a small rural hospital, peaking in 2017, a service analysis identified increasing patient complexity, increased readmissions and increased polypharmacy. Recognising medication related adverse events are linked to 15-50% of readmissions, a pharmacist-led post discharge program was developed to address the local problem. Internationally,similar pharmacist led programs have demonstrated a reduction in readmissions of up to 36%. Programs initiated in hospital, delivered within 3-5 days of discharge and modelled on a collaborative hospital and primary health team framework have been shown to be most effective.
In many rural communities, where availability of credentialled pharmacists is extremely limited, Home Medicines Reviews (HMR) are ineffective and often unavailable post discharge. Further to this, the effectiveness of HMR's post-discharge is limited by timeliness of delivery and service caps. The new model, a Rural Multidisciplinary Medication Outreach Service (rMMOS), led by a hospital-based Community Integrated Care (CIC) pharmacist, is collaborative and includes Community Pharmacists (CP), Rural Generalists and Community General Practitioners (GP). Focussing on coordinated medication management between primary and secondary care, tiered levels of post-discharge follow-up are provided. Risk is established using a rural risk stratification tool. Interventions include Hospital Referred Medscheck's (HMC) conducted by local CP's; CIC Pharmacist Home Visit 's and extended rMMOS team home visits.
Anecdotally, this rural collaborative model has resulted in reduced readmissions and medication misadventure.A retrospective observational study is planned and further analysis is underway to evaluate health system cost benefit. Potential savings of over $1 million per year are anticipated.
Service extension to include all inpatients residing in the catchment, regardless of discharge service is foreshadowed. This project has created a replicable model of medication management demonstrating collaboration across the hospital and primary care continuum with significant benefits to healthcare outcomes for rural communities.

NATIONAL MEDICINES SYMPOSIUM 2021
EVALUATING QUALITY USE OF MEDICINES:
How do we know if we're making a difference?
18 May 2021 virtual event

215

Sports pharmacy: Perceptions about pharmacy-physiotherapy inter-professional collaboration

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Introduction: Sports-related injuries in primary care are often managed by physiotherapists, however consumers often seek advice from community pharmacists. The scope of practice of Australian pharmacists in sport and exercise medicine, and the extent of inter-professional collaboration between pharmacists and physiotherapists have not been reported.
Aim: To provide insight into barriers to, and facilitators of, pharmacist and physiotherapist inter-professional collaboration.
Methods: Ahpra-registered pharmacists and physiotherapists were invited to participate in semi-structured interviews. Interviews were transcribed for qualitative coding and thematic analysis.
Results: Preliminary analyses from 17 interviews indicate that pharmacists are frequently called upon to provide sports-related health advice. Pharmacists feel most confident providing advice about medicines but perceive a lack of knowledge and confidence, particularly regarding strapping, braces/supports and supplements, which may be due to a lack of undergraduate and professional development educational opportunities. Perceptions vary about scope of practice, and when/whether the patient is referred to a physiotherapist, and impact of factors such as availability of local primary healthcare services and financial constraints. Physiotherapists perceive the role of pharmacists as being limited to the provision of medicines and medicines advice; they rarely consider pharmacists an option for referral, preferring to refer consumers to physicians for medication advice. Concerns about the safety of unscheduled analgesics and non-steroidal anti-inflammatory medicines vary. While some physiotherapists refer consumers elsewhere for advice about these medicines, others recommend them to assist with managing pain and inflammation.
Discussion: Preliminary findings indicate that pharmacists provide advice about a range of sports-related topics, and may refer consumers to a physiotherapist, particularly regarding the use of straps and supports. Physiotherapists are positive about pharmacists' roles in sport and exercise-related healthcare but are uncertain about pharmacists' scope and expertise. Clear referral pathways may foster improved collaboration between pharmacists and physiotherapists to optimise patient outcomes.

NATIONAL MEDICINES SYMPOSIUM 2021
EVALUATING QUALITY USE OF MEDICINES:
How do we know if we're making a difference?
18 May 2021 virtual event

216

Assessing the impact of a pharmacist led mixed intervention model on the reduction of administration errors in an Australian hospital

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Objective: To assess the impact of a pharmacist led mixed intervention model on administration errors in an Australian hospital.
Background: Medication errors remain the one of the most common type of incidents reported in Australian hospitals. Studies have reported that for every 10 drug administrations, a medication administration error is likely to occur and reach the patient, potentially contributing to a preventable patient harm.
Methods: Two types of intervention model (human and system orientated) were implemented through collaboration with key stakeholders (nurses, educators and policy makers) to reduce administration errors across this 650 bed multisite Australian Hospital from August 2018 to June 2019. To assess the impact of the mixed intervention model, the total number of reported medication errors, rate of administration errors per 1000 bed days were retrieved from the hospital electronic medication management system for 12 months before (June 2017 to July 2018) and after (from July 2019 to June 2020) implementation of all interventions.
Results: Implementation of mixed model intervention model through collaboration with stakeholders resulted in significant reduction in the number and frequency of administration errors, and those with harm (from 68% to 55%, P<0.0001 and from 12% to 8%, P = 0.0001 respectively). Rate of administration errors per 1000 occupied bed days as well rate of administration errors that caused patients harm have also reduced (P= 0.0068 and P=0.0236) respectively. Additionally, the severity of administration errors were also reduced (HR 0.562 95% CI (0.298-1.062) in the post intervention phase.
Conclusion: Introducing a mixed intervention model reduces administration errors across health settings and has the potential to drive excellence in healthcare

NATIONAL MEDICINES SYMPOSIUM 2021
EVALUATING QUALITY USE OF MEDICINES:
How do we know if we're making a difference?
18 May 2021 virtual event

217

Improving Non-Vitamin K anticoagulant prescribing in tertiary settings- A pre and post qualitative and quantitative study

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Objective: To assess the impact of implementing patient specific alerts in electronic medication management systems on anticoagulant prescribing.
Method: A collaborative multidisciplinary group was set up to review and endorse an upgrade to the hospital electronic medication management system (EMS). The intervention focussed on implementing tailored patient specific physiological alerts (such as age and renal function) built in EMS to improve the appropriateness of anticoagulant prescribing. A pre and post retrospective study of 100 patients discharged on anticoagulants was conducted. Appropriateness of anticoagulant prescribing was assessed using prescribing product information. Prescriber satisfaction and experience survey was assessed in both stages. Associated hospital acquired complications (HAC) were evaluated as well as related admission cost and average length of stay.
Results: Redesign of computerised decision support in systems improved appropriateness of anticoagulant prescribing from 48% to 91%, P< 0.05. A total of 67 prescribers accepted the invitation to participate in the qualitative satisfaction study. Half the respondents (n=33, 50%) answered positively to a question gauging for the usefulness of implementing anticoagulant alerts in the EMS in improving their practice and patient safety. This rate has increased to 72% (n= 48) in the post intervention phase. P<0.05. Additionally, the total number of reported HAC that are likely to be associated with inappropriate prescribing was reduced by 36% in the post intervention phase from 29 to 22 (RR= 0.7454 95%CI (0.4283-1.2972), P=0.2986. The cost of associated HAC has also reduced by 29% from $1,282,748 to 911,117) as well as the mean length stay by 11% (from 18 days to 16 days) post intervention.
Conclusion: This study highlights that well-designed electronic prescribing alerts that provide context-relevant information to prescribers are likely to result in benefits to clinicians and patients as well reduction in HAC and potential economic burden.

NATIONAL MEDICINES SYMPOSIUM 2021
EVALUATING QUALITY USE OF MEDICINES:
How do we know if we're making a difference?
18 May 2021 virtual event

218

Interventions to decrease the incidence of dispensing errors in hospital pharmacy: A systematic review and meta-analysis

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Background: Dispensing errors have the potential to cause significant patient harm. Strategies shown to improve the safety of medication dispensing have been widely published, however, there is an absence of literature comprehensively assessing the outcomes of these strategies.
Aim: To evaluate the effectiveness of interventions designed to decrease the rate of dispensing errors in hospital pharmacy dispensaries.
Methods: A systematic review and meta-analysis of the peer reviewed literature were conducted. Medline, Embase, CENTRAL and CINAHL were searched to identify comparative studies that evaluated interventions designed to reduce the rate of dispensing errors in hospital pharmacy dispensaries. Data were extracted from eligible studies using a standardised data collection tool. Quality assessment was conducted using the Scottish Intercollegiate Guidelines Network Checklist-3. Meta-analysis was performed using a random effects model and presented as risk ratios (RR), with corresponding 95% confidence intervals (CI).
Results: Eleven studies were eligible for inclusion. Interventions included implementation of dispensing technologies, accredited technicians performing prescription verification, and addressing look-alike medications. Five studies detected dispensing errors during final verification (prevented or near-miss dispensing errors); five studies identified unprevented dispensing errors; one study evaluated both. There was a statistically significant reduction in the pooled rate of dispensing errors from 0.080% in the control group to 0.043% in the intervention group (rate difference 0.037%, 95% CI 0.033–0.042%). Meta-analysis demonstrated a 34% reduction in the risk of prevented dispensing errors (RR 0.66, 95% CI 0.46–0.93) and 68% reduction in the risk of unprevented dispensing errors (RR 0.32, 95% CI 0.24–0.43).
Conclusion: This is the first systematic review and meta-analysis of the impact of dispensing error interventions. The results indicate that the implementation of the most effective interventions, such as appropriately trained staff and using technology, results in reductions in dispensing error rates.

NATIONAL MEDICINES SYMPOSIUM 2021
EVALUATING QUALITY USE OF MEDICINES:
How do we know if we're making a difference?
18 May 2021 virtual event

219

We successfully Implemented part pack dispensing with iPharmacy and ROWA robotics for the first time in an Australian public hospital

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Background: In May 2020, we became the first Australian public hospital to implement part pack dispensing using ROWA in pharmacy robotics and iPharmacy v9.5. Prior to this upgrade, all partial medication packs required external shelf storage, resulting in ineffective inventory management, wastage and cumbersome workflows.
Description: The iPharmacy upgrade enables full and partial medication packs to be stored, dispensed and distributed from dispensing robots.
Methods: A local working group provided project oversight of the upgrade and developed workflows to support practice change. The group was comprised of pharmacy distribution, dispensary, management, electronic medicine and iPharmacy staff. Upgrade preparation included comprehensive inventory review to identify the optimal location for stock based on its dispensing in part or whole packs and the suitability of partial packs being stocked in the robot. Support materials were developed, including Frequently Asked Questions and workflow guides. Education and staff engagement sessions were held in person and via video forums due to COVID-19 distancing requirements.
Key Findings: Potential risks and measures of success were identified pre-activation and evaluated one month post upgrade. The upgrade increased utilisation of robotics by enabling storage of an additional 800 products in the ROWA and reduced person hours per stocktake by reducing the number of excess stock bin locations by 1786. The number of products with dual stock locations reduced by 98% and 16.2 linear meters of shelving has been released. Interim reports indicate improved workforce satisfaction compared to previous practice. Further evaluation of the impact on reduction of pharmacy selection errors and wastage through improved inventory rotation is planned to further optimise workflows and outcomes.
Implications: This project demonstrates the successful use of in-pharmacy automation equipment to supply partial packs of medication and increases the utilisation of pharmacy automation equipment for pharmacy distribution.

NATIONAL MEDICINES SYMPOSIUM 2021
EVALUATING QUALITY USE OF MEDICINES:
How do we know if we're making a difference?
18 May 2021 virtual event

220

Pharmacist-conducted medication reviews in primary care for people leaving hospital: A realist synthesis of what works for whom and why

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Background: Medication reviews contribute to the quality use of medicines when people leave hospital. Systematic reviews focusing on pharmacist-performed medication reviews have found mixed outcomes for patients and identified significant heterogeneity in terms of the design of medication review processes, participants and outcome measures. Establishing contexts, mechanisms and outcomes of when, how and under what circumstances medication reviews performed by pharmacists in the community may benefit people discharged from hospital can contribute to future service and policy implementation.
Objectives: To conduct a realist synthesis and to develop a theory of what works, for whom, why and under which circumstances when pharmacists conduct medication reviews in primary care for people leaving hospital.
Methods: Following RAMESES standards realist reviews, an initial program theory informed a systematic literature search of multiple databases, augmented by agency and government sources of information. Documents were synthesised by exploring interactions between contexts, intervention, outcomes and causal mechanisms.
Key findings: The synthesis identified nine contexts and ten mechanisms, which when activated influence outcomes, of pharmacist-conducted medication reviews in primary care post-discharge. The final program theory was developed under two stages. For the first stage, for a medication review to take place, these include trust patients have in healthcare professionals, their health care priorities post-discharge, capacity to participate, perceptions of benefit and effort required by all involved.
For the second stage, the medication review process, invitations to collaborate between healthcare professionals, enabling pharmacists employing clinical skills and taking responsibility for medication review outcomes were linked to more positive outcomes for patients.
Implications: Medication reviews after hospital discharge seem to work more successfully when patient preferences are respected, programs facilitate coordination and collaboration between healthcare professionals, and pharmacists take responsibility for outcomes.

NATIONAL MEDICINES SYMPOSIUM 2021
EVALUATING QUALITY USE OF MEDICINES:
How do we know if we're making a difference?
18 May 2021 virtual event

221

Impact of Automated Dispensing Cabinets on medication omissions and delayed doses

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Background: Medication omissions lead to a delay in treatment, potentially causing patient harm. Automatic Dispensing Cabinets (ADCs) have been shown to reduce medication omissions; however, there is limited information to determine their effect on reducing delayed medication administration. ADC's were implemented in the Acute Medical Unit (AMU) within Lyell McEwin Hospital in June 2019.
Aim: To assess the impact of ADC implementation on medication omission rates and delayed doses.
Method: The incidence of omitted and/or delayed doses was analysed pre (April 2019) and post (August 2020) ADC implementation via chart review. An omitted dose was defined as a dose not given without justification. A delayed dose was defined as a dose given with a delay in administration of greater than 30 minutes for time critical medications or 1 to 2 hours for non-time critical medications, depending on the dosing frequency.
Results: A total of 37 patients were reviewed pre-ADC implementation and 50 patient's post, with 1057 and 1948 doses charted respectively. A 53.3% reduction of medication omissions was observed post ADC implementation (1.5% (16/1057) vs 0.67% (13/1948), p=0.03). A 3.9% reduction in the rate of delayed doses was also observed post ADC implementation (5.1% (54/1057) vs 4.9% (95/1948), p=0.8). The number of individual items dispensed to inpatients reduced by 47.3% from 1444 items pre ADC to 761 items post-ADC.
Conclusion: This study shows a trend towards a reduction in medication omissions following the implementation of ADCs. The study demonstrated limited impact on delayed doses, indicating that other factors independent of timely medication access may influence administration at a ward level. Further investigation into barriers to timely medication administration may be required.

NATIONAL MEDICINES SYMPOSIUM 2021
EVALUATING QUALITY USE OF MEDICINES:
How do we know if we're making a difference?
18 May 2021 virtual event

222

What proportion of patients with chronic noncancer pain are prescribed an opioid analgesic? Systematic review and meta-regression of observational studies

Dr Stephanie Mathieson[1], Dr Graeme Wertheimer[3], Professor Christopher Maher[1,2], Professor Christine Lin[1,2], Professor Andrew McLachlan[2], Professor Rachelle Buchbinder[4,5], Professor Sallie-Anne Pearson[6], Professor Martin Underwood[7]

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Background: Guidelines now discourage opioid analgesics for chronic non-cancer pain because the benefits frequently do not outweigh the harms. We aimed to determine the proportion of patients with chronic non-cancer pain who were prescribed an opioid, the types prescribed, and factors associated with prescribing.
Methods: We searched electronic databases without restrictions. We included observational studies of adults with chronic non-cancer pain that were prescribed opioids for pain management. We included population-based studies (such as databases, including dispensing data) and studies from clinical settings. We excluded studies of self-report opioid use. Opioid prescribing was determined as the proportion of patients with chronic non-cancer pain that were prescribed opioids. Opioids were categorised as weak (e.g. codeine) or strong (e.g. oxycodone). Study quality was assessed using a risk of bias tool designed for observational studies measuring prevalence. Individual study results were pooled using a random-effects model. Meta-regression investigated study level factors associated with prescribing. Overall quality was assessed using Grading of Recommendations Assessment, Development and Evaluation criteria.
Outcomes: Of the 42 studies (5,244,313 participants) identified, the majority (n = 28) were from North America. Eleven studies had low risk of bias. The pooled estimate of the proportion of patients with chronic non-cancer pain prescribed opioids was 30.9% (95%CI 28.9% to 33.0%, 42 studies, moderate-quality evidence). Strong opioids were more frequently prescribed than weak opioids (18.4% (95%CI 16.0% to 21.0%, n = 15 studies, low-quality evidence), versus 8.5% (95%CI 7.2% to 9.9%, n = 15 studies, low-quality evidence)). Meta-regression determined opioid prescribing was associated with year of sampling (more prescribing in recent years) (P = 0.015), geographic region (P = 0.048; Asia prescribing less than North America, P = 0.006) but not by setting (P = 0.972). In conclusion, opioid prescribing for patients with chronic non-cancer pain is common and has increased over time.

NATIONAL MEDICINES SYMPOSIUM 2021
EVALUATING QUALITY USE OF MEDICINES:
How do we know if we're making a difference?
18 May 2021 virtual event

223

What is the prevalence of opioid analgesics use in people with chronic non-cancer pain? Systematic review and meta-regression of observational studies

Dr Stephanie Mathieson[1,2], Dr Graeme Wertheimer[3], Professor Christopher Maher[1,2], Professor Christine Lin[1,2], Professor Andrew McLachlan[2], Professor Rachelle Buchbinder[4,5], Professor Sallie-Anne Pearson[6], Professor Martin Underwood[7]

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Background: Opioid analgesics are commonly used to manage chronic non-cancer pain. The prevalence of opioid use in people with chronic non-cancer pain is unclear as there is yet to be a systematic overview. Reviews of opioid prescribing rates may not indicate the actual use of opioids as not all prescriptions are filled.
Aims: To review studies examining the proportion of people with chronic non-cancer pain who report consuming opioids and characteristics associated with use.
Methods: We searched databases from inception to 8th February 2020. We included observational studies reporting the proportion of adults with chronic non-cancer pain who used opioid analgesics. Opioids were categorised as weak (e.g. codeine) or strong (e.g. oxycodone). Study risk of bias was assessed, and Grading of Recommendations Assessment, Development and Evaluation provided the overall quality. Results were pooled using random-effects model. Meta-regression determined factors associated with opioid use.
Results: Sixty studies (N = 3,961,739) reported data on opioid use in people with chronic non-cancer pain from 1990 to 2017. Of these 46 (77%) had moderate risk of bias. Opioid use was reported by 26.8% (95%CI 23.1% to 30.8%; moderate quality evidence) of people with chronic non-cancer pain. The use of weak opioids (17.3% (95%CI 11.9% to 24.4%; moderate quality evidence) was more common than strong opioids (9.8% (95%CI 6.8% to 14.0%; low quality evidence). Meta-regression determined opioid use was associated with geographic region (P = 0.02; lower in Europe than North America), but not sampling year (P = 0.77), setting (P = 0.06), diagnosis (P = 0.34) or disclosure of funding (P = 0.77).
Conclusions: Our review summarised data from over 3.9 million people with chronic non-cancer pain reporting their opioid use. Between 1990 to 2017, one quarter of people with chronic non-cancer pain reported taking opioids and this proportion did not change over time.

NATIONAL MEDICINES SYMPOSIUM 2021
EVALUATING QUALITY USE OF MEDICINES:
How do we know if we're making a difference?
18 May 2021 virtual event

224

Sodium-glucose co-transporter-2 Inhibitors Induced Diabetic Ketoacidosis, a holistic approach

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Background: Hospitalised patients are at higher risk of SGLT2 inhibitors (SGLT2is) - induced Diabetic Ketoacidosis (DKA) mainly due to severe illness or fasting for a procedure.
Objectives: Reduce the risk of DKA through analysing the SGLT2is prescribing, dispensing, and administration processes over the patient hospital stay and at the transition of care.
Methods: An audit of the electronic medical records (eMR) revealed a 30% incidence of ketosis in randomly selected patients treated with a SGLT2is over 6 months (14 wards). Acidosis was not investigated in all patients.
Settings: A Quality Improvement (QI) Drug Use Evaluation project in a tertiary teaching hospital
Actions: The Driver Diagram including the PDSA Cycle was utilised as the QI tool. Endocrinology department championed the project. Primary drivers were admission, hospital stay, and discharge times. Secondary drivers were identifying patients at high risk due to procedure type or comorbidities, specifying each clinician's role (physician, pharmacist, nurse), and optimising the discharge planning.
The change ideas were withholding all SGLT2is orders on presenting to hospital particularly in the Emergency Department (unplanned admission), measuring blood ketone bodies, glucose levels, and blood pH, incorporating a safety alert to electronic Medication Management program (eMed) for all SGLT2is, risk assessment prior to reinitiating therapy during hospital stay, pharmacist- lead in-services specific to the service type, procedure carried out, and length of fasting as defined by health policies and guidelines, establish safeguards at the time of dispensing the SGLT2i, and guidance on safe re-initiation of therapy prior to discharge and communicating post-discharge management with the community carers such as General Practitioners. Practice guidelines are drafted and a post-intervention audit is designed.
Implications: Holistic and multidisciplinary management of SGLT2is-induced DKA risk in hospitalised patients that involves all stakeholders to reduce the length of hospital stay and improve patients' quality of life.

NATIONAL MEDICINES SYMPOSIUM 2021
EVALUATING QUALITY USE OF MEDICINES:
How do we know if we're making a difference?
18 May 2021 virtual event

225

High Costs & Kids: National Paediatric Medicines Forum (NPMF) - An Australian Collaborative Initiative

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Background: Paediatric Hospital Formularies are complex. The advent of complex diseases and even more complex medication regimens places an onerous workload on hospital drug & therapeutic committees. A recent MJA study summarised the issue facing all Australian children's hospitals: There is limited high-quality evidence informing paediatric hospital-based drug approvals... A national, standardised approach to hospital-based drug evaluation could improve decision making.
Description: A national approach will provide external expertise on efficacy of medications, in collaboration with Children's Healthcare Australasia. The project aims to establish and develop governance of the NPMF, to collaborate & disseminate relevant paediatric medication information to participating hospitals to ensure consistency of practice and support equity of access.
Action: A Project Pharmacist facilitates formation & development of the NPMF. It comprises of clinicians from paediatric facilities across Australia. The NPMF are tasked with reviewing novel, high cost medicines. These include those utilised in paediatrics not currently subsidised by the Pharmaceutical Benefit Scheme and Special Access Scheme therapies.
Medications are chosen via horizon scanning and member discussions. The evaluation process involves the pharmacist compiling and analysing available evidence, along with national usage, economic modelling and relevant recommendations for the Forum to review. The final evaluation is disseminated as evidence based, peer reviewed clinician information summaries.
Evaluation: As the Forum is in its infancy, initial appraisal will include the number of medications evaluated by the NPMF, combined with utilisation of clinician information summaries and NPMF advocacy to government bodies for paediatric medications.
Implications: Future NPMF progression includes standardised off-label therapy whilst reducing the likelihood of paediatric patients being therapeutic orphans. As the group develops, it has the potential for standardised practice in paediatrics with clinician information summaries distributed extensively. Resulting in more representation of Australian paediatric resources and greater awareness of the need for government funding for paediatric therapeutics.

NATIONAL MEDICINES SYMPOSIUM 2021
EVALUATING QUALITY USE OF MEDICINES:
How do we know if we're making a difference?
18 May 2021 virtual event

226

RMMR uptake rate: Why is it so low?

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The opportunity for improved medication safety in aged care facilities is well documented and often highlighted in the recent Final Report from the Royal Commission into Aged Care.
Recent research has found that only 19.1% of RACF residents receive an RMMR within three months of entry, concluding that there is missed opportunity for identifying and resolving medication-related problems. RACGP Guidelines recommend that residents should receive an RMMR on entry and when their clinical circumstances change .
Despite this, our analysis shows a decline in uptake of RMMRs and significant variability between facilities. Comparison has been made between the total number aged care beds and number of RMMRs performed. This is compared to uptake rate, ie number of RMMR referrals offered to GPs vs completed.
Data shows RMMRs were conducted for 67% of residents during FY18-19. This figure declined to 58% in FY19-20. For a large service provider in quarter four of 2020, the uptake rate was only 53%. One of the largest facilities had an uptake rate of 31% whereas another facility in another state was 94% and a third facility in the same city was only 10%.
The observation of variable uptake partly explains the research finding of the RMMR program not having the impact it should. Between the MBS fee and the pharmacists fee the government invests more than $250 for each RMMR. This funding could be used more effectively to bring together multidisciplinary health care teams which include pharmacists, to improve outcomes for residents.

227

Opioids in primary care: working together for a bigger impact

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Background: Reducing inappropriate opioid use requires a balanced approach to ensure optimal care is still provided in the diverse and challenging contexts of primary care. NPS MedicineWise launched a national educational program 'Opioids and the bigger picture when treating chronic pain' in October 2019.
Objective: The program aims to reduce the harms of opioids while ensuring adequate pain management and quality of life for people with CNCP who are managed in primary care.
Method: The program was developed collaboratively in consultation with key organisations and opinion leaders (including consumers) to ensure alignment of program messages and goals with those of health professionals (HPs), consumers and peak bodies, and where possible across sectors and at transitions of care.
Program key messages and interventions were co-designed with HPs and consumers, in line with our standard model, using evidence-based implementation frameworks that draw on clinical evidence, gaps and barriers in practice, and opportunities for behaviour change. Interventions were developed and tested iteratively with HPs and consumers to ensure greater alignment to their priorities and needs. Key stakeholders were further engaged in the development, testing and/or promotion of program's interventions.
This resulted in a national program that utilises a mix of interventions to facilitate behaviour change including educational visiting, audit and feedback products, patient-mediated strategies, and decision-support tools.
Findings: The collaborations and codesign process led to tailored messages and interventions targeting key practice gaps and addressing challenges in practice, such as safe tapering processes for opioids and active engagement of patients in the pain management approach. The interventions were well received, and evaluation shows a significant impact on HP knowledge, confidence, and practice.
Lessons learnt: A stronger approach for future programs could adopt a collective impact approach, including developing common indicators of success, and agreeing on assigned contributions across organisations.

NATIONAL MEDICINES SYMPOSIUM 2021
EVALUATING QUALITY USE OF MEDICINES:
How do we know if we're making a difference?
18 May 2021 virtual event

228

How does the content and delivery of medicines safety risk communications affect prescribers' awareness, knowledge and behaviours: A systematic review.

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Introduction: Information about emergent evidence of harm is shared through medicines safety risk communications, including what the specific risk is, the evidence supporting it, who the risk affects and how to best manage it. Research to date indicates medicines safety information communicated to prescribers not only varies globally, but these communications have inconsistent effects on prescribing. Furthermore, little is known about how the content and delivery of these messages influence effectiveness.
Objective: The aim of this study is to systematically review and synthesise the current literature to determine how medicines safety risk communications content and delivery affects prescriber's awareness and knowledge of safety risks associated with medicines, and effects on prescribers' behaviours.
Method: This is a systematic review of randomised and quasi-randomised controlled trials evaluating the content and delivery of medicines safety risk information. A literature search has been conducted in MEDLINE, EMBASE, SCOPUS, Web of Science and PsycINFO. Studies are included if the intervention relates to content (e.g., text or visual or audio information) and/or delivery of risk information (e.g., hardcopy, digital and person to person) on medicines. Trials assessing different formats such as layout and language are also included. Dual independent screening and extraction is used, and risk of bias assessment undertaken. Where appropriate outcomes data are available, we will carry out meta-analyses (PROSPERO CRD42020188031).
Results: We identified 11,436 studies for initial screening, of which 114 were assessed at the full text level. Analysis is underway. Outcomes to be assessed include: how communication methods, retrievability and utility affect awareness; knowledge (risk description, rationale and evidence and risk mitigation); and behavioural change (prescribing, monitoring or mitigation and patient communication). Preliminary results, including knowledge gaps, will be presented.
Conclusion: This is the first systematic review to examine how content and delivery of risk communication on medicines affects prescribers.

NATIONAL MEDICINES SYMPOSIUM 2021
EVALUATING QUALITY USE OF MEDICINES:
How do we know if we're making a difference?
18 May 2021 virtual event

229

The burden of hospital admissions for adverse drug reactions in Tasmania

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Background: With an ageing population, the incidence of adverse drug reaction (ADR)-related hospital admissions in Australia is expected to increase in coming decades. Almost 15% of admissions in patients aged ≥65 years are associated with ADRs based on prospective chart review, compared with 2.7% when administrative coding is used for ADR identification. Examination of the incidence of ADRs and measuring the impact of interventions designed to reduce medication-related harm are integral to the Council of Australian Governments' agreement to make Medicine Safety and the Quality Use of Medicines the 10th National Health Priority Area.
Objectives: To assess:

- the incidence of ADR-related admissions,
- the proportion of ADR-related hospital admissions attributed to patients who had previously experienced an ADR-related admission, and
- drug classes associated with repeat ADRs.

Methods: This was a retrospective study of Tasmanian adult patients with an acute admission between 2011-2015. Routinely collected administrative data from the four major public hospitals were extracted from the Admitted Patient Care National Minimum Dataset (APC-NMDS). ADRs were identified based on International Statistical Classification of Diseases and Related Health Problems coding (ICD-10-AM).
Findings/implications: Four percent of acute admissions in adult patients were ADR-related. Almost one-in-six ADR-related admissions were attributed to patients who had previously experienced an ADR-related admission during the study period. In half of these repeat admissions, the causative drug class had been associated with a previous ADR-related admission in the same individual. It is important to monitor these metrics to evaluate the impact of interventions designed to improve the use of medicines. The burden of ADR-related admissions is significant, even when estimated using administrative data. Repeat ADR-related admissions in the same individual are also relatively common and require increased specific attention.

NATIONAL MEDICINES SYMPOSIUM 2021
EVALUATING QUALITY USE OF MEDICINES:
How do we know if we're making a difference?
18 May 2021 virtual event

230

Potent incidents: A retrospective review of hydromorphone hospital inpatient incident reports.

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Background: Opioids are high-risk medicines, frequently prescribed and administered in the inpatient hospital setting. Hydromorphone incidents may pose particularly high risk of harm due to its potency. Reviewing incident data is a key strategy to improve medicines safety within an organisation.
Aim: To identify and characterise hydromorphone-related incidents from South Australian hospitals to identify targets for quality improvement.
Methods: Hydromorphone-related incidents submitted to a statewide incident reporting system over a two-year period were reviewed retrospectively. Incidents were categorised by type and stage in the medication management. Incident severity was rated using the National Coordinating Council for Medication Error Reporting and Prevention Medication Error Index. Results were summarised using quantitative descriptive statistics.
Results: Eighty-one hydromorphone-related incidents were identified, representing 6.3% of total opioid-related incidents errors. More than half (60.5%) of these hydromorphone incidents occurred during the drug administration phase of the medication process. Common types of administration errors were included giving the wrong medication (28.6%), omitting a medication (16.3%) or administering the an incorrect formulation (16.3%). A considerable number of errors occurred during prescribing (22.2%). Common prescribing errors were invalid/ or incomplete orders (27.8%), prescribing the wrong formulation (16.7%), medication not prescribed/ or charted (16.7%) and wrong dose prescribed (16.7%). The majority of hydromorphone-related incidents (81.5%) reached the patient and 19.8% resulted in harm to the patient harm. These results reflect the trends from observed with other opioids included in the data with errors incidents also primarily occurring in the administration and prescribing phases.
Conclusion: Opportunity exists to reduce hydromorphone-related incidents within prescribing and administration processes. These results can guide development of interventions to improve safety.

NATIONAL MEDICINES SYMPOSIUM 2021
EVALUATING QUALITY USE OF MEDICINES:
How do we know if we're making a difference?
18 May 2021 virtual event

231

Provision of Residential Medication Management Reviews in Residential Aged Care Facilities

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Background: Residential medication management review (RMMR) is a key service for facilitating quality use of medicines in residential aged care facilities (RACFs). The recent Royal Commission into Aged Care Quality and Safety recommended RMMRs be provided to residents on entry an RACF and at least annually thereafter. Understanding utilisation of this flagship government-funded service is important for aged care policy and planning. This study examined time to first RMMR after RACF entry using the National Historical Cohort of the Registry of Senior Australians.

Methods: Non-Aboriginal individuals aged ≥65 years who first entered permanent residential care during 2012-2015 and were dispensed ≥1 prescription in the preceding year were included. The cumulative incidence function was used to determine time to first Medicare Benefits Schedule (MBS) claim for an RMMR while accounting for competing events (death or permanent departure from the first RACF for another reason), with follow-up until 31/12/2016.

Results: 176,390 residents from 2,799 RACFs were included. The median resident age was 84 years, 61.7% were female and 48.1% were living with dementia. In the year before RACF entry, residents were dispensed a median of 11 unique medicines and 4.5% had received a Home Medicines Review.

At 3 months after entering an RACF, 19.1% of residents had received an RMMR, while 11.8% had died without receiving an RMMR, and 5.7% had left their first RACF for other reasons without an RMMR. By 24 months, 49.7% of residents had received an RMMR, 25.8% had died without an RMMR, and 10.2% had left their first RACF for other reasons.

Conclusion: RMMRs are a key strategy for minimising medicines-related harm, yet MBS claims for RMMRs are lodged for only a fraction of residents after RACF entry. The potential underuse of this program may represent a missed opportunity to resolve medicines-related problems in Australian RACFs.

NATIONAL MEDICINES SYMPOSIUM 2021
EVALUATING QUALITY USE OF MEDICINES:
How do we know if we're making a difference?
18 May 2021 virtual event

232

Encouraging Antimicrobial Stewardship in residential aged care facilities.

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Background: Concerning levels of inappropriate antimicrobial use persist in residential aged care facilities (RACF). Inappropriate antimicrobial use presents risks to residents' safety and increases the potential for the development of antimicrobial resistance.
Objective: To improve antimicrobial stewardship in the RACF by reviewing the availability of antimicrobial medications in the imprest system.
Method: Current antimicrobial prescribing habits across 180 RACFs across South East Queensland were analysed. This data was reviewed against the Therapeutic Guidelines recommendations for common conditions seen at RACFs. The number of times antimicrobials were prescribed for residents which are not considered first or second line therapy for these conditions was alarmingly. In addition, the list of anitmicrobials available in the imprest system exceeded those recommended as first or second line therapy. This ready availability resulted in antimicrobial courses being commenced in residents before the pharmacist was able to review the medication order for appropriateness.
Following review of the prescribing data and Therapeutic Guideline recommendations, the only antimicrobials available in the imprest system were those indicated as either first or second line therapy.
Results: Prescribing data and antimicrobial use will be reviewed and analysed 4 weeks after implementation of the new antimicrobial imprest list. The data will then continue to be analysed at 4 week intervals over the next 6 months.

NATIONAL MEDICINES SYMPOSIUM 2021
EVALUATING QUALITY USE OF MEDICINES:
How do we know if we're making a difference?
18 May 2021 virtual event

233

Leveraging technology to reduce transcription errors

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Background: Within the aged care setting, the supply pharmacy is responsible for maintaining the resident's medication chart. Following an in-depth analysis and review, the pharmacy determined a change in medication management software would improve resident medication safety. To change software providers, the pharmacy had to transfer approximately 5000 resident's (from 50 residential aged care facilities (RACF)) medication records from one software provider to another without disrupting or compromising medication safety and management at the RACF. In addition to transcribing the data from one system to another in the pharmacy, an onsite chart reconciliation audit was also necessary. It was estimated the initial data entry would take approximately 1250 hours, the onsite chart audit approximately 1200 hours and the entire transition could take up to a year.
Objective: To identify a more efficient, and safer method of transferring resident medication charts from one software system to another without compromising medication safety or disrupting the end user, the resident and the RACF.
Method: Working in collaboration with the new software vendor, an automatic data transfer from the existing to new software was established. In addition to improving efficiencies, this innovation also significantly reduced the risk of transcription errors. Automating transcription also allowed the pharmacy to focus on known areas of increased risk i.e. opioid patches, injections, and reduced the time pharmacy staff were onsite at the RACF, reducing risk of exposing any of the residents to COVID-19 (transition occurred from July to November 2020).
Results: Every resident medication chart was successfully transferred to the new software according to schedule without compromising safety.

NATIONAL MEDICINES SYMPOSIUM 2021
EVALUATING QUALITY USE OF MEDICINES:
How do we know if we're making a difference?
18 May 2021 virtual event

234

Opioid-induced in-hospital deaths: A 10-year review of Australian Coroner's cases exploring similarities and lessons learnt

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Background: While opioid medications provide a cornerstone for management of acute moderate-to-severe pain, their ability to depress the central nervous system is well known. The vast range of opioid drugs and formulations available, the need for individualised dosing, the frequency of opioid prescribing and administration within the hospital setting, and their intrinsic adverse effect profile make opioids high risk medicines, often implicated in medication-related harm. It is important to learn from seminal incidents, such as inpatient deaths, involving medication-related harm to improve patient safety and the quality of care in the future.
Aim: To identify patient and health service delivery factors which can contribute to an increased risk of death associated with excessive sedation and respiratory impairment through review of coronial inquest case reports involving administration of opioids.
Methods: This study assessed similarities in available coronial inquest cases reviewing opioid-related deaths in Australian hospitals from 2010-2020. Cases included for review were in-hospital deaths that identified patient factors, clinical errors and service delivery factors that resulted in opioid therapy contributing to the death.
Results: Of the 2,879 coroner's inquest reports reviewed across six Australian states, 15 met the criteria for inclusion. Coroner's inquest reports were analysed qualitatively to identify common themes, contributing patient and service delivery factors and recommendations. Descriptive statistics were used to summarise shared features between cases. All cases included had at least one, but often more, service delivery factors contributing to the death, including insufficient observations, prescribing/administration error, poor escalation and reduced communication.
Conclusion: Wider awareness of the individual characteristics that pose increased risk of opioid-induced ventilatory impairment, greater uptake of formal, evidence-based pain management guidelines and improved documentation and observations may reduce opioid-induced ventilatory imparitment mortality rates.

NATIONAL MEDICINES SYMPOSIUM 2021
EVALUATING QUALITY USE OF MEDICINES:
How do we know if we're making a difference?
18 May 2021 virtual event

235

Prescribing, patient, and hospital admission characteristics are all associated with opioid incident reports in hospital inpatients

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Opioids are high risk medicines that are involved in a large number of medication incident reports in hospitals, with oxycodone, combined oxycodone-naloxone tablets, and buprenorphine commonly implicated. It is unclear what prescribing, patient, or hospital admission factors may be associated with a higher risk of being exposed to medication incidents involving oral or transdermal opioid formulations.

In a collaboration involving nursing and pharmacy staff to improve opioid safety, we sought to explore possible associated prescribing, patient and hospital admission risk factors for reported nursing incidents on our hospital's inpatient wards involving non-parenteral opioids. Inpatient risk management reports were correlated to an institutional database capturing all electronic medical record prescribing at individual patient level, as well as corresponding characteristics from patient and hospital admission domains. Medication administration data was used to calculate the maximum and mean oral morphine equivalent daily dose (oMEDD) during the patient hospital admission for individual patients. Individual patient level data from all patients during the study period was examined.

In the study period (January 2018 – June 2020), a non-parenteral opioid medication incident was reported in 321 of 43,725 inpatient admissions where the patient received a non-parenteral opioid. Factors associated with opioid medication incident reporting included a higher total number of medication or opioid orders, higher maximum and mean oMEDD during the patient admission, failure to capture daily assessment of pain scores, higher maximum pain score, higher maximum sedation score, contact isolation, drug allergy, opioid allergy, and ICU admission. Patients with a primary language other than English were not at greater risk of an opioid medication incident.

Prescribing, patient, and hospital admission domains all contain characteristics associated with an increased likelihood of an opioid medication incident. Interventions to reduce opioid medication incidents are likely to require multidisciplinary collaborative interventions in order to successfully address all contributing factors.

NATIONAL MEDICINES SYMPOSIUM 2021
EVALUATING QUALITY USE OF MEDICINES:
How do we know if we're making a difference?
18 May 2021 virtual event

236

Excessive opioid prescribing on discharge following surgery would persist despite regulatory changes and institutional guidance

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Background: Excessive opioid prescribing after surgery places patients at risk of harm from future inappropriate opioid use. Recent national regulatory changes allow PBS prescriptions of 10 immediate-release (IR) opioid tablets/capsules and discourage slow-release (SR) opioids for acute pain, but may not sufficiently limit supply for patients with low opioid requirements. At our institution, discharge prescribing guidelines, supported by pharmacist review, were developed to address this. The capacity of regulation and guidelines to prevent excessive opioid prescribing, particularly for patients with low post-operative opioid requirements, remains uncertain.

Aim: We sought to determine the frequency of excessive opioid prescribing in the acute post-operative setting amongst patients with low opioid requirements, defined as requiring up to 12.5mg oral oxycodone in the 24 hours preceding discharge.

Methods: All inpatients admitted >24 hours at our institution who underwent a surgical procedure in the twelve months following release of institutional guidelines had their prescribing patterns reviewed from an institutional routine-care data repository, with specific reference to inpatient opioid usage and quantities of oxycodone IR and SR opioid tablets prescribed on discharge. Patients transferred to hospital-in-the-home were excluded, as were hydromorphone SR tablets (reserved for non-surgical pain at our institution).

Results: Between 1/6/2019-31/5/2020, 6845 acute surgical inpatients were identified. Of those taking no opioids in the 24 hours preceding discharge, 15.3% (439/2868) were prescribed 6-10 oxycodone IR 5mg tablets/capsules on discharge. Of those taking up to 12.5mg of oxycodone in the 24 hours preceding discharge, 56.8% (527/928) were prescribed 6-20 oxycodone IR 5mg tablets/capsules on discharge. Of patients prescribed SR opioid tablets, 22.9% (307/1341) were prescribed >14 SR tablets on discharge.

Conclusion: The combination of regulatory changes and supported institutional guidance is insufficient to prevent widespread excessive opioid discharge prescribing, particularly in low opioid use patients. Innovative and more intensive interventions appear required to protect such patients.

NATIONAL MEDICINES SYMPOSIUM 2021
EVALUATING QUALITY USE OF MEDICINES:
How do we know if we're making a difference?
18 May 2021 virtual event

237

Evaluating the Clinical Impact of Implementing an Emergency Department Pharmacist at a Major Metropolitan Hospital

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Background: The Emergency Department (ED) is a high-risk environment for medical misadventure and has the highest rate of preventable medication-related errors. Current literature shows the implementation of an ED pharmacist can reduce medication prescribing errors by 70% and subsequent ward-based pharmacy interventions by 75%, ultimately improving patient's health outcomes. A full time ED pharmacist was implemented at the hospital in May 2020, operating Monday to Friday.
Aim: To assess the clinical impact of implementing an ED pharmacist at a major metropolitan hospital.
Method: A retrospective audit was conducted over July and August 2020. Patients presenting to the ED were determined for inclusion eligibility by applying the organisation's Pharmacy High Needs Criteria. Two cohorts were compared, an intervention group had been reviewed by the ED pharmacist and the control ground who received no ED pharmacist review. Each group comprised of 70 High Needs patients. Electronic medical records were reviewed to determine time to medication reconciliation, inpatient length of stay and number and type of chart errors subsequently identified by the ward pharmacist.
Results: Comparing the control and intervention groups mean time to best possible medication history reduced from 3.17 to 0.29 days and mean time to medication management plan reduced from 3.68 to 1.85 days. Review by the ED pharmacist resulted in improvement in medication charting accuracy with 92.9% of intervention group patients having no medication charting errors compared to 46.2%. The average inpatient length of stay reduced from 6.52 days to 6.22; however confounding factors were not accounted for.
Implications: Implementation of an ED pharmacist led to earlier best possible medication review and medication management plans facilitating collaboration between patient, pharmacists and prescriber. This resulted in more accurate medication charting. This role could be expanded to other sites across the organisation or with extended hours for greater impact.

NATIONAL MEDICINES SYMPOSIUM 2021
EVALUATING QUALITY USE OF MEDICINES:
How do we know if we're making a difference?
18 May 2021 virtual event

238

Partnering for impact: NPS MedicineWise and the National Heart Foundation of Australia's national heart failure program

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Background: Heart failure affects 480,000 Australians, with over 60,000 new diagnoses made every year. National guidelines for the prevention, detection and management of heart failure were published by the National Heart Foundation of Australia (Heart Foundation), with the Cardiac Society of Australia and New Zealand in 2018. The Heart Foundation have produced a range of resources to support implementation of the guidelines into practice. In 2020, NPS MedicineWise approached the Heart Foundation to collaborate on the design, development, implementation and evaluation of a program.
Objective: To improve health outcomes for Australians with heart failure by optimising quality use of medicines and health technologies in primary care through delivering a national collaborative heart failure program.
Methods: A formal collaboration agreement determined the extent of the collaboration and responsibilities. Working with a multidisciplinary expert working group, we co-designed the program including determining the scope, primary and secondary audiences, and key messages.
Key findings: The program scope includes diagnosis, secondary prevention, and management of comorbidities. The primary audience are people with heart failure and their carers, general practitioners, practice nurses and pharmacists. Interventional strategies include educational outreach visits, webinars and a suite of bespoke supporting materials.
The advantages of the partnership include i) reducing duplication of work by leveraging existing assets; ii) consistent messaging to health professionals and consumers aligning with national guideline recommendations; iii) access to experts in the field to provide peer review; iv) greater program reach through use of networks; and v) leveraging our reputations and expertise to achieve greater collective impact. Practical aspects that have enabled good working relations include up front agreement of a detailed project plan, responsibilities and timelines, intellectual property, copyright and governance arrangements.
Implication: The national heart failure program is likely to achieve greater impact through this collaboration.

NATIONAL MEDICINES SYMPOSIUM 2021
EVALUATING QUALITY USE OF MEDICINES:
How do we know if we're making a difference?
18 May 2021 virtual event

239

Reducing Impact of Peripherally Inserted Central Catheter replacement (RI-PICC)

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Background: Peripherally inserted central catheters (PICCs) are vital in patient care and are used to administer intravenous medications and nutrition for extended periods. While PICC complications such as infections are monitored at our institution, occlusion rates are not quantified. Anecdotal reports indicate occlusions cause delays in therapy and increase costs and demands on the health service such as replacement costs and radiology capacity.
Identifying occlusion rates early and chemical intervention with alteplase has the potential to reduce the number of PICC replacements, reduce healthcare costs and improve patient care. This motivated collaboration between Pharmacy and Radiology, to quantify our institution's occlusion rates and their consequences.
Aim: To assess PICCs inserted at our institution, occlusion rates and their consequences, and to evaluate the effectiveness of alteplase to unblock occluded PICCs.
Method: Electronic medical records of all PICCs inserted by Radiology for inpatient care from October 2017 to March 2018 were reviewed after gaining Ethics approval.
Results: Of the 283 PICCs reviewed, 80 (28.3%) had a one lumen and 203 (71.7%) had two lumens. Of the single lumen PICCs, only two became occluded, compared with 71 occasions in the double lumen PICCs, $p<0.0001$. The median days in-situ was lower for single lumen PICCs compared to double lumen PICCs (nine versus 14 days, $p=0.006$).
Alteplase was utilised in over a third of occlusions with a success rate of 91% (21/26). This resulted in only 10 patients with missed doses instead of a potential of 20% (10/50) in the double lumen PICC population. Alteplase reduced the number of PICC replacement by 91%, saving cost of replacement and radiology staff time.
Conclusion: Significantly higher occlusion rates were observed in double lumen compared to single lumen PICCs. Alteplase is an effective alternative to PICC replacement leading to improved patient care, radiology capacity, and reduced healthcare costs.

NATIONAL MEDICINES SYMPOSIUM 2021
EVALUATING QUALITY USE OF MEDICINES:
How do we know if we're making a difference?
18 May 2021 virtual event

240

Pharmacist discharge medicine counselling: are we documenting enough?

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Background: The National Safety and Quality Health Service Standard 4 outlines the requirement to provide patients with information about their medicine needs and risks. As there is no standardised way to document discharge medicine counselling, considerable variability between health services may exist.
Description: This project aimed to review local processes for documenting pharmacist discharge counselling (PDC) and create a tool to provide consistent documentation.
Action: Medical records of 70 patients discharged from hospital with a pharmacist-generated discharge medication list (Medilist) were reviewed for documentation of counselling. Provision of counselling was documented for 48 patients (68.6%). No patients had documentation of who received counselling, use of professional interpreters, provision of consumer medicines information (CMIs) and additional material. Of the four patients from residential aged-care facilities (RACF), there was no documentation of communication with the supplying pharmacy and RACF. Of the 19 webster-pak® patients, one patient (5.3%) had documentation of handover to the supplying pharmacy.
A PDC progress-note sticker was developed to document:

- Who was counselled
- Use of professional interpreters
- Provision of Medilist, CMIs and other material
- Liaising with community pharmacies and RACF
- Return of patient's own medicines
- Other comments

Evaluation: Medical records of 70 patients were reviewed after implementation of the progress-note sticker, with counselling documented for 64 patients (91.4%). Where PDC was documented, the person counselled was identifiable and where professional interpreters were not used, the reason was documented. Of the 10 RACF patients, five (50%) and nine patients (90%) had documentation of communication with the RACF and supplying pharmacy respectively. Thirteen of 15 webster-pak® patients (86.7%) had documentation of handover to the supplying pharmacy. Documentation of material supplied included CMIs, corticosteroid weaning charts, warfarin booklets, sharps-kits and oral-syringes.
Implications: This project improved the frequency and accuracy of documentation of PDC at our hospital.

NATIONAL MEDICINES SYMPOSIUM 2021
EVALUATING QUALITY USE OF MEDICINES:
How do we know if we're making a difference?
18 May 2021 virtual event

241

Intravenous Iron Dosing

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Background: Careful dosing of intravenous iron is important to minimise consequences of iron deficient anaemia, and avoid complications related to iron overload. Clinician practice regarding dosing varies between settings and specialities. Ganzoni dosing is an individualised calculated dose based on patient details and has traditionally been advocated for, while the fixed-low dose method provides a method for individuals to receive a lower fixed dose of iron. At present, it is unclear if Ganzoni-dosing compared with a fixed-low dose provides greater haemoglobin improvements for iron-deficient patients with reduced haemoglobin.
Aim: The aim of this study is to explore whether the choice of intravenous iron dosing method influences improvements in the patient's haemoglobin concentration.
Method: A retrospective observational study using real-world data was carried out to compare Ganzoni and fixed-low dose patients using a cohort of 79 patients between 1 April 2017 and 25 February 2019. The primary outcome of interest was the change in haemoglobin concentration between baseline (within 0–28 days prior to intravenous iron infusion) and follow-up (4–12 weeks following intravenous iron infusion).
Key Findings and Lessons learned: The Ganzoni and fixed-low dose methods indicated similar improvements in haemoglobin concentration (17 and 25 g/L, respectively), with no statistically significant differences identified between the two dosing methods for any other clinical indicators assessed.
Conclusion: This study has indicated that the fixed-low dose method may be an appropriate alternative to the Ganzoni dosing method for the dosing of iron polymaltose and ferric carboxymaltose for iron deficient patients with reduced haemoglobin

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242

Patterns of use of b/tsDMARDs and other medicines for patients with rheumatoid arthritis: a retrospective study using PBS data

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Aim: To describe prescribing patterns for biologic/targeted synthetic disease-modifying antirheumatic drugs (b/tsDMARDs) for rheumatoid arthritis (RA) in Australia, and to analyse conventional synthetic (cs)DMARDs, opioid and glucocorticoid prescribing to support quality use of medicines.
Methods: Pharmaceutical Benefits Scheme (PBS) dispensing data from Services Australia from 1/1/16-31/12/19 was analysed for rheumatologists and immunologists. Prescribing patterns of b/tsDMARDs available on the PBS for RA were described. In addition, prescribing of commonly used csDMARDs (methotrexate, hydroxychloroquine, leflunomide and sulfasalazine) prior to b/tsDMARD initiation were also analysed, as well as prescription of glucocorticoids and opioids after b/tsDMARD initiation. Individualised feedback reports were produced for rheumatologists and immunologists presenting their prescribing patterns. They included national aggregated data for comparison and best practice guidance for personal reflection to support practice improvement.
Results: Data from 448 rheumatologists and immunologists were collected to form the national aggregate report. The number of patients prescribed b/tsDMARDs for RA in Australia increased from 27,856 in 2016, to 40,375 in 2019. Between 1/1/18 and 31/12/19, 11,243 patients commenced treatment with a b/tsDMARD, with TNF inhibitors the most frequently prescribed first-choice (64%). Of these 11,243 patients, 87% were previously prescribed methotrexate, 56% hydroxychloroquine, 34% leflunomide, and 30% sulfasalazine. 10% of patients were prescribed subcutaneous methotrexate before starting b/tsDMARD treatment. Approximately 50% of patients were prescribed glucocorticoids by any prescriber ≥6 months after starting b/tsDMARD treatment between 1/11/16 and 31/10/18. Between 1/1/18 and 31/12/19, 43,169 patients were prescribed a b/tsDMARD. Of these 48% were also prescribed opioids by any prescriber.
Conclusions: The number of patients prescribed b/tsDMARDs for RA is increasing with TNF inhibitors remaining the most frequently prescribed. Rates of subcutaneous methotrexate prescribing remains low and many patients continue to receive glucocorticoids and opioids after starting b/tsDMARDs highlighting opportunities for practice improvement in partnership with patients and general practitioners.

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18 May 2021 virtual event

243

Inadvertent Medication Vacations- A COVID-19 Patient Case Report at SLHD Special Health Accommodation

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Objective: To explore the implications and significance of pharmacist-led interventions to ensure safe and effective quality use of medication in special-health-hotel quarantine patients.
Clinical Features: An 87-year-old male returned traveller from an overseas cruise trip tested positive for SARS-coV-2, and was admitted under health-hotel for a mandatory 14-day quarantine. Phone interview with a pharmacist revealed that patient's usual medications packed in a dose-administration-aid, as well as his COPD inhalers had all been missed for more than three weeks, as the result of an unexpectedly prolonged overseas trip. Furthermore, the patient reported episodes of dizziness, shortness of breath, swollen ankles along with poor oral intake that were confirmed by hotel nursing staff.
Pharmacist Intervention, Case Progress and Outcome: An accurate medication history was established and reconciled promptly through consultation with patient's local pharmacy, general practitioner and carers. Based on the risk factors identified and complexity of the patient's medication regimen, pharmacist deemed it inappropriate to resupply those missed medications which had not been taken by the patient for a considerable amount of time prior to medical review. Urgent referral was made to the hospital virtual care doctors and the patient was subsequently transferred to the emergency department for assessment. 5 out of 12 of patient's pre-admission medications were withheld and deemed therapeutically inappropriate, with others slowly re-introduced in admission to the COVID ward. The patient was then discharged back to the hotel with close multidisciplinary monitoring.
Conclusion: The vital role of clinical pharmacists in a novel health hotel quarantine environment has been shown valuable in this case report. Collaborative work among medical doctors, nursing staff and allied health as part of a multidisciplinary team achieved successful patient-centred care. Prompt pharmacist clinical judgement and recommending early intervention resulted in a favourable outcome for the patient in a challenging isolation situation.

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18 May 2021 virtual event

244

Evaluation of accuracy measure in Ward Accountable Drugs handling

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Background: The appropriate management and safe handling of Ward Accountable Drugs (WADSs) is paramount in all clinical areas and within the pharmacy department. Pharmacists and relevant clinicians have a shared legal responsibility to comply in line with relevant NSW Schedule 8 medication handling policies and legislations.
Description: A noticeable number of WAD-related discrepancies and errors were reported within the pharmacy department and on the clinical wards in the last six-month period. Investigations of underlying contributing factors were performed, and strategies were formulated to address these issues in current practice.
Action: Staff compliance with "Scan Checks on Barcodes" and "Balance Reconciliation" fundamental practices was assessed two months pre- and post-reinforcement of the staff meeting reinforcement and measured retrospectively:

1. Extraction and analysis of the iPharmacy crystal report "QI- Medication Scanning Check Analysis- S8"
2. Analysing WADs stock balance accuracy reflected in balance reconciliation. The completion of balance reconciliation each month in top 10 frequently used WADs ranged in oral tablets, prepacked liquids and injections were manually counted.

Evaluation: The monthly average of S8 discharge medications scan checked in post-intervention was found at 2-fold increase (64.34%) than pre-reinforcement baseline (32.65%). Also, the results indicated increasing trends seen in the total monthly reconciliations performed in first month post-reinforcement, however slightly down trending in the next month.
Implication: This audit establishes the impact of effective WAD safe handling quality improvement activities which significantly promote high-risk medication safety and will be presented to staff for continuity in this new level of practice, thus making such impact sustainable. Benefits of reinforcing WAD fundamental practices were showcased, which not only prevent WAD-related discrepancies, the occurrence of preventable errors in WADs handling, but also improve stock on hand accuracy with high turn over WADs and the time invested to investigate, trace and rectify errors.