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Pharmacists as patient advocates: A series of case studies illustrating the impacts of a regular pharmacist service in residential aged care (nursing homes)

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ABSTRACT

Background: Medicine-related problems are common in older people living in residential aged care facilities (RACFs). Recognising the significant medicine-related problems, the Australian government has announced a $345 million funding package to employ on-site pharmacists in RACFs starting in 2023. The new on-site pharmacists are to provide a range of clinical services to reduce medicine-related adverse events, promote quality use of medicines, and improve clinical governance and education. Underpinning these services, the authors argue that pharmacists play the critical role as resident advocates.

Objective: This study aims to demonstrate how pharmacists can enhance their advocacy responsibility within and beyond the clinical environment to not only reduce medicine-related adverse events but also improve residents' overall health and quality of life.

Methods: This study uses a case series methodology to demonstrate pharmacists' diverse roles in advocating for residents and their families. The case studies were based on participants enrolled in the Reducing Medicine-Induced Deterioration and Adverse Reactions (ReMInDAR) trial, a randomised controlled trial testing the effects of a regular pharmacist service across the Australian RACFs.

Results: Pharmacists' advocacy ranged from persistence in follow-up with a resident's general practitioner (GP) to ensure the GP was aware that a patient was experiencing bleeding and bruising while on an anticoagulant, to advocating for a new bed for a resident with peripheral oedema who had been sleeping in his chair due to fear of falling out of his current bed.

Conclusions: Our trial focussed on pharmacists serving as the residents' advocate to improve their overall health and quality of life, rather than just addressing a list of medicine-related problems. The pharmacist model used in the ReMInDAR trial supports pharmacists to work to their full scope of practice, helps guide the Australian government's new on-site pharmacist program, and serves as an exemplar pharmacist in aged care model internationally.

1. Background

Medicine-related problems are common in older people living in residential aged care facilities; over 95% of residents in Australian aged care facilities have at least one medicine-related problem detected at the time they receive a medicines review.[1,2] In Australia, the Residential Medication Management Review (RMMR) is a comprehensive medicines review for aged care residents conducted by an accredited pharmacist following a referral from the resident's general practitioner (GP).[3] The purpose of the RMMR is to optimise the outcomes from medicines and minimise adverse events by identifying and resolving medicine-related problems. Accredited pharmacists are funded to conduct an RMMR for a resident every 24 months or more frequently if there is a clinical need, and from April 2020, up to two follow-up services if clinically indicated. The service is, however, underutilised[4] and the infrequent nature of the service means that the focus of RMMR is often on resolving medicine-related problems rather than preventing them.

Recognising the significant medicine-related problems in residential aged care, the Australian government announced a $345 million investment over 4 years to employ on-site pharmacists in residential aged care starting in 2023.[5] The new on-site pharmacists are expected to provide clinical services including resolving medicine-related issues, whole-of-facility

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quality use of medicines activities and collaboration with health care teams,[6] with the aim to reduce medicine adverse events. A 2019 systematic review reported that pharmacist services in residential aged care are effective in resolving medicine-related problems and reducing rates of falls,[7] which means that the government's on-site pharmacist program will likely reduce medicine harms in aged care. However, we argue that pharmacists' role and contributions in residential aged care extends beyond providing discrete clinical services; pharmacists need to focus more on patient advocacy to more effectively reduce medicine harms.

This paper describes a series of case studies demonstrating how pharmacists can reduce medicine adverse events, at the same time, contribute to improving residents' health and quality of life through regular follow up and continuous advocacy. The case studies were derived from case notes of participants enrolled in the Reducing Medicine-Induced Deterioration and Adverse Reactions (ReMInDAR) trial,[8,9] a multicentre, open-label, randomised controlled trial involving 39 aged care facilities in Australia conducted between August 2018 and June 2020. The trial enrolled 248 participants including 120 in the intervention group.[9] Six case studies of the 120 participants in the intervention group were selected to illustrate a variety of clinical and non-clinical scenarios that the pharmacists identified and solved. The trial intervention was a regular pharmacist service occurring every eight weeks over 12 months. Each pharmacist session comprised four key components: i) review of resident care record and medication chart, ii) discussion with resident and care staff to discuss and identify concerns about the residents' health or medicines, iii) resident assessment using validated tools to detect medicine-induced deterioration and adverse reactions, and iv) where necessary, liaison with resident's GP to discuss the resident's condition and provision of recommendations of actions to take if medicine-related problems were indicated. The detailed ReMInDAR study protocol and the trial results for primary and secondary outcomes have been published previously.[8,9] The model trialled represents pharmacists practising to their full scope of competency, in particular the National Competency Standards Framework Standard 2.1 Collaborate and work in partnership for the delivery of patient centred, culturally responsive care.[10]

The clinical vignette represents each case; however, names and environment have been changed to ensure individual's confidentiality. Information included in the case studies was documented by the trial pharmacists and research assistants and verified by the ReMInDAR trial research staff. Case studies have been produced with consent from trial participants. The project was approved by the University of South Australia Human Research Ethics Committee (ID: 0000036440) and the University of Tasmania Health and Medical Human Research Ethics Committee (ID: H0017022).

2. Case presentation

2.1. Case study 1: Mary - "Too scared to say I'm bleeding"*

88-year-old Mary is on medicines to manage her atrial fibrillation and hypertension. During the first pharmacist session, Mary expressed concern that she sometimes has bright red blood in her stool and experience bruising on her arms. Mary had kept this to herself because she feared needing to undergo colonoscopy and "suspected the worst". However, based on a review of Mary's medicines, the pharmacist suspected the bleeding might be due to the apixaban dose (5 mg twice daily). The pharmacist notified the nurse regarding the blood in the stool and contacted the GP to discuss the resident and the pharmacist's concerns.

During subsequent visits, the pharmacist noted that Mary was still experiencing blood in her stool once or twice a week. Mary was not constipated or straining while using the toilet. It appeared that a GP review to address Mary's concern had not been undertaken. Mary's vital signs including weight, age and laboratory results indicating kidney function (serum creatinine = 0.66 mg/dL) were checked by the pharmacist. Considering Marys' weight (<60 kg) and age (>80 years old), the pharmacist contacted the GP again and recommended reduction in apixaban dose down to 2.5 mg. The GP did not think that the bleeding could be due to apixaban and therefore no changes to the apixaban dose were made.

The pharmacist continued to stress Mary's concerns about the bleeding to the GP and by the fourth pharmacist session, the GP finally agreed to trial reducing apixaban 5 mg twice daily to 2.5 mg twice daily. During follow up at the fifth pharmacist session, Mary told the pharmacist that the blood in stool had stopped recently and that she no longer had bruising. By the sixth session, Mary confirmed that her bleeding problems had resolved completely.

2.2. Case study 2: Harry - "Finally in my own bed!"*

Harry is a 62-year-old man who moved into aged-care because of his illnesses, which include incontinence, osteoarthritis, amnesia, obesity, obstructive sleep apnoea, transient cerebral ischaemic attacks, atrial fibrillation, cancer, dementia, depression, anxiety, and hypertension; he has also been experiencing recurrent falls.

Harry has been sleeping in his armchair for the last six months, as he found his bed was too narrow and was fearful he would fall out. Harry had swollen ankles and back pain, which was most probably from sleeping in his chair. Harry also thought his speech and mobility were declining. Harry was on 18 regular and eight "when required" medicine, which he was unhappy about, particularly the "big orange tablets that catch his throat and irritates him for few hours" (Allopurinol 300 mg).

Harry spends almost 24 h a day in the same armchair. Harry appeared to willingly self-isolate; refusing to leave his room, and not engage in any wellness or social activities because they were "not interesting". The ReMInDAR pharmacist spent time with Harry and reviewed his medicines during the first visit. The pharmacist discussed Harry's issues with his doctor at the second session. Subsequently, some of Harry's medicines were removed, or substituted for smaller alternatives and the dose was reduced for a few medicines. At the same time, based on concerns expressed to the staff by the pharmacist, the lifestyle co-ordinator made additional weekly one-on-one visits to Harry to try and find activities to improve his social engagement.

At the third visit, Harry expressed pleasure with these outcomes, especially not having to take any more "orange pills", however, he was still not leaving his room. Despite this, the small 'win' by the pharmacist helped establish a new relationship based on trust. Harry continued to open up to the pharmacist about his problems and revealed that he had previously fallen out of his bed (unreported to staff) hence his anxiety about sleeping in the current bed.

The pharmacist continued to advocate with the facility staff on Harry's behalf about the importance of getting him a new bed. At the fourth visit, the pharmacist learned that Harry had purchased a recliner chair that enabled him to lay further back and elevate his feet; this reduced the swelling in his legs. More promisingly a new wider bed was on order for him.

By the fifth session (conducted by phone during COVID-19 access restrictions), the pharmacist noted that Harry had remarkably improved. He was very much looking forward to being able to use his new bed.

2.3. Case study 3: Barbara - "My medicines are making me 'gag'!"*

Barbara uses 11 regular medicines to manage her multiple comorbidities including hyperlipidaemia, hypertension, diabetes, congestive heart failure, renal failure and depression. She also has eight medicines prescribed for use when necessary.

Barbara recently had a stroke. Despite being back in the facility, Barbara was still feeling very unwell after her stroke and could no longer complete the Montreal Cognitive Assessment (MoCA) test to assess cognition,[11] which she had been able to complete prior to her stroke. The pharmacist asked Barbara "What bothers you the most?" to which Barbara expressed real concern about her medicines and said that all her medicines were making her feel really nauseous. Barbara said she was "*most terrified of the sound of the nurses pushing the medicine trolley to her room each day*".

As Barbara could not swallow her medicines after her stroke, the nursing staff have been crushing the medicines and the mixture was very unpalatable and made her "gag".

The ReMInDAR pharmacist reviewed and reconciled Barbara's medicine and identified medicines which had been ceased in the hospital but were still on the medicine chart in the aged care facility. The pharmacist discussed Barbara's concerns and the issue of gagging with her GP and as a result Barbara was taken off many of her tablets, the dose was reduced for some medicines and some of her medicines were changed to liquid forms.

During subsequent pharmacist sessions, Barbara's spirits had greatly improved, and she was once again able to complete the MoCA test. Barbara was visibly much happier and was very grateful to the pharmacist for intervening on her behalf.

2.4. Case study 4: Anita - "The leg swelling is now gone"*

Anita is an 80-year-old woman with a history of cancer, anxiety and depression, gastro-oesophageal reflux disease (GORD) and arthritis. During the initial pharmacist review, ankle oedema and ongoing constipation were identified as additional issues for Anita. The pharmacist considered the ongoing constipation might be attributed to buprenorphine and ankle oedema to amlodipine.

At the second session, Anita's lower leg oedema was still an issue, and quite concerning for her. The pharmacist contacted Anita's GP and suggested a trial cessation of amlodipine, with possible replacement with a beta-blocker or moxonidine if the blood pressure was not managed sufficiently. The pharmacist suggested adding regular docusate and senna to manage the on-going constipation. The GP agreed to cease the amlodipine.

In the medical review one month later, the GP noted that Anita's ankle oedema had significantly improved. The GP was unsure if it was due to cessation of amlodipine but there did not appear to be any other changes that contributed to it. The constipation remained an issue; and the pharmacist noted buprenorphine could be the contributing factor. Anita continued to have significantly less ankle oedema at the subsequent visits with the ReMInDAR pharmacist.

During the fifth visit, the pharmacist noted several potential medicine-related problems. There was now duplication of proton-pump inhibitor therapy (PPI); Anita was already on rabeprazole but pantoprazole was added to the medicine chart. The pharmacist contacted the GP to suggest removing duplicate pantoprazole (PPI) from the medicine chart and increasing the dose of rabeprazole if necessary. The dose of buprenorphine had increased from 10μg/h to 15μg/h recently. Anita appeared visibly tired, which the pharmacist considered might be due to the combination of buprenorphine and diazepam, the latter which Anita was on to manage her anxiety. Anita indicated that she would like to try not taking diazepam to see if her tiredness reduced.

The pharmacist discussed with the GP the opportunity to reduce the dose of diazepam from 5 mg to 2 mg, and to cease the medicine eventually. Pantoprazole was removed from Anita's medicine chart due to duplication of PPI. All recommendations were implemented by the GP and Anita reported to the pharmacist that she felt much better; however, constipation remained to be an ongoing issue for Anita.

2.5. Case study 5: John - "Spirits lifted and an adverse medicine reaction no more"*

John is a 91-year-old man who has glaucoma, macular degeneration, constipation, short-term memory loss, hypertension, and hyperlipidaemia, ankle oedema, back pain, arthritis, gout, and enlarged prostate.

John complained to the ReMInDAR pharmacist about his ankle oedema and said he felt depressed due to his worsening condition. The pharmacist noted that John's health had declined over the past few weeks, and his ankle oedema was significantly worse with fluid seeping from his calves. His cognitive function (assessed using the MoCA test) and grip strength had both decreased significantly when compared to his baseline values recorded during his enrolment in the trial. John had also developed shortness of breath with a cough, potentially secondary to retention of fluids in his lungs, which was not present during the pharmacist's previous visit.

John told the pharmacist repeatedly *"if my oedema did not further improve, I will cease all my medicines and just wait to die"*. The pharmacist suspected that the worsening of oedema could be due to felodipine or pregabalin, and was extremely concerned for John's worsening mental state. The pharmacist attempted to contact John's GP to suggest a trial cessation of those medicines. However, the GP was overseas, so the pharmacist communicated with the facility nurse instead. In addition, the pharmacist spoke to a locum GP who stated that he could see John "early next week". Despite the pharmacist stressing the urgency of reviewing John, he was not reviewed immediately. The pharmacist continued to make several attempts to contact the locum GP and John's GP, managing to get in touch with John's GP two weeks later. The pharmacist suggested that a trial cessation of felodipine or pregabalin should be undertaken. The GP was welcoming and supportive of the trial. Although the GP was not convinced that oedema was medicine-related, the GP agreed to trial a decrease in pregabalin (25 mg) from 3 times a day to twice daily to see if this would improve his condition.

A follow-up was scheduled by the pharmacist to further monitor John's oedema and general health. During the third session, the pharmacist noted that John's health had significantly improved since the last session and that his oedema had improved since the pregabalin was reduced. John had started exercising regularly which allowed him to lose weight slowly and improve his oedema. The pharmacist continued to monitor his condition and reinforced the importance of exercise to help with the oedema.

2.6. Case study 6: - Betty – "No more falls: reducing the sedative dose does it"

Betty is an 80-year-old woman who had been recently hospitalised for congestive cardiac failure. In addition to this, Betty suffers from diabetes, obesity, hyperlipidaemia, chronic back pain, sciatica, cognitive impairment, double vision, poor balance, necrobiosis lipoidica, peripheral artery disease, peripheral neuropathy, recurrent chronic leg ulcers, anxiety, dementia, depression, and incontinence.

In the first session, the ReMInDAR pharmacist noted that Betty's dose of pregabalin was increased from 225 mg twice a day to 300 mg twice a day due to pain in her right foot. She had also been given temazepam (10 mg at night) to aid with sleep.

Betty was satisfied with her pain management, however she indicated to the pharmacist that she felt dizzy and disliked the weight gain since increased dosing of the pregabalin. Her weight had increased by 5.5 kg within a month. Pregabalin may cause drowsiness, impaired balance, confusion and weight gain. The pharmacist discussed with Betty the potential for pregabalin to cause these side effects and the possibility of reducing the pregabalin dose, however Betty was reluctant to reduce the dose due to her pain.

Four weeks later, Betty had a fall and she stated that she was feeling tired for a week before her fall. Betty acknowledged the risks associated with losing her balance; however, she was still reluctant to reduce the dose of pregabalin. The pharmacist reiterated the benefits of reducing the medicine. In addition, the ReMInDAR pharmacist discussed her concerns with the aged care staff to ensure they provided the care necessary for Betty. Within six days, Betty had another fall in the bathroom and was admitted to hospital.

At the subsequent pharmacist review visit, Betty had had two further falls and stated that she was 'loosing strength' in her legs. She was still on same medicine regimen; but in addition, she had started perindopril 4 mg daily. The ReMInDAR pharmacist noted that this medicine could cause hypotension, which could also contribute to her falls.

The pharmacist discussed these issues with the registered nurse as Betty's doctor was on holidays. A follow-up communication with the nurse occurred within a month and the doctor decreased Betty's pregabalin dose from 300 mg twice a day to 250 mg twice a day.

By the fifth pharmacist review session, Betty had not had any falls and at this time, Betty's pregabalin dose was further reduced to 75 mg twice a day. Betty indicated she would like to further decrease the pregabalin dose if she can, as long as her pain is under control. The pharmacist noted to review and monitor Betty closely.

3. Discussion

As the case studies illustrate, the interventions performed by the ReMInDAR trial pharmacists extended beyond identifying and resolving medicine-related problems; in many of the scenarios, the pharmacists served as an effective advocate for the residents due to the repeat nature of the intervention. The types of case studies presented reflect that there were two main scenarios presented; cases with high potential for serious adverse events and those that may not lead to serious consequences but do significantly impact the resident's quality of life. When residents' health is declining and their capacity for self-determination diminishes, the "minor" things can make a huge difference, e.g., "no pain", "not being scared" and "a good nights' sleep". This series of case presentations illustrate the different ways a residents' life can be negatively affected beyond the serious adverse events that they experience.

The model tested in the ReMInDAR trial represents an example of a mature pharmacy practice, one that allows pharmacist to practice at their full scope of competency as outlined in the National Competency Standards Framework for Pharmacists in Australia.[10] The service enables pharmacists to increase their influence outside of the immediate team and promotes collaboration with other healthcare professional, aged care staff and residents in delivery of a patient-centred care. This model of practice enables pharmacists to practice at their full scope of competency for Domain 2 (Collaboration and Communication) in the National Competency Standards Framework.[10] As one of the first global examples of pharmacist ongoing follow-up and documentation, the model enables pharmacists to be a much more effective advocate for the residents; pharmacists as effective patient advocate would not be possible if the services are provided infrequently, as is the case currently in Australia.

The ReMInDAR trial has shown that pharmacists' engagement with residents, including communication and trust building, was crucial to being able to identify and implement the necessary changes to improve the residents' health. This engagement was important not only to enhance their capacity to resolve medicine-related problems, but also to deliver a positive impact on aspects such as residents' quality of life, mental health, and engagement in social activities, as exemplified by the case studies. By prioritising non-medicine solutions where appropriate, the ReMInDAR trial pharmacists provided a holistic service in addition to clinical services, and one that aligns with the Quality Use of Medicines principle[12] of judicious selection of management options.

In all the case studies presented above, regular follow up and continuous advocacy by the pharmacists were key to the success of the pharmacists' interventions. Without a regular pharmacist service like the one provided in the ReMInDAR trial, the contribution of medicine-related problems to symptom burden and misery often goes 'unseen' and undetected as a potentially changeable contributor of that symptom at a time when the trajectory of the underlying condition often cannot be changed. For example, in Anita's case, the medicine-related problems (duplication of PPIs, tiredness) were identified during the fifth pharmacist visit and were resolved immediately by liaising with the resident's GP. The inadvertent duplication of a medicine meant that the resident was at an increased risk of harm. If undetected, the resident may have been on duplicate PPIs long-term; and use of PPIs is associated with an increased risk of hip fracture.[13] The on-going nature of the service provided pharmacists the opportunity to regularly review residents for any medicine-induced deterioration and adverse events, provide timely recommendation to GPs, and follow-up in a timely way with the residents and the care staff to ensure symptom resolution. By having a regular service, pharmacists could continuously advocate for the residents over time, for example, in Mary's case where she was too scared to say that she was bleeding, Harry's case where he could finally sleep in his own bed or John's case who would have chosen to die by withdrawing treatment if the pharmacists had not persisted with contacting the resident' GP. Moving forward, it will be important for pharmacists to keep records of all clinical and non-clinical services provided to residents in residential aged care, and to review these records periodically to better highlight the impact that they have on resident outcomes.

Pharmacist interventions that have been tested to improve quality use of medicines and medicines safety in Australian residential aged care facilities include simplification of medicine regimens,[14] integrating pharmacists to improve medicine management,[15,16] and medicine reviews to reduce inappropriate prescribing of renally cleared medicines.[17] All studies demonstrated the benefits of including pharmacists in improving medicine use or preventing medicine harms, but our trial is unique in its design in that pharmacists focused on the person taking the medicines and served as residents' advocate to improve their overall health and quality of life.

4. Conclusion

The case presentations included in this paper demonstrate the various roles that pharmacists can play in residential aged care, including providing clinical services to optimise medicine use and reduce medicine adverse events, as well as enhancing the role of the pharmacist as resident advocates to improve overall health and quality of life. The pharmacist model we tested in the ReMInDAR trial supports pharmacists to work to their full scope of practice, highlights the importance of patient advocacy in reducing medicine-related harm, and can help guide the Australian government's new on-site aged care pharmacist program.

Declaration of interest

RB was employed as the ReMInDAR partnership engagement and trial manager to oversee the operations management for the trial. All other authors declare that they have no competing interests.

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CRediT authorship contribution statement

Renly Lim: Conceptualization, Data curation, Funding acquisition, Project administration, Writing – original draft. **Rebecca Bilton:** Data curation, Project administration, Writing – original draft. **Gereltuya Dorj:** Data curation, Project administration, Writing – original draft. **Luke Bereznicki:** Conceptualization, Funding acquisition, Writing – review & editing. **Debra Rowett:** Conceptualization, Funding acquisition, Writing – review & editing. **Jun Ni Ho:** Data curation, Writing – original draft. **Anthea Freeman:** Data curation, Writing – original draft. **Elizabeth E. Roughead:** Conceptualization, Funding acquisition, Supervision, Writing – review & editing.

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