



# PRN Medicines Management for Older People with Long-Term Mental Health Disorders in Home Care

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**Abstract:** Older people with long-term mental health conditions who receive care in their own home are vulnerable to the inappropriate use of medications and polypharmacy given their underlying health conditions and comorbidities. Inappropriate use of pro re nata (PRN) medications in these older people can enhance their suffering and have negative consequences for their quality of life and well-being, leading to readmission to healthcare settings and the increased cost of health care. This narrative review on published international literature aims at improving our understanding of medicines management in home care and how to improve PRN medication use among older people with long-term health conditions in their own home. Accordingly, the improvement of PRN medicines management for these older people requires the development of an individualised care plan considering ‘reduction of older people’s dependence on PRN medications’, ‘empowerment of family caregivers’, and ‘support by healthcare professionals.’ PRN medication use should be reduced through deprescription and discontinuation strategies. Also, older people and their family caregivers should be encouraged to prioritize the use of non-pharmacologic methods to relieve physical and psychological problems. Besides the empowerment of family caregivers through role development, education and training about PRN medications, and involvement in decision-making, they need support by the multidisciplinary network in terms of supervision, monitoring, and home visits.

**Keywords:** family caregiver, home care, medication, medicines management, mental health, older people, patient safety, *pro re nata*, PRN

## Introduction

Long-term mental health conditions consist of various disorders characterised by abnormal thoughts, cognition, perceptions, emotions, behaviours, and relationships with others that cause long-term suffering and disability.<sup>1</sup> It has been reported that the risk of developing long-term mental health disorders especially cognitive disorders and depression among older people, as aged above 60 years, is higher than other age groups; for instance, 15% of older adults suffer from a mental disorder.<sup>2</sup> Also, about 50%, 10%, and 17% of older people suffer from cognitive disorders, anxiety, and depression, respectively.<sup>3,4</sup>

The appropriate use of medications consisting of antidepressants, anti-anxiety, stimulants, antipsychotics, and mood-stabilisers have been recognised to have a crucial role in the treatment of long-term mental health disorders.<sup>5,6</sup> About 70% of older people are prescribed at least one psychotropic medication, but the

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increased prescription of psychotropic medications and benzodiazepines has been associated with a reduced quality of life.<sup>7</sup>

Opioids, anticoagulants, and antipsychotics are high-risk medications in the medication regimen of these older people despite their benefits.<sup>8</sup> The total exposure of older people to medications including anticholinergic and sedatives is associated with a higher risk of hospital stays.<sup>9</sup> The prevalence of potentially inappropriate medications for older people with long-term mental health conditions with the presence of polypharmacy ranges from 53.2% to 89.8%.<sup>10</sup>

The prevention of mortality and morbidities among older people with long-term mental health conditions requires the reduction of complexity of the medication regimen as well as the improvement of medicines management in terms of the reduction of prescribed and nonprescribed medication use and avoiding polypharmacy.<sup>11,12</sup> This narrative review on published international literature aims at improving our understanding of medicines management in home care and how to improve PRN medication use among older people with long-term health conditions in their own home.

## Concerns Over Medicines Management in Home Care

Medicines management in home care also is accompanied with many concerns affecting the safety of the medication process and quality of life in older people with chronic and long-term mental health conditions and their family caregivers.

Increasing the total number of medications in these older adults has enhanced the risk of potentially inappropriate medications between 2 and 10 times.<sup>13</sup> Polypharmacy (5–9 medications) and excessive polypharmacy ( $\geq 10$  drugs) have been observed in 39% and 23% of older people receiving home care, respectively.<sup>14</sup> The use of psychotropic medications including antidepressants and other anxiolytic/sedative-hypnotics and benzodiazepines by older people in community and primary healthcare has increased, which has created concerns about appropriate medication use.<sup>15,16</sup>

The home medication review for about 80% of older people in home care indicates discrepancies with the electronic medical records.<sup>17</sup> The overall prevalence of potentially inappropriate prescribing in older people in home care has been reported to be 10–38%,<sup>18–20</sup> which has been associated with polypharmacy (OR=5.4).<sup>18,19</sup>

Complexity of medication regimen (OR= 1.22) and number of medications (OR= 1.07) in older people living in own home are associated with unplanned readmissions and hospitalizations.<sup>21,22</sup> A nation-wide research in Sweden showed that the use of psychotropics and antiepileptic medications was associated with institutionalization.<sup>23</sup> Also, polypharmacy (OR=2.30) and excessive polypharmacy (OR=4.97) have been shown to be associated with frailty among older adults.<sup>24</sup> Therefore, the medication regimen, adverse drug reactions, and side effects of prescription and non-prescription medications in home care should be carefully assessed given the susceptibility and frailty of older adults with chronic health conditions including mental health disorders living in their own home.<sup>25</sup>

## PRN Medicines Management in Home Care

*Pro re nata* (PRN) medications management is the administration of prescribed medications based on patients' needs instead of administration in predetermined times.<sup>26,27</sup> It is commonly used for various types of medications to relieve patients' physical and psychological suffering. Besides acetaminophen and opioids for pain relief,<sup>28</sup> psychotropic and psycholeptic medications are more commonly prescribed and administered as PRN to older patients with long-term mental health conditions,<sup>29–32</sup> but the clinical effectiveness of this style of medication use in comparison with other prescription and administration styles of medication has remained unexplored and needs further research.<sup>33</sup>

Inappropriate use of PRN medications can extend the duration of hospitalisation in long-term healthcare settings and hinder the smooth transition of care for older people with chronic health conditions to their own home. Older people with five and more PRN prescriptions have the length of stay  $4.8 \pm 4.3$  years in the nursing home.<sup>32,34</sup> PRN medicines management for psychotropic medications' use by older people with long-term health conditions in their own home has remained underreported.<sup>35,36</sup> However, issues with the use of prescribed and PRN psychotropic medications among this vulnerable group of patients have been reported including the reason for administration (55–81%), response to medications (47–92%), and the possibility of use of nonpharmacologic interventions instead of medications (64–69%).<sup>37</sup> It has been stated that older adults in the age range of 60–80 years take an average of 10 different prescription and non-prescription medications including PRN.<sup>38</sup>

PRN analgesics are commonly used (50%) by older people living in their own homes.<sup>25</sup> Polypharmacy with five or more long-term drugs (OR= 2.1) is associated with a higher number of PRN medication use.<sup>34</sup> Moreover, the highest cost of medication is attributed to psychotropic and neuroleptic medications.<sup>39</sup> Therefore, improvement of the quality, safety, and cost-effectiveness of medication therapy should be the centre of attention by healthcare professionals who are involved in serving older people with long-term mental health conditions in home care.

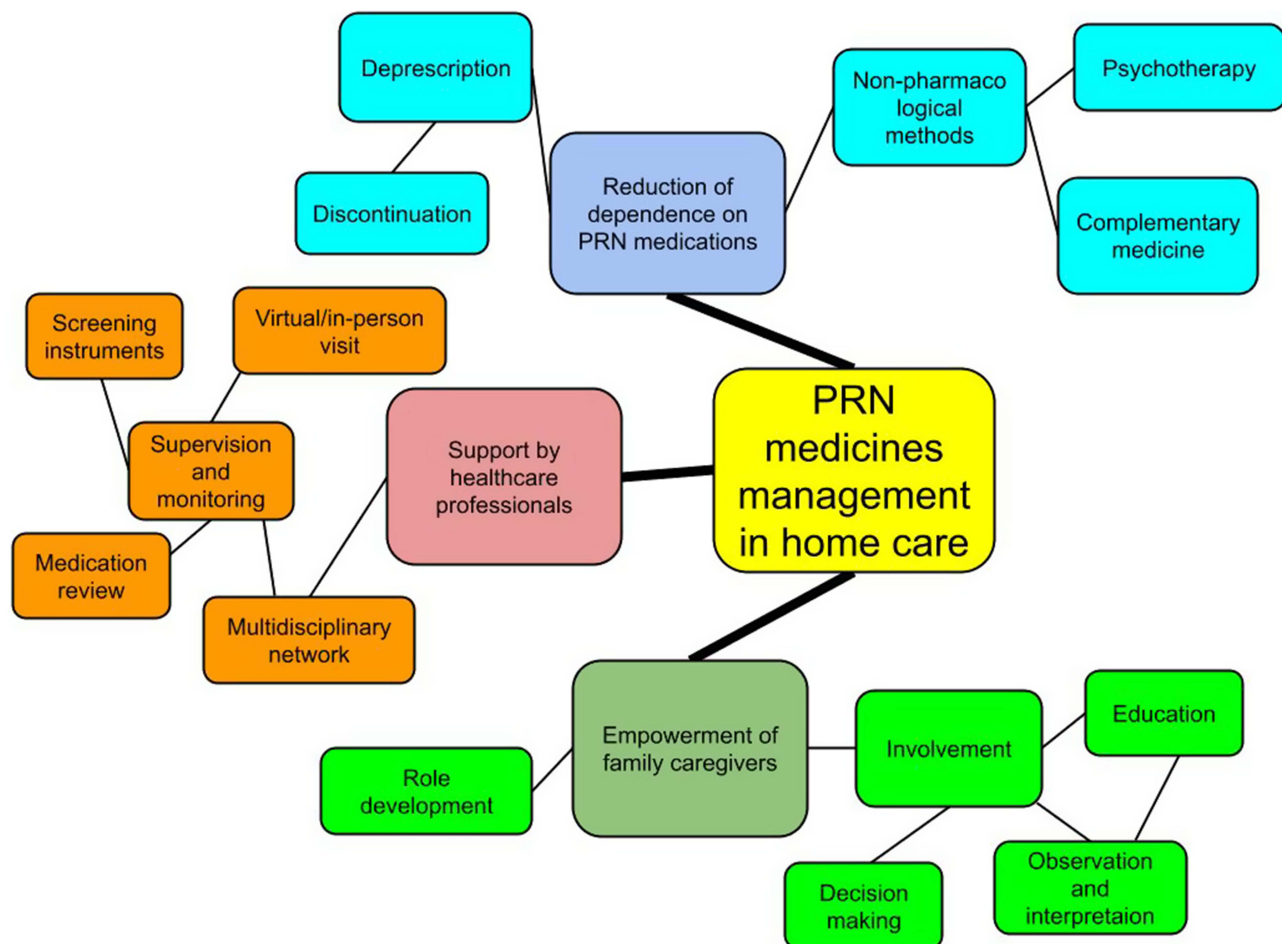
## Initiatives to Safeguard PRN Medicines Management in Home Care

Older people with long-term mental health conditions living in their own home need assistance in the management of medications.<sup>40</sup> They need individualised and goal-oriented care aligned to their needs with the concentration on the identification and reduction of the risk of harm.<sup>41</sup>

Individualised care planning through the appropriate prescription of medications, rectification of negative attitudes and barriers to medicines management including changes in lifestyle patterns, and assistance with the medication process can improve their adherence to the medication's regimen as well as improve care outcomes.<sup>42–44</sup> In this respect, the improvement of PRN medicines management in home care for older people with long-term mental health conditions requires developing an individualised care plan considering “reduction of older people's dependence on PRN medications”, “empowerment of family caregivers in care”, and “support by healthcare professionals.” (Figure 1).

## Reduction of Older People's Dependence on PRN Medications

Older people with long-term mental health conditions need discontinuation and deprescribing programmes for the chronic and sometimes unnecessary use of medications with the consideration of the possibility of relapse and



**Figure 1** Improvement of PRN medicines management in home care. PRN stands for *pro re nata*.

probable negative consequences on their well-being and quality of life.<sup>38,45</sup>

Deprescribing as the process of tapering or stopping medications to tackle the problem of polypharmacy in older adults consists of the following five steps:

- Medication review and ascertaining reasons for taking each medication;
- Calculation of the risk of medication-related harm and possibility of deprescribing;
- Assessment of the potential benefits and harm of deprescribing for each medication;
- Prioritizing medications with the lowest benefit-harm ratio and adverse withdrawal reactions;
- Implementation of the discontinuation program and monitoring its positive and negative effects.<sup>46,47</sup>

This process should be individualised based on cognitive and functional abilities and comorbidities of each older adult along with the application of close monitoring,<sup>48,49</sup> given that some older people are open to deprescribing and prefer to play an active role in related decision making, but some others may defer it to their healthcare provider because of lack of knowledge.<sup>50</sup> Moreover, the success of this program depends on the determination of achievable goals and appropriate time planning as well as the creation of psychological preparation in older people.

Stepwise deprescribing interventions for benzodiazepines through pharmacological substitution, psychological support, cognitive-behavioural therapy, education, shared decision making by the pharmacist, physician and older people have been shown to be effective in dose reduction and discontinuation between 27% and 80% of cases.<sup>48,51,52</sup> Also, discontinuation of neuroleptic medications has been shown to have no detrimental effect on functional and cognitive status of older people with long-term mental health conditions.<sup>53</sup>

Reduction of antipsychotic medications' use by the older people and prevention of its negative consequences on their health and well-being requires the facilitation of access to non-pharmacological methods including psychotherapy, social interventions, cognitive behavioural therapy, and psychoeducation.<sup>54–56</sup> The effectiveness of psychological and cognitive treatments in reducing the symptoms and suffering of older people with long-term mental health conditions have been shown.<sup>57–59</sup> Also, they have been shown to have better effects on relieving the symptoms of these older people than pharmacotherapy.<sup>60</sup>

Nonpharmacological and psychosocial interventions such as improving the home environment condition by family caregivers have been shown to reduce the frequency and severity of behavioural and psychological symptoms in older adults with an effect size equal to pharmacotherapy.<sup>61</sup>

In addition, alternative and complementary medicine including aromatherapy, massage, meditation, and music therapy with the consideration of their acceptability by the older people and their family caregivers as well as after balancing their benefits and harm can be used to improve the toleration of discontinued psychotropic medications and reduce the need to medication therapy.<sup>62–64</sup>

## Empowerment of Family Caregivers

Home care initiatives should concentrate on the encouragement of older people to remain independent as much as possible.<sup>65</sup> However, the progression of cognitive and mental health issues negatively influences the older people's ability to follow up medicines management's interventions in terms of planning, organising, and implementing tasks, which enhances the risk of harm and non-adherence to medications and consequently readmission to the hospital and dependence on family caregivers.<sup>66</sup> Provision of home care to older people who have chronic and advanced illnesses greatly impacts on the realm of the family caregiver who are often a spouse or child. Although family caregivers' involvement in the medication process can improve medication safety for older people with mental health issues,<sup>67</sup> it imposes a significant amount of stress and burden of care on them.<sup>68–71</sup> Family caregivers even suffer from mental illness and care burden may even induce depression among them.<sup>72</sup>

Lack of monitoring device in home care and inability to assess warning signs in older people are barriers to safe medicines management by family caregivers.<sup>73</sup> Medication management skills by family caregivers as the appropriate identification of symptoms in older people and the administration of PRN medications accordingly are required to enhance the appropriate use of medications and prevent over and under medication use.<sup>74</sup> Family caregivers should be empowered to be involved in shared decision making that helps with developing an individualized programme for the appropriate prescription of medications with the consideration of older people's medical needs, functional abilities, and well-being.<sup>75</sup> In this respect, training and education of family caregivers for

the management of symptoms and behaviours, what potentially can trigger psychological issues in older people with long-term mental health conditions, and medication therapy based on the older people's needs supports appropriate medication use in home care.<sup>76-78</sup> Family caregivers need to build therapeutic relationships with healthcare professionals to negotiate care, play an active role in care, and be able to manage their role expectations in home care.<sup>79</sup>

## Support by Healthcare Professionals

Older people with long-term mental health conditions and their family caregivers need support and supervision in home care, but they mostly have no access to related services or cannot use them.<sup>80</sup> An early access to palliative care services is of particular importance with a focus on treatment and provision of support both for older people and their family caregivers. Physical and emotional symptoms of care burden should be regularly assessed to avoid somatic comorbidities, reduce frequent hospital admissions, and ameliorate the low quality of home care.<sup>81</sup> Support provided by physicians, nurses, pharmacists, and social workers can mediate resilience and burden of care in home care.<sup>82</sup>

Supervision by healthcare professionals encompasses reviewing medication use in home care, rationalizing

unnecessary medications and PRN medicines management, and provision of as needed monitoring and referrals.<sup>83-85</sup> Provision of medication services to older people in home care by healthcare staff including pharmacists can reduce the medication-related hospitalization rate (36%) and \$6.6 million in healthcare cost.<sup>86</sup>

The application of explicit screening instruments for conducting medication reviews aiming at identifying unmet medication needs can significantly improve appropriate medication use.<sup>87</sup> For instance, STOPP (Screening Tool of Older Persons' Prescriptions) and START (Screening Tool to Alert doctors to Right, ie, appropriate, indicated Treatment) can be used by healthcare professionals to appraise the appropriateness of medication prescriptions for older people in the context of his/her concurrent diagnoses and to be effective in reducing fall incidents, readmission to the healthcare settings, medication omissions, and medication costs.<sup>88-91</sup> Also, the execution of "NO TEARS" tool: Need and indication; Open questions; Tests and monitoring; Evidence and guidelines; Adverse events; Risk reduction or prevention; Simplification and switches<sup>92</sup> can provide an efficient medication review in a 10-minute consultation using audio-visual links. It serves as appropriate check

**Table I** Strategies and Interventions for PRN Medicines Management in Home Care

| Improvement Strategies                                    | Practical Interventions   |
|---|---|
| Reduction of older people's dependence on PRN medications | Assessment of the older people's and their family caregivers' needs to PRN medications; Consideration of the impact of discontinuation and deprescription on the older people's physical and psychological health, and cognitive and functional abilities; Development of an individualised, stepwise and realistic plan for medication discontinuation and deprescription; Encouragement of the older people and their family caregivers to use non-pharmacologic, and complementary and alternative medicine methods  |
| Empowerment of family caregivers in care                  | Consideration of the stress and burden of care on family caregivers; Education and training about medicines management skills and symptoms indicating the appropriate use of medications; Role expansion and involvement of family caregivers in decision making initiatives regarding medications; Building close therapeutic relationships between family caregivers and healthcare professionals;  |
| Support by healthcare professionals                       | Facilitation of access to palliative and supportive home care; Continuous assessment of the symptoms of care burden; Development of the multidisciplinary network of home care consisting of physicians, nurses, pharmacists, and social workers; Frequent medication review and the rationalisation of medication use; Application of screening instruments for identifying needs to medications; Virtual and in-person home visits for monitoring the use of medications; Provision of education, consultation, decision support, problem-solving, and clinical care; Data collection and sharing between healthcare professionals in various healthcare settings during transition of care |

**Notes:** A guideline is needed to help with the selection of best medication for PRN use, its dosage, frequency, and administration method in home care. Also, more original research should be carried out to identify barriers to and the facilitators of appropriate PRN medicines management in home care including relationships between older people and family caregivers, cooperation with healthcare professionals in home care, as well as dependence on medications especially opioids. Additionally, the effectiveness of interventions aiming at the reduction of related issues and improvement of medication safety in home care should be studied.

and balance measure for prescribed and PRN medications at home and can minimize caregiver's fatigue.

Telehealth services including virtual home visits consisting of the use of audio-visual communication devices such as videoconference and videophones in a daily manner and in combination with in-person visits as low-cost and feasible supervision methods can support families with medicines management and improve appropriate medication use by the older people in home care.<sup>93–95</sup> Also, technology has been recognised as an appropriate platform for education, consultation, decision support, problem-solving, social support, monitoring the healthcare condition, and even delivery of clinical care such as assistance with medication dispensing and administration aiming at the enhancement of the quality of medication process by family caregivers.<sup>45,96</sup>

The development of a multidisciplinary care programme through organising a network linking healthcare specialists including community pharmacist, geriatrician, and community nurse that supports family caregivers with pharmacological and psychosocial treatments in home care as well as collect and share information between healthcare professionals to optimize managing the complex medication regimen is one part of monitoring and supervision in home care.<sup>97–99</sup>

## Conclusion

There is a need to pay more attention to the safety of the medication process in home care and explore factors that cause over-prescription of medications and polypharmacy influencing the safety of older people with long-term mental health condition in home care.

Healthcare professionals in the multidisciplinary healthcare team should assess and monitor the use of prescribed, non-prescribed, and PRN medications in home care and develop individualised programmes for PRN medicines optimisation (Table 1).

## Abbreviations

PRN, *Pro re nata*; OR, odds ratio; STOP: Screening Tool of Older Persons' Prescriptions; START: Screening Tool to Alert doctors to Right, ie, appropriate, indicated Treatment; NO TEARS: Need and indication, Open questions, Tests and monitoring, Evidence and guidelines, Adverse events, Risk reduction or prevention, Simplification and switches.

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## Disclosure

The authors report no conflicts of interest in this work.

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