Multidose drug dispensing and optimising drug use in older people

Medications for older people are increasingly dispensed in dose administration aids (DAAs). This includes automated or multidose drug dispensing (MDD)—machine-dispensed disposable sachets in which medications are packaged according to the intended time of administration. MDD is already common in Northern Europe, while blister packs, dosettes and other forms of DAAs are widely used elsewhere. In this issue, Kwint et al. report that community-dwelling recipients of MDD in the Netherlands have better medication adherence but poorer medication knowledge compared with age- and sex-matched recipients of manual medication dispensing [1].

This research has both clinical and policy implications. Provision of DAAs is now mandated in specific settings in countries including Australia, Denmark and the Netherlands. These settings include when nurses or aged-care workers administer medications to patients considered at high risk of adverse events, including those with cognitive and functional impairment. The rapid uptake of DAAs is largely based on assumptions of enhanced safety, improved medication adherence, reduced cost and time efficiency. However, published evidence to support these assumptions remains limited and inconsistent [2, 3].

Previous research on MDD highlights both advantages and areas for improvement. Norwegian data suggest that implementation of MDD is associated with fewer discrepancies in medication histories and improved inter-professional communication compared with manual medication dispensing [4, 5]. Conversely, large cross-sectional studies conducted using Swedish healthcare registers reveal that recipients of MDD are more likely to be prescribed potentially inappropriate medications, such as anticholinergics and long-acting benzodiazepines [6, 7]. A Danish study reported that recipients of MDD were less likely than those receiving manually dispensed medications to request a review of their medication regimen [3]. This may result in inappropriate or suboptimal prescribing being perpetuated, or medications being continued beyond their intended duration. MDD has been associated with fewer medication regimen changes in the 6 months following hospital discharge than manual dispensing [8]. Furthermore, packing quality and accuracy should not be assumed. An audit of sachets supplied to Australian aged-care facilities identified incidents (discrepancy between medication chart and sachet contents, unsuitable repacking, damaged medications, or inappropriately altered medications) in 14.5% of sachets [9]. In Sweden, patients who used one MDD system had a 5.9-fold higher risk of in hospitalized older people. J Am Geriatr Soc 2001; 49: 1327–34.

3. McCusker J, Cole M, Abrahamowicz M, Han I, Podoba JE, Ramman-Haddad L. Environmental risk factors for delirium among older patients in hospitalised settings in 14.5% of sachets [9]. In Sweden, patients who used one MDD system had a 5.9-fold higher risk of...
medication errors (defined as discrepancies in the medication reconciliation process) than those who did not use this medication dispensing system [10].

As in the present study, most research on MDD and potentially inappropriate medication use has been cross-sectional [2]. This means that causality between MDD and poorer quality medication treatment cannot be assumed. It is likely that MDD is preferentially offered to frail patients with complex regimens and, thus, at higher risk of drug–drug interactions and other medication-related problems. The finding that MDD is associated with improved adherence is of particular importance given that regimen complexity has been associated with lower adherence [11]. Poor medication knowledge, however, is a risk factor for adverse events—and this risk may be heightened in those with complex regimens and impaired cognition [12].

It has been recognised that unless MDD is combined with other interventions it is unlikely to improve medication understanding [3]. Kwint et al. report that just 40% of recipients of MDD had adequate medication knowledge compared with 79% of recipients of manual medication dispensing. Qualitative research in the UK indicates that DAAs are often provided without discussion with patients [13]. Clinicians have an obligation to ensure that recipients of MDD, or their caregiver in cases of severe cognitive impairment, are provided with appropriate verbal and written information to facilitate safe and effective medication treatment.

A randomised controlled trial in the Netherlands reported that pharmacist-led medication review was an effective strategy to improve medication use among recipients of MDD [14]. Recipients of MDD had a mean of 8.5 medication-related problems each, with the number of medication-related problems deemed to require a medication change declining by 29% over the 6-month study. Education and advice provided in the context of medication review may partially address inadequate medication knowledge. When clinical pharmacists supported the implementation of MDD in Sweden, the error rate was reduced to that observed in patients without MDD [15]. Medication reviews are also recommended or provided for recipients of DAAs in Australia and Finland [16, 17]. However, there is a lack of published data on the extent or comprehensiveness of these medication reviews in routine practice. This remains an important topic for further research.

Other topics deserving further research include the association between MDD and medication knowledge in aged-care facilities, and whether MDD limits clinicians flexibility to ‘deprescribe’ or reduce the dose of medications for which the risk to benefit ratio is no longer considered favourable [18]. A recent Australian study suggests that recipients of DAAs are willing to undergo deprescribing provided their treating clinician indicates it is possible [19]. There is also a lack of longitudinal studies on MDD and potentially inappropriate medication use.

In summary, Kwint et al. have extended what is known about MDD and highlighted a potential pitfall associated with its use. Until further longitudinal research is available, MDD should be viewed as a worthwhile tool to improve adherence that is best implemented after careful consideration, patient education and scheduled follow-up.

### Key points

- Further research is needed about MDD and clinicians’ flexibility to ‘deprescribe’ or reduce medication doses.

### Conflicts of interest

None declared.

### References


9. Gilmarin JF, Hussainy SY, Marriott JL. Medicines in Australian nursing homes: a cross-sectional observational


