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COMMENTARY

Implementation science in the nursing home

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Evidence-based practices (EBP), including those that have been widely disseminated, do not automatically move into routine clinical usage for a variety of reasons. These reasons include organizational culture, clinical inertia, lack of time, and lack of funding. As a corrective, a public health initiative referred to as *implementation science* has developed. Unlike clinical research, which mainly focuses on the patient, implementation science also investigates the healthcare provider, the healthcare organization, and relevant policy settings. Several types of studies are used to address implementation process gaps. These include designs which address the external validity of efficacy or effectiveness studies, designs which address quality gaps, designs which address frontline provider competing demands, and designs which address misalignment with national or local priorities (Bauer *et al.*, 2015).

Nursing homes have been relatively slow to implement EBP, likely because of complex contextual factors which limit both the desire for change and the capacity to ensure implementation fidelity. These contextual factors might include low staff-to-resident ratios, high staff turnover, lack of leadership, and absence of management support (Appelhof *et al.*, 2018). However, a number of recent studies in nursing home residents have employed implementation science methodology, often built on an effectiveness trial. For example, there have been process evaluations of an advance care planning intervention (Aasmul *et al.*, 2018), an intervention to prevent the use of physical restraints (Abraham *et al.*, 2019), and an intervention to improve pain management guidelines (Brunkert *et al.*, 2019).

Against this background, Gerritsen *et al.* (2019) report their findings from a process evaluation of the intervention employed in an effectiveness study of psychotropic medication reviews in Dutch nursing home residents with dementia (the PROPER study; van der Spek *et al.*, 2016). The intervention arm of the study involved three components: education sessions, medication reviews, and evaluation meetings. The biannual medication reviews involved a physician, a pharmacist, and a responsible licensed practical nurse (RLPN). Importantly, in the Netherlands, elderly care physicians are employed by long-term care organizations and pharmacists are permanently involved as consultants in nursing homes. At each of the biannual medication reviews, all of the residents in each of the intervention dementia care units were reviewed. In their process evaluation, the investigators assessed the quality of the intervention, the implementation strategies delivered and received, and the barriers and facilitators to implementation. It should be noted that medication reviews were already occurring in some nursing homes included in the study, so the intervention was not entirely novel.

Gerritsen *et al.* (2019) found high levels of staff engagement, with a 95% participation rate in preparation and education, a 100% completion rate for medication reviews, and an 82% participation rate at evaluation meetings. Among RLPNs, there was a much lower rate of making observations of medication side effects – only 14 of 30 (47%) RLPNs reported doing this. There was also a more modest rate of using the PROPER preparation checklist in conducting medication reviews. This was done in only 56% of reviews. Furthermore, some RLPNs reported that they found the medication-focused training difficult. An implementation coordinator was considered to be an important facilitator of the medication review intervention and outside assistance from the study investigators was needed at times. Barriers to implementation included time and staff turnover. It appears that the time that RLPNs used to conduct their medication reviews was not backfilled.

The introduction of additional tasks such as medication reviews is unlikely to gain traction unless they are appropriately remunerated. Where physicians and pharmacists are involved, it is important to understand how their involvement is funded. The findings from Gerritsen *et al.* (2019) might not generalise well to jurisdictions where these health workers are financially independent of the nursing home organization and bill their patients directly. A cost-benefit analysis was not reported. Medication reviews should involve nursing personnel who know the patients well, but it is important that they have additional scheduled paid time that does not compete with the need to provide direct patient care.

Although the investigators refer to the importance of involving stakeholders, input from the people with dementia and their family members (or other substitute decision makers) was conspicuous by its absence. When prescribing decisions involve modest benefits and serious potential risks, as is the case with the use of

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anti-psychotic medication in people with dementia (Ma *et al*., 2014), involvement of family members is important.

The needs of individual nursing home residents with dementia should be reviewed regularly as their changing cognitive and functional status is likely to modify their requirements for both physical and psychosocial care and psychotropic medication. Targeted reviews of potentially problematic medications should, arguably, be undertaken more frequently than biannually. Although periodic medication reviews are prudent, they should not be thought to substitute for the assessment and management of the mental health needs of residents more generally.

Psychotropic medication reviews will sometimes lead to drug discontinuation. Although this will often be appropriate, and can be safely undertaken (Ballard *et al*., 2008), some nursing home residents with dementia complicated by psychotic symptoms, marked agitation and physical aggression may require longer term treatment with low-dose antipsychotic medication (Devanand *et al*., 2012). Medication discontinuation needs to be considered in the context of available alternative interventions. These might include individualized behavioral interventions and targeted diversional activities (Scales *et al*., 2018).

The use of non-pharmacological interventions to substitute for psychotropic medications could usefully be the subject of future process evaluations using the implementation science approach. The routine use of such interventions requires adequate numbers of nursing home staff with proper training and experience in their use. Nursing home managements must be prepared to fund such interventions. Clinical audits and external reviews are needed to ensure that an appropriate balance between pharmacological and non-pharmacological interventions has been maintained. There is a need for reliable and well-validated benchmarks against which nursing homes can assess their performance in relation to the assessment and management of behavioral and psychological symptoms (BPSD) in their residents. Psychotropic medication reviews are one component of the comprehensive care of nursing home residents.

Although external policy settings were not evaluated by Gerritsen *et al*. (2019), the legislative framework in which nursing home care is situated may play an important role in encouraging implementation of evidence-based practices, particularly if external audit and contingent funding are involved. Appropriate policy settings should ensure dementia-friendly design elements, including ample circulation space to minimize physical confrontation, daylight to entrain biological rhythms, and outdoor areas to allow adequate physical activity. Care plans should be flexible and person-centered, rather than impersonal and task-focused. The staffing ratios and business models which underpin high quality dementia care in the nursing home setting require further examination, and the methods of implementation science may be able to assist with this.

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