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Background and Aim:

One of the key action areas of the World Health Organization third Global Patient Safety Challenge¹ 'Medication Without Harm' (WHO, 2017) is to reduce severe avoidable medication-related harm and address polypharmacy. NICE guidance on falls risk assessment and prevention² also includes medication review as part of its recommended multifactorial risk assessment (NICE, 2013). Use of Falls Risk Increasing Drugs³ (FRIDs) along with polypharmacy and anticholinergic burden are known to increase the risk of falls, particularly in older people². In 2021, Belfast HSC Trust appointed a pharmacist to work with the community falls multidisciplinary team and optimise medicines in older people at risk of falls, and we aim to explore the impact of this role on medicines optimisation in older people.

Method:

92 patients were reviewed by phone (35%) or during home visit (65%), by the community falls pharmacist June 2022- August 2023.

- FRIDs³ prescribed, were identified and reviewed, and Anticholinergic Burden score (ACB) was measured using the anticholinergic burden calculator⁴ (ACBcalc[®])
- The number of medications prescribed and the appropriateness of these was measured using Medicines Appropriateness Index⁵ (MAI)
- Significance of clinical interventions by the community falls pharmacist was measured using EADON⁶ scale and cost avoidance of these measured using an adapted version of the SchARR tool⁷. Potential cost savings⁸ from deprescribing, and environmental impact were calculated (every £1 spent on pharmaceuticals generates greenhouse gas emissions 0.1558kg CO₂⁹)
- Lying/ standing manual BP measurement was undertaken
- Bone health review was undertaken using a fracture risk assessment tool¹⁰ (FRAX[®]) & appropriate patients referred for a DEXA scan, using a new direct pharmacist referral pathway

Table 1: Top 10 FRIDs deprescribed

Medication Name	Number patients
Amitriptyline	21
Codeine	12
Furosemide	6
Tramadol	6
Mirtazapine	6
Solifenacin	5
Promethazine	4
Diazepam	3
Gabapentin	3
Pregabalin	3

Results:

Demographics:

- Age range: 59-96 years; average age 79 years, median age 78 years. 25% male/75% female

FRIDs:

- 92 patients were on 1 or more FRID, with average number of FRID per patient = 4.
- Number of FRIDs per patient ranged from 1-8. A total of 367 FRIDs were identified and 101 deprescribed. **Table 1** outlines the top ten FRIDs deprescribed.

Anticholinergic burden (ACB):

- average ACB scores reduced from 4.2 before pharmacist intervention, to 2.8 after (↓ by 33%). p<0.05

Polypharmacy & Medicines Appropriateness Index (MAI):

- Average no. medicines per patient reduced from 10.4 to 9.6 (↓ by 8%). p<0.05
- Average MAI score pre pharmacist review was 13.0, this decreased to 5.7 post review, (↓ by 56%). p<0.05

Clinical interventions: Eadon grades, cost avoidance and environmental impact outlined in **Table 2**.

- 317 clinical interventions by pharmacist; Average 3.4 interventions per patient.

Blood Pressure:

20 patients (22%) were identified as having orthostatic hypotension, uncontrolled hypertension or hypotension

Bone health:

Calcium and vitamin D initiation was recommended in 13 and 38 patients respectively, and oral bisphosphonate commenced in 10 patients.

DEXA outcome: Osteopenia newly identified in 14 patients and osteoporosis in 3 patients

Conclusion: The community falls pharmacist ↑ prescribing appropriateness, generates a return of £1-£2 per £1 invested, & ↓CO₂ emissions by 1 tonne

Table 2: Cost avoidance⁸ and environmental impact⁹ of community falls pharmacist optimising medicines and use of FRIDs in older people over a 14-month period.

Intervention description (Eadon criteria)	Cost avoidance ⁸ SchARR model £	Eadon Grade	Number of interventions made by falls pharmacist	Cost avoidance £
Potentially lethal	1085-2120	6	0	0
Potentially serious	713-1484	5	19	13547-28196
Potentially significant	65-150	4	297	19305-44550
Minor	0-6	1-3	1	0-6

Total cost avoidance due to falls pharmacist interventions:

14 months = £32852 - 72752
adjusted for 12 months = **£28160 - 62358**

12-month projected savings (drug cost) for FRIDs deprescribed¹⁰

£6041

Total potential cost avoidance: community falls pharmacist 0.5WTE 8a salary 12 months = £32564
'Invest to save' return in range of £1 to £2 per £1 invested

£34201-£68399

Environmental impact of reducing inappropriate prescribing⁹: Avoidable CO₂ emissions (kg) per 12 months

941 kg CO₂

Discussion:

The pharmacist review had a statistically significant impact on reducing the ACB score by an average of 33%. The MAI pre- and post-review reduced by an average of 56% indicating an improvement in appropriateness of prescribing. 101 FRIDs were deprescribed & amitriptyline was deprescribed in 22% patients. 94% of clinical interventions were significant resulting in improvement in care and an additional 19 preventing potentially serious outcomes.

References

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