Incidence and cost of medicines-related harm in older people following hospital discharge

A UK prospective cohort study including 1,116 older people recruited from 5 NHS hospitals found that 37% of them experienced medicines-related harm (including adverse drug reactions, harm from non-adherence and medication errors) after their discharge from hospital. The study reinforces the importance of implementing recommendations in the NICE guidelines on medicines adherence and medicines optimisation.

Overview and current advice

Polypharmacy is increasingly common in older people in the UK, raising their risk of medicines-related harm. Older people are particularly vulnerable to medicines-related problems in the time after hospital discharge because of changes to medicines while an inpatient and poor information sharing between hospital and primary care. Medicines-related harm can include adverse drug reactions and harm resulting from non-adherence to medicines. Between 2008 and 2015, emergency hospital admissions caused by adverse drug reactions increased by about 50% from around 60,000 admissions to over 90,000 (Veeren et al. 2017). It is thought that between a third and a half of all medicines prescribed for long-term conditions are not taken as recommended, with one UK study finding that 30% of people (median age 67 years) were non-adherent 10 days after starting a new medicine for a chronic condition (Barber et al. 2004).

The NICE guideline on medicines adherence recommends supporting and involving people in decisions about their prescribed medicines, by making an informed choice and encouraging adherence. The NICE guideline on medicines optimisation provides recommendations on the safe and effective use of medicines for people taking 1 or more medicines. The recommendations encourage medicines reconciliation, medication review, use of patient decision aids, and robust processes for medicines-related communication systems when patients move from 1 care setting to another. The NICE Pathway on medicines optimisation brings together all related NICE guidance and associated products on medicines optimisation in a set of interactive topic-based diagrams. The NICE key therapeutic topic on multimorbidity and polypharmacy summarises the evidence and resources on this topic.

New evidence

A UK multicentre, prospective cohort study (Parekh et al. 2018) investigated the incidence, severity, preventability and cost of medicines-related harm in 1,116 people aged 65 years and over (median 82 years) during an 8-week period after hospital discharge (when medicines may have been changed
and care transferred from hospital to primary care). Participants were recruited from 5 NHS teaching hospitals in England, near to the time of discharge, between 2013 and 2015.

After discharge, pharmacists followed up participants for 8 weeks to determine if they experienced medicines-related harm, defined as an adverse drug reaction, harm arising from not receiving a medicine because of non-adherence or a medication error.

The incidence of medicines-related harm events was identified from 3 sources: participant interviews, GP records, and review of hospital readmissions. Data on use of NHS services (emergency department visits, hospital admission, outpatient clinics, GP visits and out-of-hours care) were also collected and used to estimate the annual cost of post-discharge medicines-related harm in older people in England.

Overall, 413 participants (37.0%) experienced 621 medicines-related harm events in the 8 weeks after discharge from hospital (representing an incidence of 556 events per 1,000 participants over 8 weeks). Medicines-related harm was attributable to:

- adverse drug reactions in 72.9% (301/413) of cases
- both an adverse drug reaction and non-adherence in 11.6% (48/413) of cases (for example a person who experienced a gastric bleed associated with antiplatelet therapy who was non-adherent to their proton pump inhibitor)
- non-adherence in 10.9% (45/413) of cases
- medication error in 3.4% (14/314) of cases
- both a medication error and an adverse drug reaction in 1.2% (5/413) of cases.

A total of 460 events (74.1%) were attributable to medicines prescribed at hospital discharge, the rest were prescribed in the community after discharge. The most common medicines-related harm events were diarrhoea (8.9%), constipation (8.4%), falls (5.6%) and bleeding (5.0%). The medicines-related harm risk (incidence per 1,000 prescriptions) was greatest for opioids, antibiotics and benzodiazepines.

Four participants (1%) died because of a medicines-related harm event (fall, gastrointestinal bleed, stroke and lower respiratory tract infection), 9 participants (2.2%) had a life-threatening event and in a further 323 (78.2%) participants the medicines-related harm was classed as serious (requiring therapy change or treatment by a healthcare professional). Medication harm was assessed as definitely preventable (treatment inconsistent with best practice or unrealistic) in 10.7% (44/413) of cases and possibly preventable (preventable with efforts exceeding obligatory clinical demands) in 41.2% (170/413) of cases.

A total of 328 people accessed NHS services because of their medicines-related harm event, and 87 of these had a hospital readmission. The total NHS cost over the 8 weeks after discharge was over £225,000, with hospital readmissions accounting for 93% of the costs. The authors estimated the annual cost to the NHS of medicines-related harm post-discharge in older people to be £395.5 million, with the costs of preventable medicines-related harm being in the range of £51.6 million to £234.4 million per year.

**Commentary**

Commentary provided by NICE

The study highlights the importance of clinicians being aware that older people may be more vulnerable to medicines-related harms in the immediate post-discharge period after leaving hospital. The medicines-related harms were attributable to existing and newly started medicines and many of the harms could have been prevented. The majority of harm was associated with medicines prescribed in hospital, however 26% of medicines-related harm events were associated with
medicines prescribed in the community after discharge. While the authors of the study highlight potential costs associated with preventable medicines-related harm, these were based on estimates and the primary focus of the study was patient safety. The WHO Global Patient Safety Challenge: Medication without Harm, aims to reduce the level of severe, avoidable harm related to medications by 50% over 5 years. It recognises transfer of care as one of 3 early priority actions, along with problematic polypharmacy and high-risk situations.

The high proportion of medicines-related harm events attributable to adverse drug reactions seen in this ‘real life’ study may be a result of poor prescriber knowledge of the potential harms of medicines. A systematic review by Hoffman and Del Mar (2017) found that clinicians were more likely to overestimate the benefits of treatments and underestimate the risk of harms from them. The fact that opioids and benzodiazepines were among the highest risk medicines is unsurprising as they have well-known adverse effect profiles and are often included as a medicines optimisation priority, as highlighted by the NICE key therapeutic topics which include these medicines.

Non-adherence to medicines was implicated solely or partly in nearly a quarter of medicines-related harm cases in this study, which highlights the potential seriousness of this and the need to ensure people are appropriately supported to take their medicines. The NICE guideline on medicines adherence recommends supporting and involving people in decisions about their prescribed medicines, and this study reiterates the importance of implementing this guideline. The NICE guideline on medicines optimisation outlines the importance of medicines-related interventions, such as medicines reconciliation, medication review and medicines-related communication systems when people move from 1 care setting to another. The study again reinforces the need to implement the guideline recommendations to help support the safe and effective use of medicines.

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**References**


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