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Discharged but Not Safe: Medication Errors and Preventable Harm after Hospital Discharge in Older Adults

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ABSTRACT

This critical integrative review examined how medication-related failures developed between inpatient prescribing and post-discharge use in older adults, and why process improvements did not consistently translate into fewer emergency visits or readmissions. Medication safety was weakened not only by unintended discrepancies but also when purposeful changes lost their rationale, instructions were poorly understood in the context of medicines already present at home, or follow-up responsibility remained unclear. Reconciliation and pharmacist-led interventions improved medication accuracy more consistently than broad health-service outcomes because readmission lay far downstream from the mechanisms these interventions targeted. The review proposed a post-discharge medication continuity gap, defined as a break between an intended hospital medication decision and its preservation long enough for appropriate reassessment. The concept extended beyond list discrepancy because technically correct documentation could still fail in communication or home use. It was presented as an analytical proposition rather than a validated clinical construct. Safer discharge depended on medication decisions remaining transferable, clinically intelligible, and recoverable when later care began to diverge.

INTRODUCTION

A medication list can be correct when an older patient leaves hospital and still become unsafe a few days later. A drug stopped during admission may remain in a cupboard and be restarted out of habit. A new medicine may be taken at the wrong dose because the change was understood as temporary, or a medicine withheld during acute illness may never be restarted because no one was told when to reconsider it. These situations are difficult to classify as a single type of error. The hospital has changed treatment inside a monitored environment, while the patient has to rebuild that treatment at home using printed instructions, old supplies, memory, caregiver help, and advice from clinicians who were not present when the original decision was made. Older adults are especially exposed because medication burden is often high and the acute illness that prompted admission can temporarily alter attention, mobility, appetite, or the ability to manage an established routine.

Recent studies continue to show frequent medication discrepancies and medication-related harm after hospital-to-community transitions, although estimates vary sharply with definitions and follow-up methods (Alqenae et al., 2020). That variation is clinically important. Two medication lists that disagree reveal a process problem, but they do not tell us whether the patient took the wrong medicine, whether exposure changed, or whether harm followed. Conversely, an adverse drug event after discharge may occur without a detectable documentation discrepancy. Studies that collapse discrepancy, medication error, adverse drug reaction, preventability, and readmission into one broad safety narrative make the transition appear simpler than it is. The useful question is how an inpatient medication decision travels after discharge and where its meaning, accuracy, or practical use begins to diverge.

An unstable medication history can introduce error before discharge planning begins. Shah et al. (2022) showed that omissions remained possible among hospitalized older adults with polypharmacy

despite deliberate attempts to reconstruct the pre-admission regimen. Acute care then adds further decisions. Renal impairment, hypotension, infection, surgery, or a new diagnosis may justify temporary holds, dose changes, or new treatment. By the final hospital day, clinicians are not merely comparing a home list with a discharge list. They are deciding which pre-admission medicines remain appropriate and which hospital changes should persist after the acute problem has changed. A medication omitted at admission and an intentional deprescribing decision can look identical on a final list if the reasoning behind each is no longer visible.

Stopping medication can itself be good care. The MedSafer trial showed that electronic decision support can increase deprescribing of potentially inappropriate medicines in hospitalized older adults (McDonald et al., 2022), while a systematic review of randomized deprescribing trials found that medication reduction is feasible although effects on clinical outcomes remain heterogeneous (Omuya et al., 2023). The transition risk appears when an appropriate hospital decision cannot be distinguished later from an accidental omission. A primary-care clinician may restore a familiar drug to correct what seems to be an incomplete list. A patient may do the same at home. Continuity, in that situation, means preserving the clinical meaning of the change until somebody with adequate information can reassess it; it does not require preservation of the pre-hospital regimen.

Older patients and families describe discharge medication communication as variable in both involvement and clarity (Tobiano et al., 2021). Cam et al. (2024) similarly found that medication communication can be professionally thorough while poorly matched to what an older person is ready to absorb at the point of leaving hospital. The difficulty is easy to understand. Discharge education competes with fatigue, transport arrangements, relief about going home, and the practical work of leaving the ward. A printed list may be technically complete and still fail to answer the few questions that matter most at home: which medicines are genuinely new, which familiar medicines have been stopped, and which changes require later review. Patient understanding therefore cannot be inferred from documentation quality alone.

Medication reconciliation improves the accuracy of transition information and can reduce medication errors or adverse drug events, but effects on emergency use and readmission are less stable (Killin et al., 2021; De Oliveira et al., 2021). Jošt et al. (2024), for example, reported a substantial reduction in clinically important discharge medication errors after a pharmacist-led intervention without a corresponding reduction in 30-day healthcare use. This is not necessarily a failed intervention. A corrected discharge list is close to the mechanism being changed; all-cause readmission is separated from that mechanism by disease progression, frailty, infection, social support, access to follow-up, and many other causes. The present review examines medication safety across that distance in older adults after hospital discharge. Direct evidence is concentrated in populations aged 60 or 65 years and above, with broader adult transition studies used when their mechanisms were clearly applicable to older patients. The synthesis asks where medication decisions lose continuity, which failures are most plausibly connected with preventable harm, and how outcomes should be interpreted when medication accuracy improves but hospital use does not.

RESEARCH METHODS

A critical integrative review with narrative synthesis was used to examine medication safety during the transition from hospital to home. This approach was selected because the literature includes different study designs and outcome measures that cannot be treated as equivalent. Literature searches were conducted in PubMed/MEDLINE and supplemented by backward and forward citation tracking. Eligible studies were peer-reviewed publications that examined medication decisions during hospitalisation, discharge medication accuracy, communication of medication changes, post-discharge medication use, medication-related harm, or interventions intended to improve continuity of care. Priority was given to studies involving older adults, while broader adult studies were included when their findings were directly relevant to medication safety in later life.

Evidence was synthesised across three stages of the medication trajectory: decisions made during hospitalisation, transfer of medication information at discharge, and implementation of the regimen by patients or caregivers after discharge. Findings were interpreted according to study design and the directness of the outcome measured, distinguishing process measures such as medication discrepancies from clinically meaningful outcomes such as medication-related harm or readmission. Because the evidence was methodologically heterogeneous, no single risk-of-bias score or meta-

analysis was applied. Instead, interpretation considered population relevance, study design, confounding, follow-up, and the strength of causal inference supported by each study.

RESULTS AND DISCUSSION

1. Inpatient Medication Decision-Making and the Origins of Transitional Medication Risk

The discharge regimen is rarely a single decision made on the day a patient goes home. It accumulates across the admission. A long-standing medicine may be stopped because renal function worsens, another may be replaced during acute treatment, and a new drug may be added for a condition diagnosed in hospital. If the pre-admission history is incomplete, later reconciliation begins from unstable information. Shah et al. (2022) documented sources of medication omission among hospitalized older adults with polypharmacy even when a multipronged medication-history process was used. Some discrepancies that become visible at discharge therefore originate near admission and persist through the stay. A final list cannot fully correct them unless the underlying history is revisited.

Purposeful change has a different clinical meaning. Structured deprescribing can reduce medication burden when a drug has become inappropriate, and MedSafer increased deprescribing recommendations and treatment changes in older inpatients (McDonald et al., 2022). Omuya et al. (2023) found similar evidence that deprescribing can be achieved across older populations, although outcome effects vary. The vulnerability begins when the decision is separated from its rationale. If a familiar medicine disappears from a discharge list with no explanation, the absence can later be treated as an administrative mistake. Restoring the drug may look like continuity even though it reverses the hospital's intended plan.

Medication discharge planning for older adults increasingly treats the reason for change and the follow-up plan as part of the medication information itself. Zhang et al. (2024) proposed guiding principles that place medication changes, patient understanding, and later review within the same discharge process. Anderson et al. (2026) gives this issue direct contemporary support. In a prospective cohort of older adults discharged after cardiometabolic medication changes, errors and gaps in medication planning remained common after patients returned home. The findings are useful because the hospital changes were often clinically purposeful. The weakness was not necessarily poor prescribing. It was the difficulty of carrying that decision into a setting where the patient and subsequent clinician needed to know what had changed, why it had changed, and whether the decision was temporary. In practice, this means that two identical medication lists may carry very different safety implications if one contains a clear rationale and review plan while the other leaves later clinicians to infer why treatment changed.

Transitions through rehabilitation or skilled care add another opportunity for interpretation. Henriksen et al. (2023) tested a pharmacist pathway for hip-fracture patients that extended across secondary and primary care. Medication information in discharge summaries improved and potentially inappropriate medication burden fell. Barry et al. (2022), examining discharge of older adults to skilled nursing facilities, described related transition vulnerabilities when a receiving service must work from information generated elsewhere. These settings make the transfer problem visible because another institution is waiting to inspect the plan. At home there may be no comparable receiving team, even though the practical need to reconcile new instructions with existing medicines is the same.

Continuity interventions also show that preserving an inpatient decision is usually an intermediate outcome rather than a final clinical endpoint. Davis et al. (2021) found that nurse-led services can support continuity across the primary-secondary care interface for people with chronic disease, although effects depend on how services connect. Johnstone et al. (2026), focusing on strategies intended to preserve hospital medication changes in older adults, similarly found clearer effects on continuity measures than on mortality, readmission, or other broad outcomes. This is a useful distinction. A medication change can be successfully transferred and still be followed by rehospitalization for reasons unrelated to medicines.

Unintentional discrepancies remain important because they can alter treatment before anyone has a chance to reinterpret the plan. Park et al. (2024) found medication discrepancies across transitions in critically ill older adults and examined their association with post-discharge emergency visits. Syversen et al. (2025) documented medication-list discrepancies after discharge in people with multiple long-term conditions. These studies show the continuing value of reconciliation, but they also expose its boundary. Comparing lists can identify mismatches in recorded treatment. It cannot establish

whether a discrepancy was clinically consequential, whether the patient followed one list or another, or whether the hospital's original intention remained appropriate once the patient's condition changed.

2. Transferability and Interpretability of Discharge Medication Information

A reconciled list answers what the patient is expected to take at discharge. Home use requires more. Older adults may need to understand why a familiar medicine has disappeared, whether a new prescription is temporary, what to do with tablets already stored at home, and who will decide when a medicine that was held should be reconsidered. Tobiano et al. (2021) found inconsistent patient and family involvement in discharge medication communication. The difficulty was not merely the amount of information provided. Patients and relatives had limited opportunities to check the meaning of changes against the routine they would have to reconstruct after leaving hospital.

Discharge is also an awkward time for learning. Cam et al. (2024) described older patients who were thinking about going home while medication information was being delivered. Fatigue and the practical demands of leaving the ward can reduce attention even when clinicians explain the regimen carefully. A long medication list can make matters worse by giving equal visual weight to stable background therapy and to the few changes most likely to create confusion. Once home, the patient does not encounter the list in isolation. Old packaging, previous dosing habits, repeat prescriptions, and advice remembered from earlier appointments remain present.

Teach-back changes the interaction by asking the patient to reproduce the plan rather than simply receive it. Marks et al. (2022) found better knowledge, perceptions, and satisfaction following a nurse-led teach-back intervention. Those outcomes support teach-back as a way to detect misunderstanding before discharge; they do not establish an effect on adverse drug events. Its practical value lies in making confusion observable while the hospital still has access to the clinical reasoning behind a medication change. Even a patient who accurately repeats the instructions may encounter a different problem later when old medication packs, new brand names, or advice from another clinician conflict with the discharge plan.

Medication self-management after discharge is therefore a distinct stage of the transition. Xu et al. (2025), studying older adults with coronary artery disease at home, described medication management as work embedded in daily routines rather than simple adherence to a written prescription. The hospital environment temporarily removes much of that work because nurses administer medicines and clinicians interpret changes. After discharge, the patient or caregiver has to match the new regimen to medicines collected over months, refill arrangements, meal patterns, symptoms, and other appointments. Errors that were impossible during supervised administration can appear only when the person again becomes responsible for selecting and timing each dose.

Nurses and pharmacists occupy different parts of this handover. Zhu et al. (2024) described nursing roles in medication reconciliation for older adults at discharge, particularly where medication information meets patient education. Pharmacist-led work adds detailed history taking and review of discrepancies. Studer et al. (2023) found fewer drug-related problems when pharmacist-led reconciliation was combined with interprofessional ward rounds, and Zheng et al. (2024) reported interception of discharge errors with potential for patient harm. These interventions strengthen the information leaving hospital. Their effect after discharge still depends on whether the corrected plan reaches the people who prescribe, dispense, supervise, or take the medicines. The distinction matters because medication safety at discharge is partly technical and partly communicative. A list can be pharmacologically accurate yet unusable if nobody establishes which changes the patient must notice, while good education cannot compensate for an incorrect regimen. This becomes important when interventions are compared across settings with different staffing models.

The difference between proximal and distal outcomes becomes clear in intervention trials. Jošt et al. (2024) substantially reduced clinically important medication errors at discharge without significantly changing 30-day healthcare utilization. Hammad et al. (2025) also separated discrepancy outcomes from post-discharge service use in elderly patients receiving pharmacist-led reconciliation. Across randomized trials, De Oliveira et al. (2021) found that pharmacist interventions can reduce medication errors and, in some settings, healthcare resource use, although effects varied. The pattern is not contradictory. Medication reconciliation directly changes a medication process; all-cause emergency attendance and readmission are affected by many events outside that process.

Caregiver involvement can determine which version of the regimen survives at home. Some older adults remain fully independent, while others begin relying on relatives only after an acute

admission. A caregiver who missed the discharge discussion may reasonably reconstruct the familiar pre-hospital regimen from memory or existing supplies. The risk is less visible than in a skilled nursing facility because there is no formal receiving service required to reconcile the plan. Medication communication therefore needs enough selectivity to make hospital-created changes conspicuous and enough clinical context to stop an intentional decision being mistaken for an omission. More information is not always better information when the critical change is buried among medicines that never changed.

3. From Medication Discrepancy to Preventable Post-Discharge Harm

Medication discrepancies are frequently reported because they can be detected by comparing records. Preventable harm requires a longer chain of evidence. Alqenae et al. (2020) found wide variation in estimates of errors and medication-related harm after hospital discharge, reflecting different definitions, follow-up periods, and detection methods. Analysis of national medication-safety reports in England and Wales likewise showed multiple contributory factors after discharge rather than one dominant documentation failure (Alqenae et al., 2023). Incident reports capture recognised events, not the full incidence of post-discharge harm, while list-comparison studies may detect discrepancies that never alter treatment exposure.

Direct older-adult outcome evidence shows why the distinction nevertheless matters. Jamil et al. (2024) reported medication-related harm in a substantial proportion of older adults followed after discharge, including events judged serious or preventable. Estimates from one healthcare system should not be transferred mechanically to another, but the study followed patients into the period when medication decisions become enacted rather than merely documented. Harm can emerge only after a patient restarts a stopped medicine, omits a new treatment, takes the wrong dose, or misses monitoring long enough for exposure to matter clinically. This gives the evidence greater clinical directness than studies that stop at the discharge record.

Not every discrepancy has the same capacity to cause harm. Some are corrected quickly by primary care or community pharmacy. Others involve medicines where brief divergence has little clinical consequence. Risk rises when the discrepancy persists, changes meaningful exposure, and occurs in a patient with limited physiological reserve or a narrow therapeutic margin. Anderson et al. (2026) is informative because participants had deliberate cardiometabolic medication changes and still experienced planning gaps after discharge. Many patients understood what their medicines were generally for. That knowledge did not guarantee that the intended regimen was reproduced accurately at home or preserved through later prescribing changes.

Park et al. (2024) reported an association between transition discrepancies and post-discharge emergency visits among critically ill older adults, but that relationship cannot be read as direct causation. Multimorbidity and severity increase both the complexity of medication management and the likelihood of returning to hospital. Readmission therefore remains a blunt medication-safety endpoint. A programme can prevent clinically relevant medication errors without changing the total number of admissions caused by frailty, infection, recurrent disease, or unrelated acute events.

Endpoint distance helps reconcile findings that otherwise appear inconsistent. Reconciliation accuracy sits close to the intervention. Patient understanding and continuity of intended changes are further downstream. Adjudicated medication-related harm is clinically more meaningful but less frequent and harder to measure. All-cause emergency attendance or readmission sits farther away again. Killin et al. (2021) found that advanced medication reconciliation can reduce errors and adverse drug events, while Johnstone et al. (2026) found that strategies preserving hospital medication changes produced more consistent effects on continuity than on broad clinical outcomes. Both results can be true because they measure different points along the same pathway. The farther an outcome lies from the intervention, the more opportunity there is for unrelated clinical and social events to dilute an effect. This does not make distal outcomes unimportant; it changes how confidently they can be attributed to medication-transition work. Attribution should therefore weaken as the selected endpoint becomes more remote from the intervention.

Responsibility also fragments after discharge. The clinician who stopped or started a medicine may not see the patient again. Primary care may receive a summary after a prescription has already been filled, and a community pharmacist may identify a discrepancy without access to the reason behind the hospital decision. Marsall et al. (2024) linked transition quality, patient-safety incidents, and health status within a complex discharge process. Preventability is most defensible when a failure could

reasonably have been avoided or recovered using information available at the transition and when correcting it was likely to change medication exposure or monitoring. An adverse event occurring after discharge is not, by itself, evidence that the hospital made an error.

4. The Post-Discharge Medication Continuity Gap as an Analytical Framework

Across the reviewed literature, medication reconciliation remains necessary but cannot by itself define a safe transition. Hospital teams can produce an accurate discharge list, correct discrepancies, and still lose the intended treatment once the patient returns to a setting shaped by old medication supplies, established habits, caregiver interpretations, delayed follow-up, and new clinical decisions. The recurrent weakness is a loss of continuity between what the hospital intended and what remains in use long enough for appropriate reassessment. That problem is broader than a mismatch between two medication records.

This review uses the term post-discharge medication continuity gap for that problem. It refers to a break through which an intended hospital medication decision is not preserved, interpreted, or enacted long enough to reach an appropriate point of reassessment. The term is an analytical proposition, not a validated clinical construct. Its purpose is to distinguish transitional failures that occur after a list has already been reconciled from traditional medication discrepancies identified by comparing records. A correct document can therefore coexist with a continuity gap if the rationale is lost, the patient interprets the change differently, or home use reverts to an earlier regimen. Unlike medication discrepancy, which can be identified through competing records, the continuity gap may remain invisible until the patient or a later clinician acts on an incomplete understanding. Its unit of analysis is therefore the preservation of a decision across the transition rather than agreement between documents alone.

The concept has clear boundaries. A later medication change made deliberately because renal function improves, blood pressure falls, symptoms recur, or another clinician obtains new information is not a continuity gap. Neither is a patient stopping treatment after receiving valid new advice. The gap exists when information or understanding fails to preserve an intended decision long enough for it to be reviewed under appropriate clinical conditions. This boundary matters because post-discharge prescribing must remain adaptable. Treating every later change as a failure would turn continuity into therapeutic rigidity. The relevant test is whether the original decision was lost before it could be reassessed appropriately, not whether the regimen remained unchanged.

Anderson et al. (2026) and Johnstone et al. (2026) show why continuity deserves an endpoint of its own. The former identified medication errors and discharge-planning gaps around purposeful medication changes; the latter found that interventions designed to preserve hospital changes improved continuity more reliably than broad outcomes. Hospitals should therefore judge a medication-transition intervention first on whether it transfers intended changes accurately, makes unintended discrepancies recoverable, and establishes a route for review. Readmission still matters clinically, but it is a poor solitary test of whether the medication component of discharge worked.

Pharmacist involvement is supported most consistently at the level where it acts. Studer et al. (2023), Jošt et al. (2024), Zheng et al. (2024), and Hammad et al. (2025) all found improvements in medication problems or discrepancies following pharmacist-led transition work. The evidence becomes weaker when those process gains are expected automatically to produce lower all-cause hospital use. That does not reduce the value of reconciliation. It clarifies its function. Pharmacists can make the outgoing medication plan more accurate and identify drug-related problems before discharge; continuity still depends on whether that plan remains available and intelligible to the patient and subsequent clinicians.

Clinical rationale is particularly important when a medicine has been deprescribed or temporarily withheld. An absent medicine on a list does not reveal whether the drug was stopped because it had become harmful, because it was unnecessary, because it interacted with acute treatment, or because somebody forgot to include it. McDonald et al. (2022) and Omuya et al. (2023) show that deprescribing can be a structured clinical intervention. If later clinicians receive only the result and not the reason, attempts to correct an apparent omission may undo appropriate care. Temporary holds create the opposite risk when nobody knows when reassessment should occur.

Acute illness can also change who is capable of managing the regimen. An older adult who independently organised medicines before admission may leave hospital needing temporary help because mobility, appetite, attention, or daily routine has changed. Tobiano et al. (2021), Cam et al.

(2024), and Xu et al. (2025) describe different parts of that practical transition. Discharge communication is more likely to fail when it is designed around the assumption that the person receiving information on the ward will be the same person executing every medication decision at home. Caregiver involvement should follow actual management responsibility rather than age alone.

Teach-back is useful within that narrower frame. Marks et al. (2022) demonstrated gains in medication knowledge and satisfaction, which supports its use to reveal misunderstanding while the hospital team can still correct it. Evidence is insufficient to claim that teach-back alone prevents adverse drug events. A patient may understand the instruction and still encounter a conflicting medication supply or delayed follow-up. The intervention should therefore be regarded as one recovery point in the transition rather than a complete solution.

Follow-up becomes critical when the hospital decision was intentionally provisional. Some changes depend on renal recovery, oral intake, blood pressure, bleeding risk, symptom progression, or results that will only become available after discharge. Davis et al. (2021) and Henriksen et al. (2023) suggest that continuity improves when work is carried across professional and organisational boundaries. The important feature is not which profession owns the transition. It is whether reassessment has an identifiable destination. Unassigned clinical work is easily converted into patient responsibility, often without the patient knowing that a decision remains unfinished.

The evidence base does not permit precise estimates of how often a continuity gap produces preventable harm. Definitions of discrepancy, error, medication-related harm, and preventability remain inconsistent. Process outcomes are easier to measure than serious adverse events, while national incident-reporting systems capture recognised events and miss others managed outside the reporting organisation (Alqenae et al., 2023). Observational studies remain vulnerable to confounding because frailty and multimorbidity increase both medication complexity and poor post-discharge outcomes. These limitations should restrain claims about causal effect, particularly when studies use readmission as the main endpoint.

Following the same medication decision from the ward to the first post-discharge review would resolve several of these limitations. Research could record the hospital rationale, the discharge version, what the patient or caregiver understood, what was dispensed, what was actually taken, and whether later changes represented error or appropriate clinical adaptation. Such designs would identify where continuity was lost and where recovery occurred before harm. Intervention trials could then select endpoints at a distance appropriate to the mechanism being targeted instead of relying almost exclusively on all-cause readmission.

Hospital responsibility is best framed as responsibility for transferability. A hospital cannot control every later prescription or every decision made by a patient, caregiver, general practitioner, specialist, or pharmacist. It can make its own medication decisions accurate, interpretable, and traceable enough to be carried forward. This includes making important changes visible, correcting discrepancies that are known before discharge, communicating who will manage unresolved decisions, and ensuring that the receiving patient or clinician has enough information to recognise when the plan no longer fits. The post-discharge medication continuity gap is useful only within that boundary; beyond it, ordinary clinical adaptation should not be mislabeled as failure.

CONCLUSION

Medication-related harm after hospital discharge in older adults cannot be understood by counting discrepancies alone. Hospitalization frequently changes treatment for legitimate reasons, and reconciliation can improve the accuracy of the medication plan that leaves the ward. The more difficult problem is whether that plan remains clinically intelligible and usable once supervision ends. Evidence from pharmacist interventions, communication studies, and post-discharge cohorts suggests that failures can occur after technically correct documentation, particularly when the rationale for change is lost or responsibility for review remains unclear.

The post-discharge medication continuity gap describes this narrower transition failure: an intended medication decision is not preserved long enough to reach appropriate reassessment. It should be tested rather than treated as an established mechanism. Future studies need to follow individual medication changes across settings and distinguish successful transfer, recoverable discrepancy, appropriate later modification, and preventable medication-related harm. That distinction would

provide a more credible basis for judging discharge safety than disagreement between medication lists or all-cause readmission alone.

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