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Shared Access to Medicines Does Not Establish Shared Responsibility for Their Safe Use at Home: Clarifying Storage, Handling, and Administration Across Patients, Carers, and Families

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Abstract

Medication use at home depends on work that is distributed across patients, carers, family members, and pharmacy teams, yet everyday access to medicines can obscure who is expected to perform, decide, monitor, and escalate. This conceptual article develops a Home Medication Responsibility Architecture for distinguishing these functions across storage, supply, identification and preparation, administration, monitoring and escalation, and disposal. The architecture treats responsibility as task-specific, potentially overlapping, and dynamically reallocable. Evidence from family caregiving, dementia, medication self-management, transitions of care, home medicines review, and medication-safety research indicates that medication work is interdependent, context-sensitive, and vulnerable to unclear role transfer. The central contribution is an allocation logic that separates physical access, task performance, decision authority, monitoring responsibility, and escalation accountability. It further distinguishes purposeful redundancy from unowned work and nominal handoff from verified transfer. The resulting account does not prescribe a single responsible actor for the household. It identifies the conditions under which responsibility should be explicit, shared, verified, or reallocated as capacity, illness, regimen demands, and caregiver availability change. This provides a basis for more precise pharmacy assessment, communication, and research on medication safety at home.

Keywords: Medication management at home, Medication responsibility, Family caregivers, Medication safety, Medication administration, Monitoring and escalation

Introduction

Medication use in the home is often treated as if medicines simply move from professional control into private self-management. In practice, patients and family caregivers may store medicines, obtain refills, identify products, prepare doses, administer or prompt them, observe effects, and seek help when problems emerge. Home-visit evidence shows that these activities can be safety-relevant and distributed within family caregiving arrangements [1]. A systematic review and direct caregiver research likewise show that informal carers perform heterogeneous physical, cognitive, and coordination tasks across medication management [2, 3]. This distribution creates an allocation problem. Knowing that several people can reach the medicines, remind a patient, collect prescriptions, or speak with clinicians does not reveal who is expected to decide, verify, monitor, or act when something changes. A task-based account is needed to make those expectations visible. The Home Medication Responsibility Architecture developed here analyzes responsibility through five separable questions: who can access the medicine, who performs the task, who has decision authority, who monitors whether the task remains safe and effective, and who

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owns escalation when uncertainty or deterioration appears.

Why shared access does not mean shared responsibility

Shared access describes a condition of availability: more than one person can physically reach, move, prepare, or discuss medicines. Responsibility concerns a different set of relations. In cognitive impairment, patients may retain medication autonomy for a period and later experience greater caregiver involvement when errors or safety concerns emerge [4]. The shift is neither automatic nor uniform. Decision-making research similarly shows that medication choices can be provider-led, patient-led, or shared, with participation shaped by health status, knowledge, and communication [5].

Within the architecture, access, performance, authority, monitoring, and escalation are treated as analytically distinct. A daughter may collect a refill without deciding whether therapy should change; a spouse may prepare a dose without being expected to interpret a new symptom; a patient may remain the decision-maker while another person provides reminders. Stakeholder work in dementia also shows that decision-related information is a high priority for patients, carers, and professionals [6]. Information is thus part of responsible participation, but access to information alone does not assign authority or guarantee that somebody will act when a problem exceeds routine management.

Medication work in the home

Home medication management is better understood as a work system than as a single behavior. A functional resonance analysis of medication management in dementia identified multiple interdependent functions whose performance varied with resources, capability, and system conditions [7]. This matters because responsibility can fail at the connection between tasks even when each task appears simple in isolation.

Measurement research supports the same multidimensional view. A scoping review of medication self-management measures found that available tools capture different components and do not comprehensively represent the full capability required across the hospital-to-home transition [8]. Reviews of dementia medication management similarly describe interacting problems involving knowledge, responsibility, communication, adherence, practical organization, and professional support [9]. Reviews focused on medicines-management problems and coping strategies likewise identify multiple adaptive responses [10]. These findings justify treating home medication work as a set of linked functions: storage, ordering and supply, identification and preparation, administration, monitoring and escalation, and disposal. The architecture does not assume that these functions belong to the same person or that competence in one establishes competence in another.

Actors: patient, caregiver, family and pharmacy team

The patient is usually the person whose therapy is being managed, but patient status alone does not determine which medication tasks can or should be performed independently. Family caregivers may provide reminders, organize medicines, obtain supplies, communicate with professionals, or directly administer doses. Other family members may contribute episodically without becoming primary caregivers. Pharmacy teams occupy a different position because they can supply medicines, provide information, identify medication-related concerns, and support safer use while remaining outside the household's continuous daily workflow.

Community pharmacists report that family caregivers have important information needs, yet caregivers may not be consistently identified or proactively engaged in routine pharmacy encounters [11]. Evaluation tools for caregivers of people with dementia likewise cover distinct domains such as medication selection, supply, monitoring and review, and administration [12]. Information-priority research shows that patients and carers require support across several medication-management tasks rather than one undifferentiated category of "help" [13].

The practical question concerns the form of each person's involvement and what additional responsibility, if any, follows from it. **Table 1** differentiates the major actor positions without converting participation into automatic ownership.

Table 1. Distinguishing actor participation from task-specific medication responsibility at home

Actor position	Typical form of access or participation	Responsibility question that must remain explicit	Potential ambiguity if left unstated
Patient	Possesses medicines, takes doses, reports symptoms, makes choices where capable	Which tasks remain self-managed, and which require checking or assistance?	Help may be interpreted as takeover, or declining capability may go unrecognized
Primary caregiver	Organizes, prompts, prepares, administers, communicates, or observes	Which tasks are actually owned, and which require professional decision or escalation?	Frequent assistance can be mistaken for global responsibility
Other family member	Collects supplies, gives occasional reminders, provides temporary cover	Is the role episodic support, backup, verification, or temporary transfer?	Availability can be confused with continuing accountability
Pharmacy team	Supplies, counsels, reviews, clarifies, identifies concerns	What must be communicated, verified, or referred beyond the pharmacy?	Professional involvement may be assumed to substitute for household follow-through
Shared arrangement	Two or more actors contribute to one medication function	Is overlap deliberate, complementary, and verified?	Each actor may reasonably believe another has completed the task

Storage responsibility

Storage is the first domain in which physical access can be mistaken for responsibility. Home-storage research shows that medicines may be kept under variable conditions and that disposal and storage practices are not consistently safe [14]. Yet an inventory of medicines present in a household reveals possession and reported use, not who is accountable for maintaining appropriate conditions, controlling access, noticing deterioration, or removing medicines that should no longer be available [15].

Storage responsibility has at least four components: selecting and maintaining an appropriate location, controlling access where risk requires it, keeping the current medication supply distinguishable from obsolete or discontinued products, and identifying when stored medicines need review or removal. These functions may be shared, but the architecture requires that shared storage be interpreted as a coordinated arrangement rather than as proof of undifferentiated family responsibility.

Ordering and supply

Ordering and supply concern the continuity of the intended medication regimen: recognizing that supply is running low, requesting or authorizing a refill, obtaining it, and reconciling what arrives with the current regimen. Vulnerability arises when these activities are distributed across people or organizations without a reliable connection between them. Post-discharge research has documented substantial medication-list discrepancies in patients with multiple long-term conditions [16], while realist review evidence shows that informal-carer involvement in medicines transitions depends on information, resources, role clarity, and the surrounding care context [17].

The task extends beyond collecting medicines. A family member may obtain a prescription while another person tracks supply, and a pharmacy may dispense accurately even when the household is working from an outdated list. Professional review also does not guarantee improved downstream outcomes in every context: a matched cohort study of Home Medicines Reviews in older people receiving home aged-care services found no association with several measured health outcomes [18]. The architecture treats supply continuity as a chain that can fail at request, authorization, acquisition, reconciliation, or incorporation into the household regimen.

Identification and preparation

Before administration, somebody must identify the intended medicine and dose, distinguish it from alternatives, and prepare it appropriately. These demands become especially important when regimens are complex or cognitive capacity is reduced. In older adults with cognitive frailty, medication self-management capability differed across components, and identification could be more difficult than other aspects of the task [19]. This supports separating identification and preparation from a global judgment that a person can or cannot "manage medicines."

Preparation can also be protected by system-level defenses. Work integrating medication-risk management into automated dose dispensing for older home-care clients emphasized reconciliation, medication review,

follow-up, and information sharing around vulnerable phases of the process [20]. Such safeguards distribute verification across people and systems. They reduce reliance on one actor's memory or vigilance and clarify where professional checking can support home preparation.

Administration

Administration is the point at which the regimen is enacted: the medicine is taken, given, prompted, or intentionally withheld pending clarification. Caregiver research in dementia shows that medication assistance can include burdensome and behaviorally difficult work, with challenges associated with features of the regimen and the care situation [21]. The person physically handing over or prompting a dose may carry substantial operational responsibility without having authority to alter the regimen.

Technology can assist execution while leaving these distinctions intact. A pilot randomized trial of an in-home electronic medication dispensing system reported higher recorded adherence in the intervention group [22]. However, a recent systematic review of medication reminder technologies found uneven evidence across outcomes and identified domains in which effects remain insufficiently demonstrated [23]. Devices can cue, release, or record medication use; they cannot by themselves determine who should interpret refusal, changing symptoms, repeated missed doses, or uncertainty about whether a medicine remains appropriate.

Monitoring and escalation

Monitoring begins after and around administration but is not reducible to observing whether a dose was taken. It includes noticing symptoms, adverse effects, changes in cognition or function, repeated non-administration, confusion about instructions, supply problems, and other signals that may require a response. Qualitative home-visit research with family caregivers has shown that medication optimization can be hindered by difficulty accessing prescribers, obtaining updated medication information, and navigating fragmented health-system relationships [24]. A household may recognize a problem yet still lack a clear route for resolving it.

Escalation adds a second layer: somebody must decide that the signal exceeds routine management, contact an appropriate professional, communicate the relevant information, and verify that responsibility for the next action has been accepted. Research across transitions of care shows that opportunities for patient and family participation in medication-change decisions vary with communication processes [25]. Work developing a caregiver-guidance evaluation tool at hospital discharge likewise separates understanding, engagement, preparedness, and coordination as distinct qualities of support [26]. These distinctions imply that a phone call, message, or discharge instruction is not equivalent to a completed responsibility transfer.

For that reason, the architecture separates five monitoring-and-escalation functions: observation, interpretation, decision to escalate, transmission, and confirmation of follow-through. The same person may perform all five, but this should not be assumed. **Table 2** identifies where responsibility can become discontinuous even when several people are actively involved.

Table 2. Monitoring and escalation as a chain of separable responsibility functions

Responsibility function	Core question	Example of adequate ownership	Characteristic failure if ownership is unclear
Observation	Who is expected to notice change or non-routine medication use?	A patient or caregiver knows which changes should be noticed	A signal is visible to several people but actively watched by none
Interpretation	Who judges whether the signal is routine, uncertain, or concerning?	A defined person uses agreed instructions or seeks clarification	Symptoms, refusals, or repeated missed doses are normalized without review
Escalation decision	Who decides that professional input is required?	A patient or caregiver has clear triggers and permission to seek help	Everyone waits for another actor to initiate contact
Transmission	Who communicates the relevant information, and to whom?	The responsible actor contacts an appropriate pharmacy or clinical service with current details	Information is partial, delayed, or sent to an actor without authority to respond
Follow-through verification	Who confirms that advice, review, or treatment change has actually been received and enacted?	The household and professional sides know who owns the next action	A nominal handoff occurs, but each side assumes the other will complete the next step

Disposal

Medication responsibility continues after a medicine is no longer intended for use. Unused, expired, discontinued, duplicated, or otherwise obsolete products can remain physically accessible in the home even though their therapeutic role has ended. Safe-disposal research shows that interventions can change disposal behaviour, although intervention effects and implementation contexts vary [27]. The responsibility question therefore extends beyond whether household members know that medicines should be returned or discarded safely.

Within the Home Medication Responsibility Architecture, disposal requires recognition that a medicine has left the active regimen, separation from medicines still in use, and completion of an appropriate removal or return process. Responsibility may be divided: a prescriber may discontinue therapy, a pharmacy may provide disposal guidance, a patient may recognize that the medicine is no longer used, and a family member may physically return it. None of these actions alone confirms completion. Disposal becomes an identifiable medication-work function when somebody is expected to close the sequence and prevent obsolete medicines from remaining unintentionally available.

Development of the responsibility architecture

The evidence reviewed across preceding sections challenges any representation of home medication management in which one household actor is globally designated as "responsible." Medication work consists of distinguishable functions, actors possess different capabilities and permissions, and both household and professional participation can change over time. Human-factors analysis of medication transitions reinforces the importance of examining changes in people, tasks, tools, information, and environments as potentially vulnerable periods [28]. Caregiver research also shows that medication management is shaped by interpersonal and environmental context [29].

The architecture therefore uses the medication task as its primary unit of allocation. For each task, five questions are asked separately: who has practical access; who performs the work; who has authority to decide or alter what happens; who checks the task or its consequences; and who is responsible for escalation when routine management is no longer sufficient. These dimensions can coincide in one person, but they need not.

This distinction also changes how shared responsibility is interpreted. Deliberate redundancy may be protective—for example, one person prepares medicines while another verifies a change—when participants know that verification is part of the arrangement. Overlap is different when two people each assume that the other has acted. Likewise, sole responsibility is not inherently preferable if the responsible person lacks information, practical capacity, or access to professional assistance. The architecture therefore evaluates the configuration of responsibility rather than the number of actors involved.

Figure 1 represents this configuration as a responsibility mesh in which medication-work functions are connected to actor participation and to distinct responsibility dimensions. Solid connections indicate relationships directly grounded in the reviewed evidence, while dashed connections mark the article's proposed allocation logic that requires subsequent empirical testing.

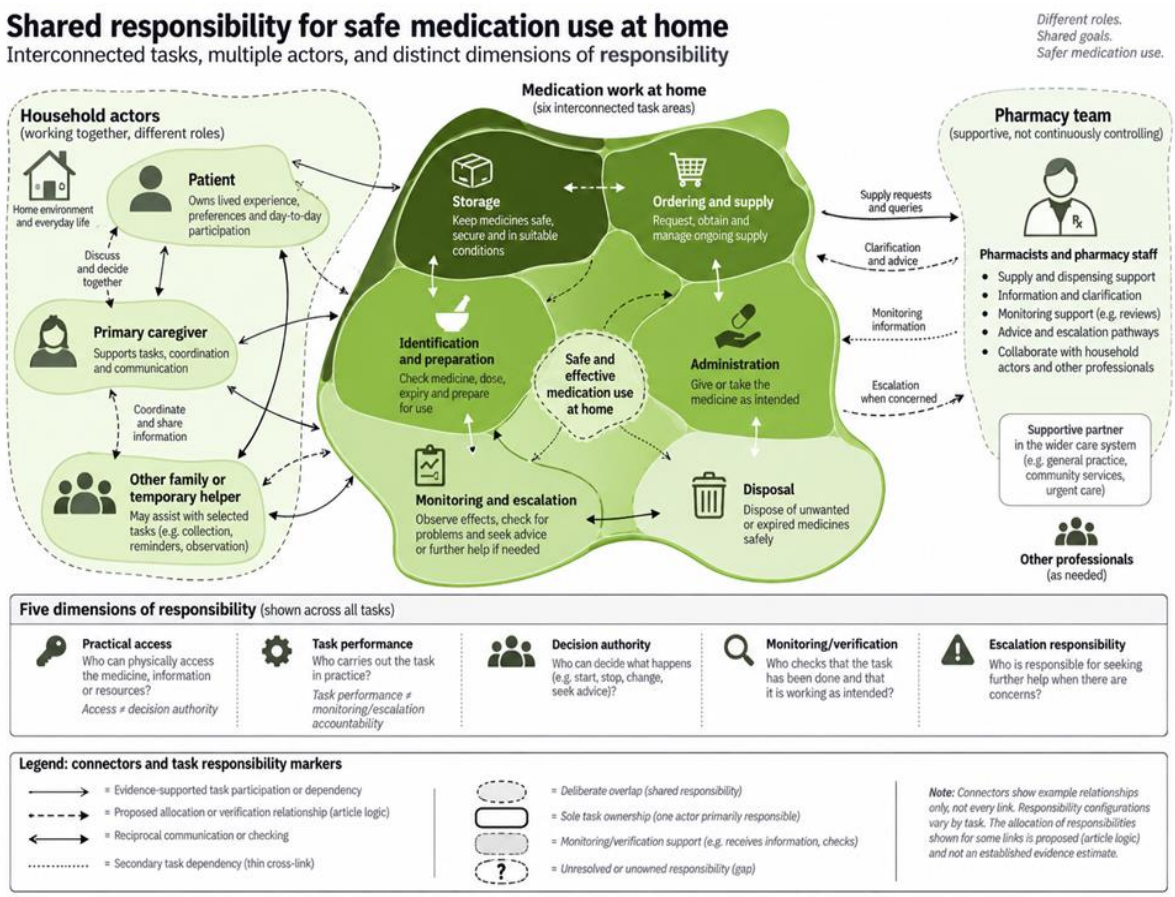


Figure 1. Task-specific responsibility mesh for medication work in the home

Overlap, gaps and ambiguous handoffs

Responsibility arrangements can fail in several different ways. Communication research across transitions of care shows that formal and informal modes of communication shape opportunities for patients and families to participate in medication management [30]. Participation, however, does not establish that a task has transferred. A person may receive information without understanding that they are now expected to act, while another actor may interpret the same communication as completion of a handoff.

Three configurations require particular distinction. Overlap exists when more than one actor performs or verifies a function. It can provide resilience when the duplication is deliberate and complementary. A gap exists when a necessary task has no actor who understands it as theirs. An ambiguous handoff occurs when responsibility is believed to have moved but the receiving actor's acceptance, information, authority, or capacity is uncertain.

A handoff is therefore considered verified in the proposed architecture only when the receiving actor can identify the relevant task, has enough information and practical capability to perform or coordinate it, and the preceding actor has reasonable grounds to believe that the transfer has been accepted. This is a conceptual criterion rather than a validated clinical threshold. **Table 3** distinguishes responsibility configurations that can otherwise appear similar in routine practice.

Table 3. Responsibility configurations that distinguish protective overlap from gaps and ambiguous medication handoffs

Responsibility configuration	What is happening	Critical responsibility question	Distinguishing feature	Principal vulnerability

Complementary overlap	Two actors intentionally contribute different parts of the same task	Are their contributions known and coordinated?	Roles are deliberately differentiated	Duplication becomes confusing if coordination disappears
Verification overlap	One actor performs and another intentionally checks	Who owns correction when checking identifies a problem?	Redundancy has an explicit checking function	Detection without authority or follow-through
Unowned task	A necessary medication function is performed by no one reliably	Who believes this task is theirs?	Absence of recognized ownership	Omission or delayed action
Nominal handoff	Information is sent or responsibility is announced	Has the receiving actor actually accepted and understood the task?	Transfer exists administratively or verbally but is not closed-loop	Both sides may believe the other now owns the task
Contested responsibility	Multiple actors participate but disagree over who may decide	Who has legitimate decision authority?	Participation is present; authority is disputed	Delay, contradictory actions, or avoidance
Split monitoring–escalation	One actor notices changes while another must decide or contact professionals	Is there a reliable route from observation to action?	Detection and response are structurally separated	Signals fail to reach an actor able to act
Verified handoff	Responsibility moves with information, capability, acceptance, and follow-through expectations	Is the new allocation understood on both sides?	Transfer is explicitly acknowledged	Residual risk remains if capacity or circumstances later change

Reallocation during illness or loss of capacity

Responsibility cannot be fixed permanently because the capacities and availability of household actors change. Mild cognitive impairment, progressive dementia, acute illness, fatigue, hospitalization, temporary caregiver absence, and recovery can all alter who can perform particular medication tasks. Dyadic evidence shows that caregiver involvement may increase when errors or safety concerns emerge, while task-specific assessment demonstrates that capability can differ across medication-management components. Reallocation therefore should occur at the level of the affected task instead of through an all-or-none judgment that a person either manages or does not manage medicines.

Evidence for structured caregiver guidance during transitions remains limited and heterogeneous [31]. This weakens any claim that one standardized handoff process has already been shown to solve responsibility reallocation. It also supports a distinction between reactive takeover, which occurs after failure or error, and anticipatory reallocation, in which foreseeable changes in capacity or availability trigger an earlier reassessment of tasks [4, 19, 31].

Figure 2 represents reallocation as a set of reversible responsibility states. Temporary transfer, added verification, progressive transfer, substitution of an unavailable caregiver, and return of responsibility after recovery are different configurations. The proposed theoretical claim is that safer reallocation depends on explicit task-level reassessment and verified handoff, not simply on increasing the number of helpers.

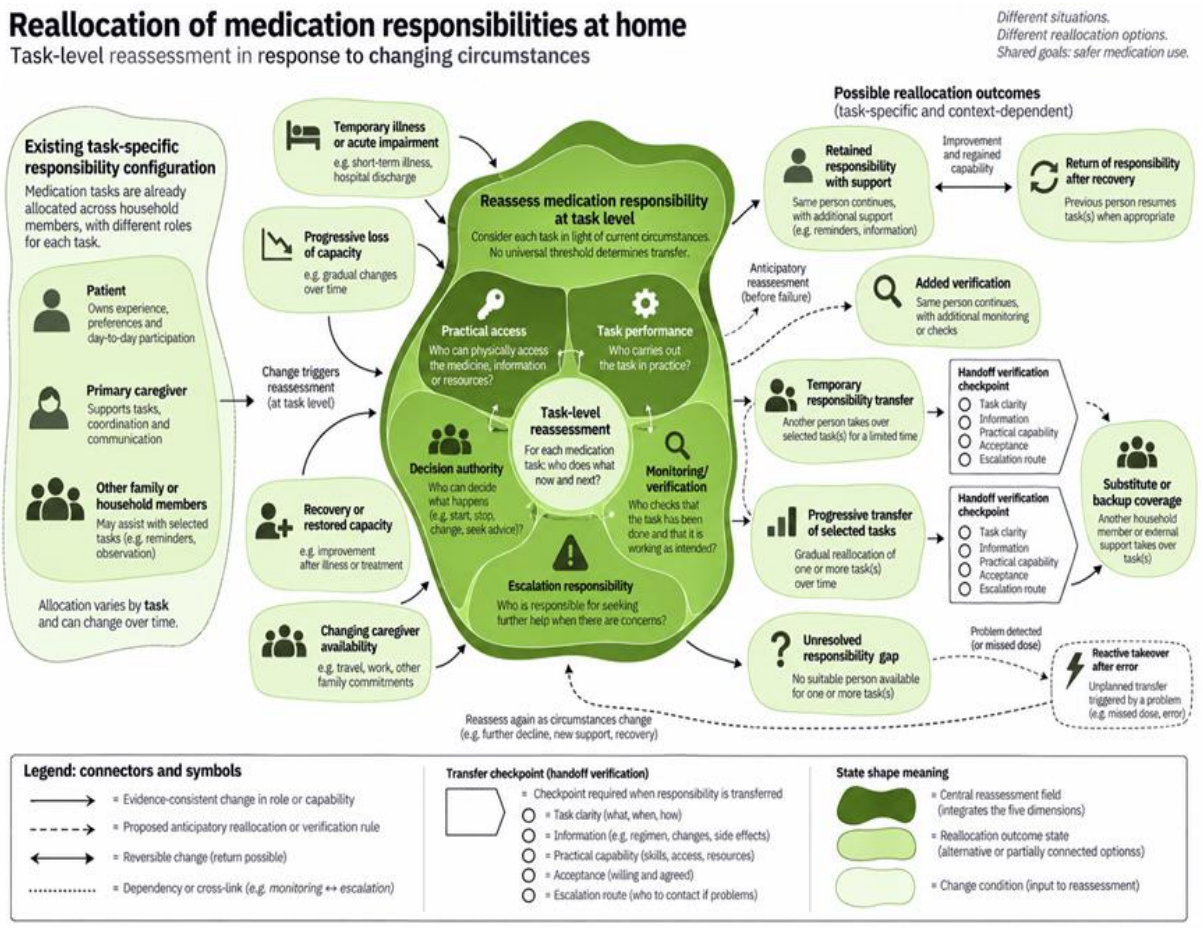


Figure 2. Dynamic reallocation of home medication responsibility during changing capacity and caregiver availability

Practice implications

Medication assessment in community pharmacy and other home-facing services should move beyond the broad question, "Who manages the medicines?" A task-specific assessment can instead ask who orders supplies, who identifies and prepares doses, who administers or prompts them, who notices problems, who can authorize or request changes, and who follows through when professional input is required. Particular attention is warranted when answers differ across tasks or when several people believe that responsibility is shared without being able to describe how.

Transitions, new illness, cognitive or functional change, altered caregiver availability, and substantial regimen change are practical opportunities to reassess this allocation. Documentation should identify responsibility changes that matter for safe continuation rather than merely recording the presence of a caregiver. Pharmacy teams can contribute by clarifying medicines and instructions, identifying inconsistencies, recognizing caregivers as medication-work participants, and checking whether advice has reached an actor who can act on it. Where the pharmacy does not have authority to resolve the problem, escalation responsibility includes helping establish an appropriate next route rather than assuming that information provision completes the process.

Results and Discussion

The Home Medication Responsibility Architecture reframes medication management at home from a person-level label to a task-specific allocation problem. Its principal contribution is the separation of physical access, task performance, decision authority, monitoring or verification, and escalation accountability. This separation explains how a household can appear highly supported while still containing an important responsibility gap. It also explains why assistance with one task should not automatically be interpreted as transfer of responsibility for the entire regimen.

The strongest rival account is that explicit allocation may be unnecessary because flexible overlap and informal redundancy are themselves sources of resilience. The reviewed evidence supports taking that possibility seriously. Household members adapt, caregivers compensate for changing needs, and systems can build multiple safety defenses around vulnerable medication processes. The architecture therefore does not privilege exclusive ownership. Its narrower claim is that overlap is more likely to function as resilience when participants understand its purpose and when detection of a problem connects to somebody able to respond. Ambiguous duplication, by contrast, cannot be assumed to provide the same protection.

Several boundaries constrain the argument. Much of the relevant empirical evidence comes from older adults, dementia, cognitive impairment, caregiving, and transitions of care. The architecture should not be treated as validated across all ages, conditions, household structures, or health systems. Evidence also comes predominantly from qualitative, observational, mixed-methods, review, and implementation research rather than trials that manipulate responsibility allocation directly. The proposed distinctions therefore organize observation and generate testable comparisons; they do not establish causal effects of explicit allocation on medication harm.

Future research should test whether responsibility configurations predict outcomes beyond conventional measures such as adherence or caregiver presence. Useful comparisons include households in which several actors have medication access but only one has escalation authority; deliberate verification overlap versus unrecognized duplication; nominal versus verified handoffs; and anticipatory task transfer versus reactive takeover after an error. Longitudinal designs are particularly important because responsibility can move in both directions as illness, function, regimen complexity, and caregiver availability change.

The framework also invites a different interpretation of medication-support interventions. Reminder technologies, dispensing devices, caregiver education, professional review, and improved information may each strengthen a particular part of the work system. Their effects should not be evaluated as though they automatically resolve every responsibility dimension. A technology can assist performance while leaving interpretation unassigned; a pharmacist can provide information while follow-through remains uncertain; a family member can observe deterioration without having a clear escalation route. The relevant theoretical question is therefore not merely whether support is present, but whether the configuration leaves each necessary medication task connected to adequate authority, capability, monitoring, and response.

Conclusion

Safe medication use at home cannot be inferred from the number of people who can reach, discuss, or assist with medicines. Responsibility is better understood as a changing allocation across specific tasks and across distinct forms of involvement: access, performance, decision authority, monitoring, and escalation. Shared arrangements can be protective when roles are complementary and understood; they can also conceal gaps when participation is mistaken for ownership or when a handoff is never verified. The strongest defensible claim is therefore conditional: shared access can support safe medication management when task responsibilities, authority, verification, and routes for reallocation are sufficiently explicit for the household and the professionals supporting it.

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