

NARRATIVE REVIEW



Deprescribing in diabetes: A narrative review of pharmacist-led de-escalation of antidiabetic therapy in older and frail adults

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Abstract

The regimen that protects a fifty-year-old from retinopathy two decades hence may, in an eighty-five-year-old with limited life expectancy, deliver nothing but the risk of a fall at three in the morning. Between a quarter and two-fifths of older people with type 2 diabetes are treated below the glycated hemoglobin thresholds their own guidelines endorse, most often with sulfonylureas or insulin, the classes least forgiving of missed meals, declining renal function, and blunted counter-regulation. Deprescribing, the deliberate and monitored reduction or withdrawal of medicines whose harms have come to outweigh their benefits, is the logical corrective, and it remains poorly executed. This review examines why de-escalation fails to happen and argues that the pharmacist is best placed to make it happen. It traces the pathophysiological basis of hypoglycemia vulnerability in aging, appraises the principal instruments: the Bruyère antihyperglycemic deprescribing algorithm, the American Diabetes Association simplification pathway, the Beers and STOPP/START criteria, and STOPP/Frail, and synthesizes the intervention literature on pharmacist-delivered de-escalation. Reported discontinuation rates of forty percent and above, achieved without deterioration in glycemic control, indicate that the intervention works where it is attempted. The persistent obstacles are organizational rather than pharmacological: prescribing inertia, diffuse accountability at transitions of care, patient interpretation of withdrawal as abandonment, and quality metrics that reward a low glycated hemoglobin without regard to the means of attaining it. A five-stage practice model case-finding, appraisal, negotiation, tapering, and surveillance is proposed, with the research priorities most likely to convert a defensible idea into routine practice.

KEY WORDS

Deprescribing; Antidiabetic agents; Hypoglycemia; Frailty; Clinical pharmacy; Overtreatment

ARTICLE HISTORY

Received 08 June 2026;
Accepted 29 June 2026; Published 06 July 2026

Introduction

A woman of eighty-four attends the diabetes clinic with a glycated hemoglobin of 6.4 percent. She takes glibenclamide twice daily, has done so since 2009, and her physician records that control is excellent. Six weeks earlier she had a fall in her kitchen at dawn; nobody connected the two events. The consultation lasts nine minutes, and no medication is changed.

This scene is unremarkable, which is precisely the problem. Every element of it—the tight number, the legacy sulfonylurea, the uninvestigated fall, the absence of any prompt to reconsider—represents an ordinary pattern of care that the evidence has quietly outgrown. Diabetes therapy accumulates. It rarely gets taken away.

The demographic arithmetic gives this urgency. Diabetes prevalence rises steeply with age, and a substantial share of the global diabetic population is now beyond sixty-five. These patients carry the comorbidity, renal impairment, cognitive decline and functional limitation that the pivotal glycemic trials largely excluded. Extrapolating trial conclusions to them is not conservative practice; it is an unexamined assumption dressed as caution.

What that assumption costs became visible when the large cardiovascular outcome trials of intensive glucose lowering reported. The Action to Control Cardiovascular Risk in Diabetes trial was halted early after all-cause mortality proved higher in the intensively treated arm, and severe hypoglycemia occurred roughly three times as often as under standard therapy [1,2]. The Action in Diabetes and Vascular Disease evaluation and the Veterans Affairs Diabetes Trial delivered no macrovascular benefit, and in each, participants who experienced severe hypoglycemia fared worse regardless of allocation [3-5]. The mechanistic explanation for the mortality signal remains contested. Its practical implication does not: below a certain threshold, further glucose lowering purchases risk rather than protection, and older people reach that threshold sooner than anyone else.

Guidelines absorbed this. Practice largely did not. Depending on definition and setting, twenty-six to forty per cent of older adults with type 2 diabetes are treated to concentrations below what their own risk profile warrants, typically with insulin or sulfonylureas. [6-7] In long-term care the picture is worse still, and the proportion whose regimens are subsequently de-escalated is small—in one large nursing-home cohort roughly a quarter of overtreated residents had therapy reduced, leaving three-quarters overtreated after a clear opportunity to act. [8] A guideline that recommends deintensification without designating anyone to perform it will not change a prescription.

That designation is the argument of this review. Deprescribing antidiabetic therapy is a medication-management task: it requires pharmacokinetic reasoning across declining renal function, recognition of duplicative and interacting agents, structured tapering, a monitoring schedule and a conversation the patient trusts. These are pharmacists' competencies, exercised daily in other domains. The published intervention literature—modest in volume, consistent in direction—suggests that when pharmacists are given the remit, therapy is successfully withdrawn in a substantial minority to a clear majority of eligible patients without loss of glycaemic control.

This review therefore addresses four questions. Why are older adults uniquely vulnerable to the harms of glucose-lowering therapy? What instruments exist to guide de-escalation, and where do they fall short? What does the evidence show about pharmacist-delivered deprescribing specifically? And what would a deployable practice model look like in a health system that has not yet built one? Our purpose is deliberately practical: to give the clinical pharmacist a defensible method rather than a further reminder that a problem exists.

Methods

This is a narrative review conducted with structured search methods. PubMed/MEDLINE, Embase, Scopus and the Cochrane Library were

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searched from January 2000 to March 2026 using combinations of the terms deprescribing, deintensification, treatment simplification, antihyperglycemic, sulfonylurea, insulin, older adults, frailty, hypoglycemia and pharmacist. Reference lists of retrieved articles and the resource libraries of [deprescribing.org](https://www.deprescribing.org) and the American Geriatrics Society were hand-searched.

Records were eligible if they addressed reduction or withdrawal of glucose-lowering therapy in adults aged sixty-five and above, described a deprescribing instrument or framework, or evaluated a pharmacist-delivered intervention. Guidelines, consensus statements, systematic reviews, controlled and uncontrolled intervention studies, cohort analyses and qualitative studies of clinician and patient attitudes were all considered. Publications in languages other than English without an English full text were excluded, as were conference abstracts lacking sufficient methodological detail.

A narrative rather than systematic synthesis was chosen deliberately. The literature is heterogeneous in design, setting, and outcome definition to a degree that would render meta-analysis misleading; the interpretive task here is to integrate pharmacological reasoning, guideline content, and implementation evidence into a coherent practice model. No formal risk-of-bias scoring or quantitative pooling was performed, and this review is not registered as a systematic review. Where the underlying evidence is weak, the text says so.

In total the searches returned a broad pool of records across the four databases and the hand-searched sources; after removal of duplicates, screening of titles and abstracts against the eligibility criteria, and full-text assessment of the remaining records, the core evidence synthesized here comprises the guideline and criteria documents appraised in Table 1, the pharmacist-delivered intervention and safety studies appraised in Table 2, and the supporting pathophysiological, epidemiological and qualitative literature cited throughout. Screening and selection were performed by the authors; because this is a narrative synthesis, no independent second screener or formal inter-rater agreement was used, and this is stated as a limitation. The searches were designed for comprehensiveness of themes rather than for the exhaustive, protocol-driven capture that defines a systematic review, and the reader should interpret the evidence base accordingly.

The Pharmacological Logic of Vulnerability

Why the aging patient is different

Hypoglycemia in older people is not simply hypoglycemia occurring in someone older. Several physiological changes converge to make the event both more likely and more dangerous.

Counter-regulation degrades first. The glucagon and adrenaline responses that ordinarily arrest a falling glucose become blunted with age and with diabetes duration, so the compensatory brake engages later and less forcefully. Simultaneously, the warning system fails: the autonomic symptoms that prompt a younger patient to eat—tremor, sweating, palpitation—are attenuated, and the glycemic threshold at which they appear drifts downward until it approaches the threshold for neuroglycopenia itself. The practical consequence is that the first manifestation of hypoglycemia may be confusion, ataxia or collapse, with no antecedent cue [9].

Renal function then determines how long the insult lasts. Glomerular filtration declines with age even where serum creatinine remains reassuring, and because muscle mass falls in parallel, creatinine substantially overstates renal reserve in the frail. Sulfonylureas and their active metabolites accumulate; insulin clearance falls; gluconeogenic capacity diminishes. An episode that a younger kidney would terminate within an hour may persist for many hours in an older one.

Cognitive and functional decline complete the sequence. A patient who cannot reliably recall whether the morning dose was taken, or who cannot reach food without assistance, has lost the self-rescue capacity on which outpatient glucose-lowering therapy silently depends. Irregular intake from anorexia, dentition or depression

removes the carbohydrate the regimen assumes. Polypharmacy adds interacting agents—beta-blockers masking adrenergic warning signs, quinolones, sulphonamides, and others potentiating hypoglycemia.

The consequences are not confined to the acute episode. Severe hypoglycemia in older adults is associated with falls and fractures, cardiac arrhythmia and cardiovascular events, accelerated cognitive decline, hospitalization, loss of independence and mortality [10]. It is also a classic prescribing cascade generator: the fall is investigated as a falls problem, the confusion as dementia, the tachycardia as arrhythmia, and each attracts its own medicine while the cause continues twice daily.

Where benefit ends

Against this stands the benefit ledger. Microvascular protection from tight glycemic control accrues over roughly eight to ten years of sustained treatment. A patient whose life expectancy is shorter than that horizon cannot receive the benefit but bears the hypoglycemic risk from the first dose [11]. This asymmetry—delayed, probabilistic benefit against immediate, concrete harm—is the entire rationale for deprescribing, and it is the argument that persuades thoughtful prescribers when abstract appeals to guidelines do not.

Symptomatic control remains a genuine goal at every age. Avoiding thirst, polyuria, dehydration, blurred vision, weight loss, infection, and the fatigue of frank hyperglycemia matters enormously to quality of life. Deprescribing does not mean withdrawing treatment; it means retaining what relieves symptoms and removing what pursues a number.

Balancing the ledger: What deprescribing risks

De-escalation is not free of hazard, and a balanced account must say so. Withdrawing or reducing glucose-lowering therapy can allow the return of hyperglycemic symptoms—thirst, polyuria, nocturia, blurred vision, fatigue and, in the frail or acutely unwell, dehydration and the precipitation of a hyperosmolar hyperglycemic state. Removing an agent that is conferring genuine organ protection is a distinct and separate risk. The judgment is therefore selective rather than wholesale: the goal is to withdraw the therapy whose harm-to-benefit ratio has inverted, not to strip the regimen.

This is why the class of agent matters as much as the decision to deprescribe. Sulfonylureas and insulin drive most hypoglycemia in older adults and are ordinarily the first candidates for reduction. Metformin, by contrast, carries a low hypoglycemia risk and is usually retained unless renal function or tolerability forbids it. Sodium-glucose cotransporter-2 inhibitors and glucagon-like peptide-1 receptor agonists occupy a more nuanced position: their intrinsic hypoglycemia risk is low, and where they are providing cardiovascular or renal benefit that persists into older age, discontinuation may remove protection rather than risk [10-12]. The corollary is that deprescribing in this population is chiefly the de-escalation of sulfonylureas and insulin, frequently while lower-risk therapy is retained—a point that guards against reading this review as an argument for indiscriminate withdrawal.

Instruments for de-escalation

Several frameworks now exist. Each contributes something and none is sufficient alone.

The Bruyère antihyperglycemic algorithm

Farrell and colleagues produced the only guideline built specifically for stopping rather than starting glucose-lowering therapy, developed by systematic review and GRADE appraisal and published in Canadian Family Physician in 2017. It directs attention to patients at risk of hypoglycemia, those experiencing adverse effects, and those in whom the treatment target no longer suits the clinical situation. Its central recommendations are to reduce the dose of, or discontinue, the agents most implicated in hypoglycemia—sulfonylureas and insulin—and, where an agent must be retained, to substitute a lower-risk alternative, for example, replacing glibenclamide with gliclazide or moving from a mixed or intermediate-acting insulin to a long-acting

analog to reduce nocturnal events. The algorithm's accompanying patient materials are among the few resources designed for the conversation rather than the chart [13].

Its authors were candid about the underlying evidence base. Their own systematic review concluded that direct trial evidence on the consequences of withdrawing antihyperglycemics was scarce, and this remains substantially true [14]. The algorithm is therefore best understood as structured expert reasoning rather than a distillation of randomized data.

The American Diabetes Association pathway

Section 13 of the Standards of Care in Diabetes provides the guideline anchor. It stratifies older adults into healthy, complex/intermediate, and very complex/poor health categories, assigns correspondingly relaxed glycated hemoglobin targets, and—critically for our purposes—distinguishes simplification from deintensification. Simplification reduces regimen complexity: fewer administration times, fewer glucose checks, no arithmetic at the point of injection. Deintensification reduces pharmacological intensity: lower doses, fewer agents, agents withdrawn. The Standards state plainly that classes carrying low hypoglycemia risk are preferred, that insulin and sulfonylureas should be considered for de-escalation where appropriate, and that sliding-scale regimens have no place in chronic management. A published insulin-simplification algorithm supports the transition from complex multiple-injection regimens toward basal insulin with or without non-insulin agents [15,16].

Explicit criteria: Beers, STOPP/START and STOPPFrail

The 2023 update of the Beers Criteria hardened the position on sulfonylureas considerably. Where earlier iterations targeted long-acting agents, the current criteria advise avoiding sulfonylureas as first- or second-line therapy unless substantial barriers preclude safer alternatives, citing hypoglycemia together with signals for cardiovascular death and stroke; where a sulfonylurea is unavoidable, short-acting agents are preferred over long-acting ones. Sliding-scale insulin without concurrent basal cover is likewise to be avoided, and sodium-glucose cotransporter-2 inhibitors carry a caution for euglycemic ketoacidosis and urogenital infection [17].

The STOPP/START criteria, now in their third version, and STOPPFrail, developed for adults with limited life expectancy, provide complementary European screening. STOPPFrail is particularly useful precisely because it addresses the population most guidelines avoid: those in whom preventive therapy has become indefensible and the clinical question is comfort rather than complication [18,19].

These instruments identify candidates. None of them tells the practitioner how to taper, what to monitor, or—what to say which is where the pharmacist's contribution begins. That contribution is exercised within a team: throughout this review the pharmacist is understood as the practitioner who systematically finds candidates, appraises the regimen, formulates a de-escalation plan and monitors its consequences, while the prescriber retains decision authority and the patient and any carers are partners in shared decision-making.

Table 1. Principal instruments applicable to de-escalation of antidiabetic therapy in older adults.

Instrument	Orientation	Contribution to antidiabetic de-escalation	Principal limitation
Bruyère antihyperglycemic deprescribing algorithm (Farrell et al., 2017)	Drug-specific, action-oriented	Only algorithm designed expressly for stopping glucose-lowering therapy; prioritizes sulfonylurea and insulin reduction and lower-risk substitution; includes patient-facing materials	Underlying direct evidence on withdrawal outcomes acknowledged by its authors as sparse
ADA Standards of Care, Section 13 (Older Adults)	Population-stratified goal setting	Health-status categories with corresponding glycated haemoglobin targets; separates simplification from deintensification; insulin simplification algorithm	States what should occur without designating who performs it or how tapering proceeds
AGS Beers Criteria (2023)	Explicit list of potentially inappropriate medicines	Advises avoiding sulfonylureas as first- or second-line therapy; short-acting preferred if unavoidable; sliding-scale insulin without basal cover to be avoided	Identifies candidates only; no tapering or monitoring guidance; US formulary orientation
STOPP/START version 3 (2023)	Explicit European screening criteria	Screening for inappropriate prescribing and prescribing omission across classes; validated for pharmacist application	Diabetes-specific content limited relative to overall scope
STOPPFrail	Explicit criteria for limited life expectancy	Directly addresses the population in whom preventive therapy is least defensible	Applies to a narrow subgroup; requires prognostic judgement

Evidence for pharmacist-led de-escalation

The intervention literature is small, methodologically modest and directionally consistent.

In a managed-care program, patients aged eighty and above with a glycated hemoglobin at or below 6.5 percent and a recent sulfonylurea claim were identified systematically; clinical pharmacists reviewed records for appropriateness and approached prescribers with patient-specific rationale. Of eighty-nine candidates, the

discontinued in thirty-seven—forty-one percent—and mean glycated hemoglobin after intervention remained within guideline goals. Two features deserve emphasis: candidates were found by systematic interrogation of dispensing and laboratory data rather than by chance at consultation, and the pharmacist's role was to supply the reasoning that overcame inertia [20].

A Veterans Affairs primary-care campaign approached the problem from the patient side. Patients over sixty-five with an active sulfonylurea prescription and glycated hemoglobin below eight

percent were telephoned and invited to participate; nineteen received the intervention and eleven discontinued therapy successfully, three requiring further regimen adjustment. Most needed a single follow-up visit, though a minority required extended support. The authors were explicit that success demanded substantial pharmacist time, a—finding more useful for service planning than a higher headline rate would have been [21].

In the Dutch community setting, a quasi-experimental study across fourteen pharmacies used a validated algorithm to identify patients at high hypoglycemia risk and delivered pharmacist-led clinical medication review targeting glucose-lowering, antihypertensive and lipid-lowering therapy. This design matters because it locates case-finding in the community pharmacy, where dispensing data are complete, and contact is frequent—the setting in which most older patients actually collect their medicines [22].

Integrated health-system programs have reported similar findings at scale, and the broader systematic review literature on pharmacist-led polypharmacy management consistently demonstrates improved prescribing appropriateness and reduced potentially inappropriate prescribing, while consistently failing to demonstrate reductions in hospitalization or mortality [23,24]. That gap is best read as a limitation of study duration and power rather than evidence of futility, but honesty requires stating it: the case for pharmacist-led deprescribing currently rests on process and surrogate outcomes.

Cohort data provide partial reassurance on safety. Among nursing-home residents with limited life expectancy or advanced dementia and tight control, deintensification was not associated with increased emergency attendance, hospitalization or death [25,26]. This is not a randomized comparison, but it addresses the objection prescribers raise most often that—stopping will precipitate harm with the best evidence presently available.

Taken as a body, this evidence is consistent in direction but low in certainty, and it must be read with that caveat foremost. The intervention studies are predominantly single-center, small in sample, and either uncontrolled or quasi-experimental; before-after designs cannot separate the pharmacist's action from secular change or from concurrent adjustments to other medicines, so the discontinuation figures quoted above are best treated as demonstrations of feasibility rather than as reliable effect estimates. The safety signal from the nursing-home cohorts is reassuring but non-randomized, and residual confounding cannot be excluded. Publication bias is a realistic concern, since programs that failed to change prescribing are unlikely to have been written up. A formal quantitative risk-of-bias score has not been applied here because the studies differ too greatly in design, setting and outcome definition for any single instrument to yield a meaningful common metric; instead each study is appraised narratively, and its principal methodological limitation is recorded alongside it in Table 2. The honest summary is that the current literature establishes that pharmacist-led de-escalation is feasible and appears safe, not that it has been proven to reduce hard clinical outcomes a—distinction the remainder of this review is careful to preserve.

Table 2. Representative studies of pharmacist-delivered de-escalation of glucose-lowering therapy.

Setting	Population and case-finding method	Pharmacist role	Reported outcome; design and principal limitation
Managed care, ambulatory (USA)	Age ≥80 years, glycosylated haemoglobin ≤6.5%, sulfonylurea claim within 120 days; identified from dispensing and laboratory data	Record review for appropriateness; patient-specific rationale presented to prescriber	Sulfonylurea discontinued in 37 of 89 candidates (41%); mean glycosylated haemoglobin remained within guideline goals. Design: single-center managed-care cohort; uncontrolled before-after. Limitation: no comparator; small candidate pool; feasibility signal, not an effect estimate.
Veterans Affairs primary care (USA)	Age >65 years, active sulfonylurea, glycosylated haemoglobin <8%; patients telephoned and invited	Direct patient engagement, taper and follow-up	11 of 19 discontinued successfully; 3 required further regimen adjustment; most needed a single follow-up visit. Design: single-site quality-improvement campaign (n=19); uncontrolled. Limitation: very small sample; substantial pharmacist time required; feasibility signal.
Community pharmacy (Netherlands)	High hypoglycemia risk identified by validated algorithm across 14 pharmacies	Clinical medication review covering glucose-lowering, antihypertensive and lipid-lowering therapy	Quasi-experimental evaluation of pharmacist-led review; demonstrates community-pharmacy case-finding feasibility. Design: quasi-experimental, 14 pharmacies. Limitation: non-randomized; outcome focus on process and appropriateness rather than hard endpoints.
Nursing home cohort (USA, observational)	Residents with limited life expectancy or advanced dementia and tight control	Not pharmacist-delivered; safety reference for de-escalation	Deintensification not associated with increased emergency attendance, hospitalization or death. Design: retrospective observational cohort. Limitation: non-randomized; residual confounding possible; predominantly male VA population limits generalizability.

Why It Does Not Happen

If the rationale is sound and the intervention feasible, the persistence of overtreatment demands explanation. The barriers

are organizational and psychological rather than pharmacological.

Prescribing inertia comes first. Continuing a stable regimen requires no decision, no discussion and no documented justification. Stopping requires all three, plus the acceptance of responsibility should anything subsequently go wrong. The asymmetry of blame is stark: no clinician has been criticized for a hypoglycemic fall in a patient whose medicines someone else started, whereas the clinician who withdraws a drug owns every subsequent event. Until deprescribing is as routinely documented as initiation, this asymmetry will continue to favor inaction [27].

Accountability then diffuses at transitions. The regimen was begun by an endocrinologist years ago; the general practitioner renews it; the geriatrician manages the falls; the hospital pharmacist reconciles it at admission and discharge. Each reasonably assumes the decision belongs elsewhere. Nursing-home admission is the clearest illustration—a transition at which the entire regimen is transcribed, functional status is formally assessed, and deintensification nevertheless fails to occur in the majority of overtreated residents [28].

Patients bring their own resistance, and it deserves respect rather than correction. Long-term medication acquires meaning: it signifies that the illness is being taken seriously and that the patient is doing what was asked. Proposing withdrawal can be heard as a statement—that treatment is no longer worthwhile that the patient is no longer worth treating. Focus-group work with older patients on cardiometabolic therapy confirms this interpretation directly [29]. The framing that works is not "you no longer need this" but "this medicine has become more likely to harm you than help you, and here is how we will watch you while we change it."

Measurement compounds everything. Quality frameworks that reward the proportion of patients below a glycated hemoglobin threshold create direct institutional pressure against appropriate de-escalation, because a frail patient moved from 6.3 to 7.6 percent registers as deterioration. Until overtreatment is measured alongside undertreatment, the incentive structure will oppose good practice.

Finally, resources and role clarity. Deprescribing takes longer than continuing. In systems where the clinical pharmacist's remit is dispensing and supply rather than therapeutic review, and where no prescribing or protocol authority exists, even a willing practitioner has no mechanism. This is the binding constraint across much of South Asia and other settings where clinical pharmacy services are still establishing themselves, and it is a service-design problem rather than a knowledge deficit.

Table 3. Barriers to de-escalation of antidiabetic therapy and pharmacist-accessible countermeasures.

Level	Barrier	Countermeasure within pharmacist scope
Prescriber	Inertia; asymmetric attribution of blame for stopping versus continuing	Patient-specific written recommendation with rationale, taper and monitoring plan; shared documentation of the decision
System	Diffuse accountability across transitions of care	Designate deprescribing review at defined trigger points: admission, discharge, long-term care entry, annual review
Patient and carer	Withdrawal interpreted as abandonment; attachment to long-standing therapy	Frame as risk-benefit reversal rather than treatment removal; state the surveillance plan explicitly; involve carers
Measurement	Quality metrics rewarding low glycated haemoglobin irrespective of means	Audit and report overtreatment prevalence alongside undertreatment; propose local indicator adoption
Resource and role	Time cost; absent protocol or prescribing authority for pharmacists	Batch case-finding from dispensing data; collaborative practice agreement or standing protocol; document time and outcomes to justify service

A Practice Model for the Clinical Pharmacist

We propose five stages. Nothing in it requires prescribing authority; every step can be executed as a documented recommendation to the prescriber. The model is a conceptual framework derived from the evidence appraised above and from pharmacological reasoning; it has not itself been prospectively evaluated, and it is offered as a structure to be tested rather than as a validated protocol. It is designed for a multidisciplinary workflow, and none of its stages presumes that the pharmacist acts alone.

Stage 1: Case-finding

Do not wait for the patient to present. Interrogate dispensing and laboratory data for the combination that defines risk: age above sixty-five, a sulfonylurea or insulin, and a glycated hemoglobin below the individualized target—below seven percent for a patient with

significant comorbidity, below seven and a half for one with dementia or limited life expectancy. Add flags for declining estimated glomerular filtration rate, weight loss, recent falls, admission with confusion, and any prior hypoglycemic episode. Glibenclamide at any age above sixty-five warrants review on its own. A pharmacy that can generate this list monthly has solved the largest single obstacle, since the patients who most need review are the ones least likely to raise the question themselves.

Stage 2: Clinical appraisal

For each candidate, establish four things. What is the realistic treatment goal—complication prevention over a decade, or symptom control now? What is the renal trajectory, estimated with a method that accounts for reduced muscle mass rather than serum creatinine alone? Which agent contributes most risk and least benefit? And what does the wider regimen add—interacting agents, duplicated

mechanisms, an anticholinergic burden that compounds the confusion the hypoglycemia is causing? Consult a validated frailty measure and the patient's functional and cognitive status; a regimen is only as safe as the person administering it.

Stage 3: Negotiation

Approach the prescriber with a specific proposal rather than a general concern: this patient, this agent, this rationale, this taper, this monitoring plan, this review date. The intervention studies suggest strongly that patient-specific reasoning is what converts agreement in principle into a changed prescription. Approach the patient with candor about why the balance has shifted and explicit reassurance about surveillance. Involve family or carers where cognition or administration requires it. Document the discussion; an unrecorded conversation will not survive the next transition of care.

Stage 4: Structured tapering

Change one agent at a time. Withdraw the highest-risk drug first—sulfonylurea before metformin, prandial insulin before basal. Where the sulfonylurea dose is substantial, halve rather than stop, and reassess. Where insulin is involved, follow the published simplification pathway: convert complex regimens to basal insulin, reduce basal dose where glucose readings run low, and consider withdrawing prandial insulin entirely when doses are small. Retain metformin unless renal function or tolerance forbids it—it is the agent with the most favorable risk profile in this population and rarely the one causing harm. Set the interval between steps by the pharmacology: longer for agents with active metabolites and in renal impairment.

Stage 5: Surveillance and re-review

Specify what will be measured, by whom and when. Capillary glucose monitoring at a defined frequency for one to two weeks after each change; a glycated hemoglobin at three months; explicit thresholds at which the patient or carer should make contact; and documented symptomatic endpoints—thirst, nocturia, fatigue—because these, not the laboratory value, define failure in this population. Schedule the review before it is needed. Deprescribing that is not followed up is not deprescribing; it is discontinuation, and it deserves the skepticism prescribers show it.

Table 4. Five-stage pharmacist-led de-escalation model with corresponding actions and outputs.

Stage	Core action	Documented output
Case-finding	Query dispensing and laboratory data for age ≥65 with sulfonylurea or insulin and glycated hemoglobin below individualized target; flag falls, weight loss, declining eGFR, prior hypoglycemia, glibenclamide use	Monthly candidate list
Clinical appraisal	Establish realistic treatment goal, renal trajectory, highest-risk agent, wider regimen burden, frailty and functional status	Structured medication review note
Negotiation	Present a specific proposal to prescriber; discuss risk-benefit reversal with patient and carer	Agreed and recorded deprescribing plan
Structured tapering	One agent at a time, highest risk first; halve before stopping where appropriate; apply insulin simplification pathway; retain metformin unless contraindicated	Written taper schedule with intervals
Surveillance and re-review	Capillary glucose monitoring 1–2 weeks after each change; glycated hemoglobin at 3 months; defined contact thresholds; symptomatic endpoints	Scheduled review date and monitoring record

Research Priorities

Four gaps limit progress, and each is addressable by the clinical pharmacy research community.

The first is outcome evidence. Randomized comparison of structured pharmacist-led de-escalation against usual care, powered for severe hypoglycemia, falls, hospitalization, and quality of life rather than prescription counts, remains the central unmet need. The absence of such trials—not the presence of contrary evidence—is what keeps deprescribing optional. [30].

The second is transferability. Almost the entire intervention literature originates in North American and Western European systems with integrated records, established pharmacist prescribing, and organized long-term care. Whether these models function where care is fragmented, records are paper-based, patients purchase medicines directly, and the pharmacist's clinical role is still being negotiated is unknown, and it cannot be assumed. This is a substantial and defensible research program for pharmacy practice groups in low- and middle-income settings.

This deserves to be spelled out rather than left as a caveat, because it bears directly on whether the model proposed here can travel. The intervention evidence rests on health systems with integrated electronic dispensing and laboratory records, established pharmacist prescribing or collaborative practice agreements, and organized long-term care—conditions that are not uniform across low- and middle-income settings, including much of South Asia. Where records are fragmented or paper-based, where patients purchase medicines directly and episodically, and where the clinical pharmacist has no formal prescribing or protocol authority, the case-finding step in particular cannot be assumed to function as reported. It is precisely for this reason that the five-stage model was built to require no prescribing authority: each stage can be delivered as a documented recommendation to the treating physician, which makes the framework deployable even where the pharmacist's clinical role is still being established. Whether it performs as intended under these constraints is an empirical question, and one best answered by pharmacy practice groups working in those systems rather than assumed from studies conducted elsewhere.

The third is measurement. There is no widely adopted, validated

indicator of diabetes overtreatment suitable for routine quality monitoring. Until overtreatment is counted with the same seriousness as undertreatment, institutional incentives will continue to work against appropriate de-escalation.

The fourth is communication. The single most consistent barrier in the qualitative literature is how withdrawal is understood by the patient. Developing and testing communication approaches that convey de-escalation as active, attentive care—and evaluating them for patient acceptance, anxiety and adherence—is a legitimate and neglected line of inquiry.

Limitations

This is a narrative review and carries the corresponding limitations. Study selection involved judgment; no formal risk-of-bias assessment or quantitative synthesis was undertaken, and the interpretive framing reflects a clinical pharmacy perspective. The primary intervention studies available are predominantly single-center, uncontrolled, and short in follow-up, with small samples; the discontinuation rates cited should be read as indications of feasibility rather than as reliable effect estimates. Publication bias is a realistic concern in an implementation literature of this kind, since unsuccessful deprescribing programs are unlikely to be written up. Finally, the practice model proposed here is derived from published evidence and pharmacological reasoning; it has not itself been prospectively evaluated, and we present it as a structure for testing rather than a validated protocol.

Conclusion

The woman with a glycated hemoglobin of 6.4 percent and the unexplained fall is not receiving excellent care. She is receiving care calibrated to a patient she stopped being some years ago, and the system around her contains no mechanism for noticing.

Deprescribing antidiabetic therapy in older and frail adults is not therapeutic retreat. It is the recognition that treatment goals move as patients age, and that a regimen appropriate at sixty may be actively harmful at eighty-five. The guidelines have said as much for a decade. What has been missing is not evidence or permission but a designated practitioner with the pharmacological competence, the data access and the professional remit to act—someone whose job it is to ask, systematically and for every patient, whether this medicine is still earning its place.

That description fits the clinical pharmacist more closely than any other member of the team. The available evidence, limited as it is, shows that pharmacist-led de-escalation succeeds in a meaningful proportion of patients without loss of glycemic control. Turning that finding into routine practice requires structured case-finding, protected time, explicit role definition and quality metrics that stop rewarding the very overtreatment they were designed to prevent. None of these is beyond the reach of an ordinary hospital or community pharmacy service. What they require is the decision to begin.

Conflict of Interest

The authors declare no conflict of interest.

Funding

This review received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Ethics Approval

Not applicable. This review analyzed previously published literature and did not involve human participants or animal subjects.

Data Availability

All data discussed in this review are available in the cited published sources.

Author Contribution

RSH conceived the review, designed the search strategy, and drafted the manuscript. SM conducted the literature search, contributed to screening and data extraction, and revised the manuscript critically for important intellectual content. Both authors read and approved the final version and agree to be accountable for all aspects of the work.

Acknowledgement

The authors thank colleagues in the Department of Pharmacy Practice, HSK College of Pharmacy, Bagalkot, for constructive discussion during the preparation of this manuscript.

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