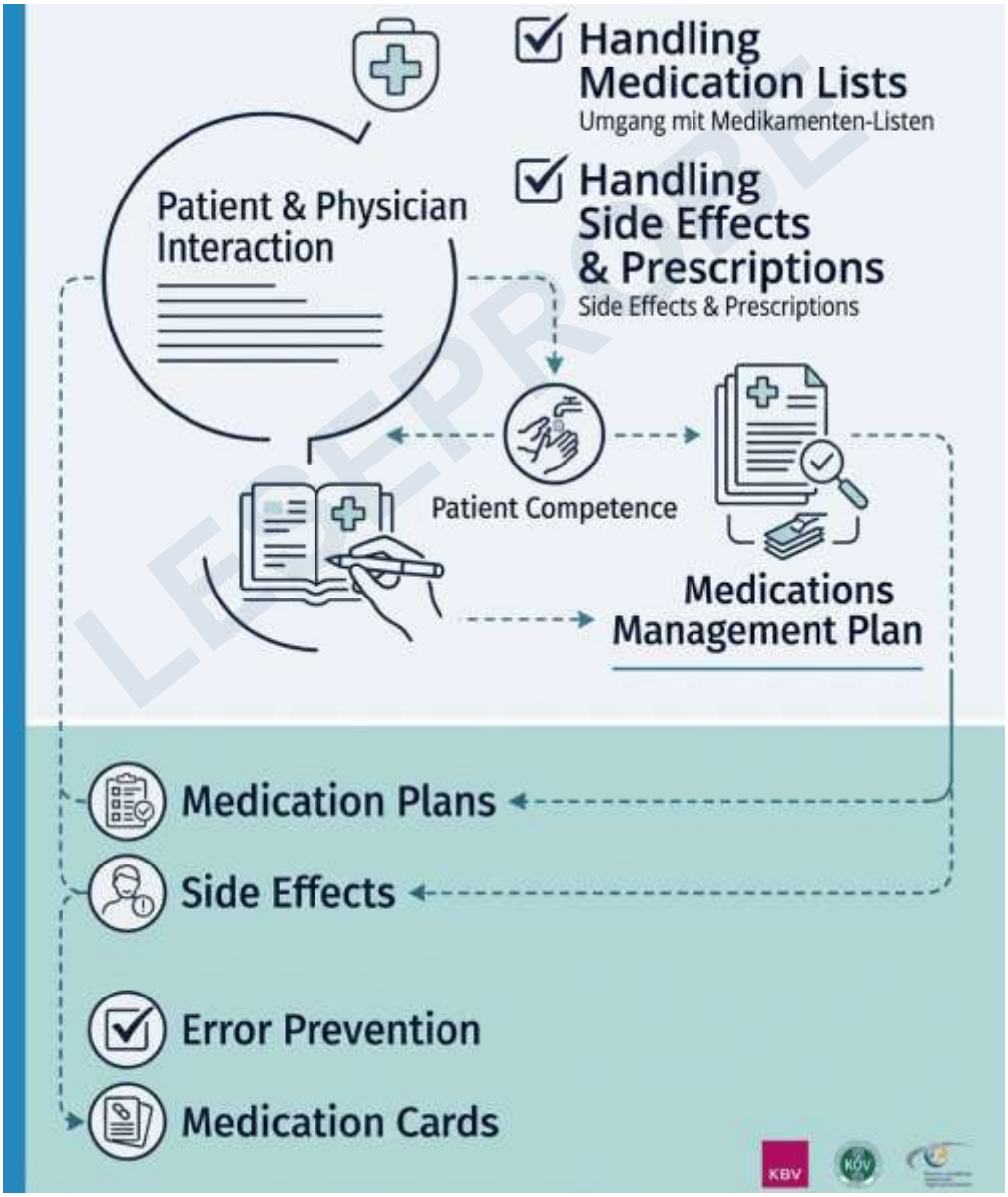
ClinicalOS – The clinical operating system for general practice

Volume 6

Multimorbidity & Rational Pharmacotherapy



Review consultations · Polypharmacy · Deprescribing

About this sample

Volume 6 · Multimorbidity and Rational Pharmacotherapy

This curated sample has 14 pages from a 90-page volume (approximately 15%, including the notice and end page). The chapters listed below are included in full. Original page numbers are retained; gaps are intentional. This overview and the PDF bookmarks cover the included sections. Cross-references may refer to the full volume.

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Note on content, use and liability

The ClinicalOS Manual series was created with the aim of providing practising GPs, junior doctors specialising in general practice, healthcare assistants (HCA) and medical students with a structured, practice-oriented learning and reference resource. The content has been developed on the basis of current medical literature, guideline-based sources and practical experience in general practice.

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FOREWORD

Dear colleagues,

Hardly a consultation goes by without encountering them: the patient with five diagnoses and nine long-term medications; the patient who, after their third visit to a specialist, can no longer remember which medication was intended for what; the relative who asks whether ‘we couldn’t just leave something out’. Multimorbidity is not the exception in GP practice — it is the norm.

ClinicalOS — the clinical operating system for general practice — now comprises eleven volumes, which together map out the decision-making, diagnostic and care logic of general practice: from Decision-Making Architecture (Volume 1) through rational diagnostics (Volume 2), Practice Pearls (Volume 3), Patient Management (Volume 4) and digital tools (Volume 5) to Practice Architecture & Team Processes (Volume 7), Professional Patient Communication (Volume 8), GP-specific Cross-Cutting Topics (Volume 9), the Clinical Keyword Compendium (Volume 10) and Case Training for Error Prevention (Volume 11). Volume 6 — Multimorbidity & Rational Pharmacotherapy — forms the link between diagnosis and therapeutic decision-making: it addresses the question of how GP care can remain safe, appropriate and patient-centred in the presence of multiple co-existing conditions.

The central thesis of this volume is that the review consultation is not an add-on to the routine visit, but an independent, plannable format — with its own indications, its own structure and its own time requirements. Polypharmacy is not, in itself, an error, but is often the logical result of guideline-compliant individual therapies that must be reassessed in their combined effect. And deprescribing is not a sign of resignation regarding treatment, but an active therapeutic decision — one that requires just as much justification as any new prescription.

This book is aimed at GPs who want to know: when is a structured medication review worthwhile? Which tools (STOPP/START, FORTA, Beers’ criteria) are genuinely helpful in day-to-day practice, and where do they reach their limits? How do I conduct a discussion about discontinuing medication without the patient feeling fobbed off? The review cards at the end of the volume translate these questions into tools that can be used immediately during consultations.

Götz Huber

CHAPTER 2 | The review consultation as a GP-related format

Part I — Basic Structure

→ Further reading: The medication plan as a diagnostic tool (Chapter 3) · Conducting consultations (Chapter 17) · Monitoring (Chapter 18)

Review question

What distinguishes a review consultation from a routine check-up — and how does it become a standard format for GP consultations?

Micro-case

Case study

An 82-year-old patient comes in for a check-up every three months. Blood pressure, HbA1c, creatinine — all documented. Nevertheless: he fell last night, has been taking a sleeping pill for six months that he no longer actually needs, and asks whether he could 'take a bit less'. The routine check-up fails to pick up on any of this because it isn't looking for it. A review consultation would.

Why this chapter is important

The medication review is the key GP-related format for managing multimorbidity and polypharmacy. It differs from the routine check-up in its explicit focus: not 'Are the readings OK?', but 'Does the overall management plan still suit this patient — today?'.

International healthcare studies and deprescribing reviews consistently show that structured medication reviews in primary care are effective when they are event-driven, patient-centred and embedded in everyday practice — not as an annual formality, but as a clinical response to change.

Typical GP scenarios

- A symptom (a fall, tiredness, confusion) could be medication-related.
- A hospital stay has altered the medication plan.
- The patient reports that they are no longer taking their medication or feel overwhelmed.
- The last comprehensive medication review took place more than 12 months ago.
- A decline in functional ability or a change in care level alters the risk-benefit balance.
- Several specialists have issued new prescriptions within a short period of time.

ClinicalOS mechanism: Structure of the review consultation

Step	Content and key question
1. Clarify the reason	What prompted this review today? Symptom, transition, timing, patient's request?
2. Ask about the objectives	What is particularly important to the patient right now? What do they want to avoid?
3. Review the medication plan	Treat it as a diagnostic document (→ Chapter 3): cascades, interactions, dosage pitfalls, historical accumulation
4. Check for red flags	Is immediate action required? Address safety-related issues first
5. Prioritise	Identify high-risk medicines and combinations (→ Chapter 6, review cards)
6. STOP and START	What can be reduced, paused or discontinued? What is missing despite a clear indication?
7. What remains?	Explicitly identify protective therapies — what must not be discontinued prematurely
8. Decision	Together with the patient: shared decision-making — documented, justified
9. Monitoring	What is monitored, when, by whom — with a clear trigger for feedback
10. Safety net	What happens if the situation deteriorates? How does the patient get to us?

What remains? — Do not discontinue treatment prematurely:

- Review consultations are not a tool for discontinuing treatment — they may also reveal that protective therapies are missing (START) or that dosages need to be adjusted.
- Take patients' fears about stopping medication seriously. Do not make any changes without their consent and a relapse plan.

Discussion points

Conversation prompt

"I'd like to go through your medication with you today — not to take anything away, but to check whether everything is still suitable for your situation and whether anything is missing."

Documentation module

Documentation

Review consultation [date]. Reason: [symptom/transition/time interval]. Patient goals: [formulated]. Medication plan reviewed: [N preparations]. Changes: [list]. Remaining: [list]. Monitoring agreed: [what/when]. Safety net: [condition for follow-up]. Next review scheduled: [date].

Common misconception

Review consultations take a lot of time and are not feasible in day-to-day practice. In fact, the implementation literature shows that focused, event-driven reviews can be clinically valuable even in 10–15 minutes — provided the structure and prioritisation are clear in advance.

Practice Pearls

- Not every review is a full review. An event-driven, focused review (e.g. following a fall: sedative and hypotensive medicines) is often more effective than an unfocused comprehensive review.
- Healthcare assistants (HCA), nursing staff and the pharmacy can assist with review preparation (updating the medication list, using the 'brown-bag' approach).
- 'When was this last reviewed?' is one of the most important review questions — and is often not asked.
- A review without a monitoring agreement is incomplete.

⚠ Failure mode

The review takes place, but no decision is documented and no monitoring is agreed. Result: a sham review with no clinical consequences.

Evidence note: Structured medication reviews in primary care: effects on reducing medication-related errors (PIM) are well established; effects on hard endpoints (hospitalisation, mortality) are heterogeneous — process-oriented evidence is stronger than outcome-oriented evidence. Confidence: moderate to high for process quality.

→ Chapter 3: The medication plan as a diagnostic tool
→ *Chapter 17: Communication and Shared Decision-Making in Deprescribing*

CHAPTER 3 | The medication plan as a diagnostic tool

Interpreting the medication plan clinically — not just counting

Review Card 1 relates to this chapter · Cross-references: Chapter 5 (Deprescribing), Chapter 6 (High-risk Medicines), Chapter 16 (Discharge)

Review question

What does the medication plan reveal about diagnoses, risks, gaps in care, treatment burden and cognitive biases when it is read not merely as a list but as a diagnostic document?

Micro-case

A 77-year-old patient presents with fatigue, constipation and two near-falls. The medication plan lists a proton pump inhibitor, an opioid, a laxative, a sleeping pill, an antidepressant, an antihypertensive, a diuretic and, in addition, an OTC NSAID that is not documented in the practice records. The review question is not merely: "Is everything prescribed correctly?", but rather: "What disease and side-effect logic, what prescription cascades and what hidden risks are embedded in this plan?"

Why this chapter is important

A medication plan is more than just an administrative list. It reflects a patient's clinical history: previous decisions, consultations with specialists, escalations, adverse reactions, medications carried over from discharge summaries, on-demand prescriptions and, often, unresolved conflicting objectives.

Particularly in cases of multimorbidity, the plan reveals whether care still follows a coherent rationale or whether it has become a haphazard collection of treatments that has evolved over time, in which benefits, risks and burden no longer align properly.

'Brown-bag' approaches and structured reviews are valuable because they not only cross-check prescriptions but also highlight medicines actually taken, over-the-counter preparations, duplications, dosing errors and gaps in knowledge.

The following applies to Volume 6: the medication plan is not an appendix to the history-taking, but part of the diagnostic process.

Typical GP scenarios

- A patient brings a formally correct plan, but is also taking on-demand medication, old leftover supplies or over-the-counter preparations.
- Following discharge from hospital, the plan, the packaging and actual usage do not match.
- A symptom such as dizziness, tiredness or nausea is more likely to be medication-related than disease-related.
- The number of medicines is not extremely high, but the combination nevertheless poses a high functional risk.

ClinicalOS methodology — Interpreting the plan clinically

The medication plan should be used to actively assess the indication, benefits, harms, ADRs, interactions, duplicate prescriptions, burden and potential under-treatment. To do this, it is not just a matter of counting preparations, but of analysing patterns:

- Which medicines suggest an outdated escalation pattern?
- Which combinations suggest a prescribing cascade?
- Which medicines are missing despite the risk profile?
- Which medicines might explain the current problem better than a new diagnosis?

Practical workflow

1	**Check for up-to-date information**	Compare the treatment plan, packaging, over-the-counter medicines, as-needed medicines and actual intake.
2	**Review each item clinically**	What is the medication still being taken for today? Who started the treatment? What would be the harm if it were stopped abruptly?
3	**Identify patterns**	Sedation, anticholinergic burden, blood pressure reduction, risk of hypoglycaemia, risk of dehydration, duplicate prescriptions, cascades, interactions.
4	**Linking to everyday life**	Is the patient even able to manage the plan in practical terms? Do the dosage frequency, the patient's understanding and the treatment goals fit in with their daily life?
5	**Not just STOP, but also START**	Are there any parts of the treatment that are missing, on hold or inadequately protected?
6	**Prioritise changes**	First, address risks of high clinical relevance; then focus on optimisation.

What can be reduced, paused or discontinued?

The medication plan particularly often highlights four groups of candidates for review:

- Old prescriptions with no clearly identifiable current indication.
- Medicines from prescription cascades — medicines used to treat the side effects of other medicines.
- Duplicate prescriptions or parallel preparations with the same mechanism of action.
- Medicines that contribute significantly to burden or risk: sedative, anticholinergic, hypotensive or dehydrating combinations.

What remains? — Do not discontinue treatment prematurely:

- Medicines that are effective in managing symptoms and safeguard quality of life (e.g. pain relief, antiemetics)
- Medicines with a known risk of withdrawal or rebound (e.g. antidepressants, antiepileptics, beta-blockers)
- Cardiovascular protective medication with a clearly established long-term indication
- Medicines that have been classified as essential following systematic review — any change requires monitoring

Monitoring

Once a medication plan has been reviewed from a diagnostic perspective and changes have been made as a result, the monitoring process must follow a clear rationale: what are the clinical expectations, which parameters should be monitored, when is follow-up appropriate, and how can adverse developments be identified?

The higher the level of frailty, functional instability or cognitive impairment, the less sufficient an abstract instruction such as 'monitor as required' becomes.

Quote

“For me, the medication plan today is not just a list of your tablets, but a diagnostic document. It shows us what is protective, what is a burden, what might be carried over from past situations, and where we need to look more closely.”

Documentation component

The medication plan is analysed as a diagnostic tool. Actual intake, including over-the-counter (OTC) and as-needed medication, is recorded. Checks are carried out for current indications, duplicate prescriptions, interactions, prescription cascades, burden and missing treatment. Prioritised review points, as well as monitoring and safety net measures, are agreed upon.

Practice Pearls

- Don’t just count medicines — read them.
- OTC and as-needed medication are often crucial for diagnosis.
- The care plan often reveals more about the patient’s care history than the list of problems.
- A good review appointment often starts with medication packs on the table, not with the cursor in the e-prescription module.

⚠ Failure Mode

This chapter fails if the medication plan is checked only for completeness, but not for its clinical history, its risks and its implicit errors in reasoning.

safety net

Patients, relatives or carers need to know which changes may be normal following an adjustment and which require earlier feedback. Particularly in the case of medication changes following brown-bag or review appointments, it must be clear which version of the plan applies.

Evidence note

The strength of this chapter lies more in its care logic and practical plausibility than in randomised outcome data. However, the benefits of structured ‘brown-bag’ approaches for identifying problems and knowledge gaps are readily apparent. Confidence is high regarding GP-related logic, and moderate regarding direct inferences about outcomes.

Part II — The logic of deprescribing

CHAPTER 5 | Deprescribing — active therapy, not omission

Targeted reduction, suspension, discontinuation — with monitoring and a Plan B

Core methodological chapter · Cross-references: Ch. 6 (high risk), Ch. 7 (PIM), Ch. 8 (START) · Basis for all review cards

Review question

When is reducing, pausing or discontinuing a medication good medicine – and why is this not therapeutic passivity?

Micro-case

An 81-year-old patient presents with fatigue, dizziness and reduced exercise tolerance. On examination, no single dramatic problem is apparent; rather, there is a medication regimen characterised by a gradual increase in sedation, hypotension and the overall treatment burden. The key question is not: 'Which new medication is missing?', but: 'Which current treatment now poses more risk or burden than benefit, and how can this be safely adjusted?'

Why this chapter is important

Deprescribing is not a side project, nor is it merely a matter of correcting prescribing errors on the sidelines. Current guidelines and reviews describe it as an integral part of the prescribing continuum: every ongoing medication must be reviewed repeatedly over time for its benefits, harms, alignment with treatment goals and monitoring requirements.

This is particularly crucial for older people with polypharmacy, as the benefits and harms of medicines change in line with function, prognosis, treatment burden, frailty and patient priorities.

Deprescribing therefore involves a planned, person-centred decision to reduce, pause, taper off or discontinue a medication when the balance is no longer right. This corresponds exactly to the book's guiding principle: not to treat less at any cost, but to treat in a more targeted and safer manner.

Typical GP-related scenarios

- The original treatment goal no longer applies or has lost priority.
- The medication is formally justifiable but no longer fits the patient's functional status, frailty or everyday life.
- Adverse effects, interactions or the burden of treatment outweigh the net benefit.
- A preventative approach continues even though the time to benefit, prognosis or patient's goal have changed.

ClinicalOS mechanism — steps in deprescribing

1	**Identify the trigger**	What is the current trigger for the review? A symptom, a fall, a frailty signal, a change in medication?
2	**Check for red flags**	Are there any risks requiring immediate intervention (fall, delirium, bleeding, hypoglycaemia)?
3	**Clarify the goal and treatment burden**	What is the current treatment goal? How demanding is the overall treatment plan?
4	**Identify candidates**	Which medicines have the most unfavourable benefit-risk ratio in the current context?
5	**Actively protect 'what remains'**	Which medicines must not be reduced — due to function, rebound or safety?

1	**Identify the trigger**	What is the current trigger for the review? A symptom, a fall, a frailty signal, a change in medication?
6	**Only with monitoring and a safety net**	Make changes gradually, with defined monitoring, warning signs and a contingency plan.

Typical candidates for deprescribing

- Medicines with no current indication (continued from previous prescriptions).
- Sedatives that do more harm than good.
- Medicines resulting from a cascade of prescriptions.
- Duplicate prescriptions or those continued on a historical basis.
- Long-term treatments with questionable current net benefit (prognosis, time-to-benefit).

What remains? — Do not discontinue treatment prematurely:

- Medicines that are highly effective in relieving symptoms and that safeguard quality of life or function
- Medicines with a risk of rebound or withdrawal — never stop them abruptly
- Cardiovascular protective therapy with a valid, documented indication
- Any potential change must be considered alongside the question: What would be the harm if the dose were reduced too quickly?

Monitoring

Current guidelines explicitly identify monitoring as a core component of the deprescribing process. This includes anticipated changes, timing of follow-up, warning signs and ongoing assessment of benefits. A sound decision to discontinue medication remains incomplete without follow-up.

Sample dialogue

"We don't simply stop a treatment. Together, we assess which treatment is currently helping you, which is causing you more harm, and which changes we can safely trial – with follow-up and a Plan B."

Documentation module

Deprescribing review carried out. Current indication, benefit-risk balance, patient's goals, treatment burden and risks assessed. Decision: continue / reduce / pause / discontinue. Monitoring, warning signs, relapse plan and follow-up discussed.

Practice Pearls

- Deprescribing is part of good prescribing practice — not a last resort.
- Shared decision-making significantly increases the feasibility of changes.
- It is not the number of medicines alone that matters, but how well they are currently suited to the patient.
- Without monitoring, deprescribing is not a properly completed process.

⚠ Failure Mode

This chapter fails if deprescribing is portrayed as a deficient act of 'omission' rather than as an active, controlled therapeutic decision.

Evidence note

The principles, process logic and the role of shared decision-making and monitoring are well supported. The evidence for consistent, robust outcome effects across all deprescribing interventions is less robust. Confidence: high for the overall concept.

CHAPTER 6 | High-risk medicines first

Prioritising rather than working through the list alphabetically

Introduction to Chapters 9–15 · Cross-references: Chapter 5 (Deprescribing), Review Cards 1–9

Review question

Why should a GP-related medication review not begin alphabetically or with a focus on completeness, but rather with high-risk medication?

Micro-case

An 86-year-old female patient with a history of falls, fatigue and nocturia is taking, amongst other things, a benzodiazepine, a diuretic, two antihypertensives, an antidepressant and opioids as required. The question is not what order specialist groups are accustomed to, but which medicines currently pose the highest risk of falls, confusion, hypotension or loss of function.

Why this chapter is important

In practice, time is short. A review that treats every item with equal weight often fails to identify clinical priorities. High-risk medicines and high-risk combinations, on the other hand, often account for a disproportionately large share of the immediate potential for harm — through falls, delirium, dehydration, hypoglycaemia or bleeding risks.

Prioritisation is therefore not a shortcoming, but rather consistent GP-related medicine: first address the risks, then fine-tune.

An overview of high-risk categories

🎗	**FRIDs / Risk of falls**	Benzodiazepines, Z-drugs, sedating antihistamines, opioids, certain antihypertensives.
🎗	**Anticholinergic burden**	Tricyclic antidepressants, antispasmodics for the bladder, certain antihistamines — the cumulative effect is crucial.
🎗	**Risk of hypoglycaemia**	Sulfonylureas, insulin in cases of poor nutritional status or impaired renal function.
⚠	**Combination of hypotension and dehydration**	Multiple antihypertensives + diuretics in cases of reduced fluid intake or acute illness.
⚠	**Risk of bleeding**	NSAIDs + anticoagulation, NSAIDs + aspirin — particularly in cases of impaired renal function.
◐	**High-risk status ≠ discontinue immediately**	Even high-risk medication can serve an important purpose. First assess, prioritise, safeguard.

Practical workflow

1	**Define the reason**	What is the current risk event? A fall, syncope, delirium, confusion, functional decline?
2	**Check for red flags**	Are there any situations requiring immediate intervention?
3	**Identify high-risk categories**	Sedatives, anticholinergic agents, hypotensive agents, agents promoting dehydration and agents with a risk of hypoglycaemia.
4	**Tackle the 1–3 most dangerous issues first**	Don't tackle everything at once — focus on the risk of harm with the highest plausibility.
5	**Followed by a secondary review**	Duplicate, historical or low-priority long-term medication in the second step.

What remains? — Do not stop taking medication too hastily:

- Even high-risk medication can be essential for function or symptom control
- Do not routinely stop medication that carries a risk of withdrawal or decompensation
- A high-risk status means: assess first — do not automatically stop treatment immediately

Discussion points

"Today, we won't be going through every tablet as if they were equally important, but will start with the medicines that are currently most likely to be contributing to your dizziness, risk of falling or exertional symptoms."

Documentation module

Structured medication review carried out, prioritising high-risk medication. Relevant risk factors for the current problem identified. Prioritised adjustments, monitoring and safety net agreed.

Practice Pearls

- Prioritisation is not a shortcoming — it is good general practice.
- High-risk combinations are often more important than individual, isolated PIMs.
- The current clinical presentation determines which risks are the top priority today.
- Chapter 6 serves as the methodological introduction to the subsequent case-based chapters and review cards.

⚠ Failure Mode

This chapter falls short if it reduces high-risk medicines to a mere list-based approach without establishing a link to the current GP-related context.

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