Dialysis patients face escalating medication burden over two decades

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Managing patients with end-stage kidney disease (ESKD) on dialysis is a complex undertaking, often involving multiple comorbidities and a demanding medication regimen. For years, clinicians have observed a creeping expansion in the number of pills these patients must take daily, a trend that carries significant implications for adherence, side effects, and overall quality of life.

New analyses confirm this anecdotal observation, revealing a substantial rise in medication burden among dialysis patients over the past two decades. This increase reflects both advances in supportive care and the growing complexity of managing a population with multiple interacting health issues.

KEY TAKEAWAYS

- The Pivot: The average number of prescribed medications for dialysis patients has increased significantly since 2003.
- The Data: Patients on dialysis are now routinely prescribed more drugs than in previous decades, with a notable rise in cardiovascular and mineral bone disease agents.
- The Action: Clinicians should routinely review medication lists for polypharmacy, consider deprescribing where appropriate, and assess the cumulative burden on patients.

Patients living with end-stage kidney disease (ESKD) requiring dialysis represent one of the most medically complex populations in clinical practice. Their disease state itself necessitates a range of therapies, from erythropoiesis-stimulating agents to phosphate binders, all while managing the myriad comorbidities that frequently accompany kidney failure. These often include hypertension, diabetes, cardiovascular disease, and mineral and bone disorders, each demanding its own pharmacological approach. The sheer volume of prescriptions can quickly become overwhelming, creating a significant medication burden that impacts adherence, increases the risk of drug-drug interactions, and contributes to adverse events.

The chronic nature of ESKD means patients are often on dialysis for years, during which time their health status can fluctuate, new comorbidities may emerge, and treatment guidelines evolve. This dynamic environment contributes to an ever-expanding medication list. The challenge for clinicians lies in balancing the need to treat every identified condition effectively with the imperative to avoid polypharmacy, defined as the concurrent use of multiple medications, often five or more. For patients, this translates into a daily routine dominated by pill-taking, a factor that can severely diminish their quality of life and complicate self-management.

The Expanding Pharmacopeia in Dialysis

Over the past two decades, the market of medication management for dialysis patients has undergone a substantial shift. In the early 2000s, the focus was primarily on managing the immediate consequences of kidney failure, such as anemia, fluid balance, and electrolyte disturbances. While these remain central, the intervening years have seen the introduction of new therapeutic classes and a more aggressive approach to preventing long-term complications, particularly cardiovascular events, which are a leading cause of mortality in this population. This expansion has, predictably, led to an increase in the number of prescribed drugs.

For example, the management of mineral and bone disorder (MBD) in chronic kidney disease (CKD) and ESKD has seen the introduction of calcimimetics and new phosphate binders, adding to the existing vitamin D analogues. Similarly, cardiovascular risk reduction strategies have become more intensive, with a greater emphasis on lipid-lowering agents and antiplatelet therapies, even in patients with advanced kidney disease. Each new agent, while potentially beneficial for a specific indication, contributes to the overall pill burden. The average dialysis patient now carries a significantly longer medication list than their counterpart did in 2003.

Understanding the Drivers of Polypharmacy

The rise in medication burden is not simply a matter of clinicians overprescribing; it is a reflection of several interconnected factors. First, the aging population on dialysis means more patients present with multiple chronic conditions that require pharmacological intervention. Older patients often have a higher prevalence of diabetes, heart failure, and peripheral vascular disease, each adding to their medication regimen. Second, evolving clinical guidelines, driven by new evidence, frequently recommend additional therapies to improve outcomes. While these recommendations are evidence-based, their cumulative effect can be a substantial increase in the number of daily pills.

Third, the fragmentation of care, where patients see multiple specialists (nephrologists, cardiologists, endocrinologists, etc.), can lead to a lack of holistic oversight of the medication list. Each specialist may add a drug for their specific area of expertise without fully appreciating the patient's entire regimen or the potential for interactions. This siloed approach makes it challenging to identify opportunities for deprescribing or to streamline therapy. Patients themselves may also contribute to the complexity by using over-the-counter medications, herbal remedies, or supplements, which are often not documented in their official medication lists but can still interact with prescribed drugs.

The Consequences for Patients and Systems

The implications of increased polypharmacy for dialysis patients are far-reaching. Medication non-adherence is a major concern; the more pills a patient has to take, the less likely they are to adhere to the full regimen. This can lead to suboptimal disease control, increased hospitalizations, and poorer outcomes. Patients may prioritize certain medications over others, or simply become overwhelmed by the sheer volume and complexity of their schedule. A simple 7-Day Weekly Pill Organiser can sometimes help, but it does not address the underlying issue of too many medications.

Adverse drug reactions (ADRs) also become more prevalent with polypharmacy. The risk of drug-drug interactions increases exponentially with each additional medication, particularly in a population with impaired renal clearance. These interactions can lead to unexpected side effects, toxicity, or reduced efficacy of other drugs. For example, the combination of certain cardiovascular drugs with agents used to manage MBD can lead to electrolyte imbalances or exacerbate existing cardiac conditions. Identifying and managing these ADRs adds another layer of complexity to patient care, often requiring additional clinic visits or hospital admissions.

Beyond the direct clinical consequences, polypharmacy also impacts patients' quality of life. The burden of managing multiple prescriptions, remembering dosing schedules, and dealing with potential side effects can be emotionally and physically draining. It can interfere with daily activities, social engagement, and overall well-being. The financial cost of multiple medications can also be a significant burden for patients, even in systems with subsidized healthcare, potentially leading to patients rationing their medications or foregoing some altogether.

Addressing the Challenge: Deprescribing and Holistic Review

The growing medication burden necessitates a proactive approach to medication management in dialysis patients. This involves not only careful consideration when initiating new therapies but also a systematic review of existing regimens for opportunities to deprescribe. Deprescribing, the planned and supervised process of dose reduction or stopping of medication that might be causing harm or no longer be of benefit, is a critical strategy to mitigate polypharmacy. Clinicians should regularly assess whether each medication is still indicated, whether the patient is experiencing benefits that outweigh potential harms, and if the dose is appropriate for their current renal function. This requires a thorough understanding of pharmacokinetics and pharmacodynamics in ESKD, which can be complex. Tools like the Oxford Handbook of Nephrology and Hypertension can be invaluable for quick reference in this regard. A multidisciplinary approach, involving nephrologists, pharmacists, nurses, and even dietitians, can facilitate a more comprehensive medication review, ensuring that all aspects of a patient's care are considered.

The process of deprescribing must be patient-centered, involving shared decision-making. Patients need to understand the rationale behind stopping a medication and be empowered to voice their concerns or preferences. For some, the psychological comfort of taking a pill, even if its benefit is marginal, can be significant. Therefore, any deprescribing effort must be carefully communicated and monitored to ensure patient safety and satisfaction. The goal is not simply to reduce the number of pills, but to optimize the medication regimen to improve patient outcomes and reduce treatment burden.

Still, the challenge remains substantial. The evidence base for deprescribing in ESKD is often less robust than for initiating therapies, and clinicians may be hesitant to remove medications that have been part of a patient's regimen for years. The fear of missing a potential benefit or precipitating a new problem can be a powerful deterrent. But the rising tide of polypharmacy demands a more assertive stance. The long-term implications of an ever-increasing pill burden on patient safety, adherence, and quality of life are too significant to ignore. Future research must focus not only on new therapies but also on robust strategies for optimizing existing regimens and safely reducing unnecessary medication use in this vulnerable population.

> **CLINICAL IMPLICATIONS**
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> The escalating medication burden in dialysis patients is not merely an academic observation; it is a direct challenge to effective clinical practice. Clinicians are now routinely managing patients on regimens that would have been considered extreme two decades ago. This necessitates a more aggressive and systematic approach to medication review than currently practiced.
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> The onus falls on the prescribing clinician, particularly the nephrologist, to act as the primary gatekeeper for medication lists. This means moving beyond simply adding new drugs for new problems and actively seeking opportunities for deprescribing. It requires a critical assessment of every medication's ongoing benefit-risk

profile, especially in the context of a patient's overall health and life expectancy.
For the pharmaceutical industry, the trend highlights an unmet need for therapies that can address multiple comorbidities with fewer agents, or for formulations that simplify dosing. The current model of adding a new pill for every new problem is unsustainable and detrimental to patient well-being. Innovation in this space should prioritize reducing the overall treatment burden, not just targeting single disease pathways.
The goal is to optimize, not just accumulate. A patient on dialysis already faces immense physical and emotional challenges. Adding an ever-growing list of medications without rigorous, regular review only compounds their burden, potentially undermining the very care intended to improve their lives.

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