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Stakeholder Perceptions of Precision Medicine in the Management of Diabetic Kidney Disease

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Introduction

Diabetic Kidney Disease (DKD), a major microvascular complication of diabetes mellitus, is a leading cause of Chronic Kidney Disease (CKD) and End-Stage Renal Disease (ESRD) worldwide. Traditional approaches to DKD management have largely relied on generalized treatment strategies, often with limited success in halting disease progression. In recent years, precision medicine—an approach that tailors medical treatment to individual patient characteristics—has emerged as a promising avenue to improve outcomes in DKD. As precision medicine continues to evolve, understanding the perceptions of key stakeholders—including clinicians, patients, researchers, payers, and policymakers—is crucial to its successful implementation. This article explores stakeholder perspectives on the role of precision medicine in DKD, the perceived benefits and barriers, and the steps needed to translate research advances into routine clinical practice [1].

Description

Precision medicine leverages individual genetic, biomarker, phenotypic, and lifestyle data to guide diagnosis, treatment, and prevention strategies. In DKD, this can mean, stratifying patients based on molecular profiles to predict disease progression, tailoring pharmacologic therapy according to genetic responsiveness or risk, using real-time monitoring to adjust interventions dynamically. Emerging biomarkers (e.g., TNFR1, TNFR2, KIM-1), genomic risk scores, and machine learning tools are enabling more nuanced disease subtyping and prediction models. These advances have the potential to move DKD care from a “one-size-fits-all” approach to a personalized one.

Clinicians are at the forefront of DKD care and play a key role in adopting and applying precision tools. Surveys and qualitative studies reveal that most clinicians are optimistic about the potential of precision medicine to improve patient outcomes. Key perceived benefits include, improved risk stratification: Identifying patients at higher risk for progression allows earlier, more aggressive interventions. Clinicians are eager for biomarkers that guide drug selection or identify likely responders to treatments like SGLT2 inhibitors or non-steroidal mineralocorticoid receptor antagonists (e.g., finerenone). Reduced overtreatment, avoiding unnecessary medications in low-risk patients. While payers are cautious about covering expensive genetic or molecular tests without robust evidence, many acknowledge that value-based care models may incentivize personalized approaches. Policymakers are increasingly interested in incorporating precision medicine into national kidney disease strategies but emphasize the need for equity and data security [2].

Patients with diabetes and kidney disease are increasingly informed and engaged in their care. Studies exploring patient attitudes toward precision medicine in DKD reveal a generally positive outlook, particularly when personalized approaches promise, earlier detection of kidney damage, fewer side effects from medications, more tailored treatment options. Patients also value the idea of genetic testing or biomarker analysis, especially if results are explained clearly and influence clinical decisions. Patients advocate for transparent communication, equitable access, and involvement in shared decision-making as precision medicine becomes more common in DKD care.

Right now, proof for these rules depends on the impact of medications on clinical results on populaces remembered for clinical preliminaries instead of in light of people. For instance, in the TREAT study, patients with DKD and pallor were haphazardly doled out to darbepoetin alfa to accomplish a hemoglobin level of 13 g/dL or to safeguard erythropoiesis invigorating specialist (ESA) treatment in the event that hemoglobin levels dropped to under 9.0 g/dL. Dynamic treatment didn't decrease the gamble of both of the two essential composite results (demise or a cardiovascular occasion or passing or a renal occasion) however was related with an expanded gamble of stroke. These outcomes were in accordance with a few other studiesand in view of this proof, the Kidney Illness: Working on Worldwide Results (KDIGO) rule bunch suggested that in grown-up patients, ESAs should not be utilized to purposefully increment hemoglobin over 13 g/dL (evaluated proof level 1A). Curiously in the "Ordinary Hematocrit Preliminary" by Besarab et al, patients that really arrived at the objective hematocrit of 40% had by a long shot the least mortality, all things considered. While this obviously could be because of a choice predisposition, this has yet to be addressed, consider the possibility that in these people, a standardization of hemoglobin could be better than the rule suggested fractional remedy approach. This has never been tried in a clinical preliminary and maybe the maximum capacity of ESAs isn't taken advantage of in a specific subgroup of patients with sickliness and CKD/DKD [3].

Conclusion

Stakeholder perceptions of precision medicine in the management of diabetic kidney disease reflect a complex blend of enthusiasm, caution, and practical concerns. While clinicians and patients are generally optimistic about the promise of personalized care, researchers, payers, and policymakers emphasize the need for robust evidence, ethical safeguards, and systemic support. To realize the full potential of precision medicine in DKD, a collaborative, interdisciplinary approach is essential. This includes investing in education, research translation, infrastructure, and policy reform to build a healthcare system where personalized kidney care is accessible, effective, and equitable for all.

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Conflict of Interest

None.

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