

Advancing Nutritional Risk Screening in Hospitalized Type 2 Diabetes Patients: A Precision Medicine Approach

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DESCRIPTION

Nutritional status plays a significant role in the management and prognosis of patients with Type 2 Diabetes Mellitus (T2DM), especially during hospitalization when metabolic control is often compromised. Malnutrition—whether overt or subclinical—can significantly impact glycemic control, immune response, wound healing and recovery. Despite the clear link between nutrition and diabetic outcomes, nutritional risk assessment in hospitalized patients with T2DM remains underutilized and inconsistently implemented. Recent advances in screening tools offer a promising step toward more personalized, efficient and impactful nutritional care in this vulnerable population.

Traditional tools such as the Nutritional Risk Screening 2002 (NRS-2002) and the Malnutrition Universal Screening Tool (MUST) have been widely used across various inpatient settings. However, these tools are not specifically tailored to the metabolic complexities of diabetes. For example, they often overlook key diabetes-related indicators such as glycemic variability, HbA1c trends, insulin regimen complexity and inflammatory markers—all of which can significantly affect nutritional requirements and outcomes in T2DM patients.

In response, researchers have started refining or developing screening tools with greater sensitivity to the specific needs of diabetic patients. The Global Leadership Initiative on Malnutrition (GLIM) criteria, for example, provides a two-step diagnostic framework combining phenotypic and etiologic criteria, which has been adopted increasingly in diabetic inpatient populations. Additionally, recent efforts to integrate Electronic Medical Records (EMRs) and artificial intelligence into nutritional screening processes have enabled automated flagging of at-risk patients using real-time clinical and laboratory data, thereby reducing delays in intervention.

Emerging tools also emphasize the importance of functional outcomes. Handgrip strength, Bioelectrical Impedance Analysis (BIA) and phase angle are gaining traction as objective markers of muscle quality and nutritional risk in patients with T2DM, particularly in those at risk for sarcopenia or frailty. These tools provide not only a snapshot of current nutritional status but also a predictive insight into the patient's capacity for recovery and resilience to complications.

A critical advancement has been the recognition that nutritional risk in diabetic patients is not solely about undernutrition. Overnutrition, particularly in the form of sarcopenic obesity, represents a unique challenge where excess adiposity masks underlying muscle wasting and poor metabolic reserve. Modern screening protocols are beginning to reflect this nuance, moving away from reliance on Body Mass Index (BMI) alone and incorporating body composition analysis into routine care. This shift allows for earlier detection of at-risk individuals who may otherwise be overlooked by conventional screening methods.

Despite these advances, widespread clinical implementation remains inconsistent. Barriers include lack of training, time constraints, absence of standardized protocols and variable institutional priorities. Multidisciplinary involvement, particularly from clinical nutritionists, endocrinologists and nursing staff, is essential to integrate screening tools into routine practice and ensure timely intervention. Hospital protocols should mandate early screening–ideally within 24-48 hours of admission—to initiate targeted nutritional therapy and monitor longitudinal outcomes throughout the patient's stay.

In conclusion, nutritional risk screening in hospitalized patients with T2DM is undergoing a significant transformation, driven by more targeted, data-rich and functionally relevant tools. As healthcare systems move toward precision medicine, incorporating these advanced screening strategies into standard care protocols will be crucial. Doing so can enhance metabolic control, reduce length of hospital stay and improve clinical outcomes in this growing patient population. Further research should focus on validating these tools across diverse populations and hospital settings, while exploring their potential to predict long-term outcomes such as readmission rates, infection risk and glycemic relapse following discharge. The path forward lies in embracing a proactive, interdisciplinary and patient-centered approach to nutritional care in diabetes management.

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