



## EDITORIAL

### **Nutrition assessment in surgical patients: The strategic way to improve outcomes**

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#### **Introduction**

Malnutrition remains a significant but often under-recognized challenge in the management of surgical patients worldwide. It is estimated that a substantial proportion of patients undergoing major surgery, particularly those with gastrointestinal or oncologic diseases, suffer from some degree of malnutrition.<sup>1,2</sup> The physiological stress induced by surgery, characterized by a hypermetabolic state and systemic inflammatory response, exacerbates existing nutritional deficits.<sup>3</sup> This synergistic effect leads to impaired immune function, delayed wound healing, increased muscle wasting, and a higher predisposition to postoperative complications such as sepsis and anastomotic leakage.<sup>1,4</sup> Consequently, malnutrition is directly linked to prolonged hospital stays, increased healthcare costs, and higher mortality rates.<sup>2,5</sup> Therefore, early and systematic nutrition assessment is no longer optional but a fundamental pillar of perioperative care.<sup>4</sup>

#### **The landscape of nutrition screening and assessment**

The primary goal of nutritional screening is to identify individuals who are at risk of malnutrition and are likely to benefit from nutritional support. Several tools have been validated for use in the clinical setting, including the Malnutrition Universal Screening Tool (MUST), Nutrition Risk Screening 2002 (NRS-2002), and the Subjective Global Assessment (SGA).<sup>2</sup> Recent systematic reviews and meta-analyses have underscored the importance of tool validity. For instance, MUST has shown high sensitivity (0.84) and specificity (0.85) in predicting adverse outcomes in general surgical populations.<sup>2</sup> However, the choice of tool often depends on the clinical setting and the specific patient demographic. In elderly critically ill patients, prognostic indices such as the Geriatric Nutritional Risk Index (GNRI) and the Prognostic Nutritional Index (PNI) have gained traction.<sup>5</sup> These indices utilize objective laboratory data, such as serum albumin levels and lymphocyte counts, combined with physical measurements like body weight. Comparative studies have indicated that both GNRI and PNI are strong predictors of mortality in the elderly, although GNRI may offer slightly better prognostic performance in certain intensive care scenarios.<sup>5</sup>

#### **Nutrition assessment tools in the Thai context: BNT/NT**

In Thailand, the development and implementation of localized tools have been crucial in addressing the specific needs of the population and the healthcare system's structure. The Bhumibol Nutrition Triage (BNT), also referred to as Nutrition Triage (NT), is a prominent tool developed by Thai experts.<sup>1,6</sup> Unlike some international tools that rely heavily on subjective parameters, the BNT/NT incorporates objective data including Body Mass Index (BMI), recent weight changes, current energy intake, age, and the severity of



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the primary disease.<sup>6</sup> The BNT/NT categorizes patients into four risk levels (Class I to IV). Evidence from the multicenter THAI-SICU study, which involved 1,685 patients across major Thai medical centers, has demonstrated a clear correlation between BNT/NT classification and clinical outcomes.<sup>1,6</sup> Patients classified as BNT/NT Class III and IV exhibited significantly higher ICU mortality and 28-day mortality rates compared to those in lower risk classes.<sup>6</sup> Specifically, the odds ratio for mortality increases significantly as the BNT/NT class progresses, highlighting its utility as a robust prognostic tool in high-acuity surgical settings within the Thai healthcare context.<sup>1,6</sup>

### Specialized surgical populations and PNI

In specialized fields such as gynecologic oncology, the role of the Preoperative Prognostic Nutritional Index (PNI) is becoming increasingly evident.<sup>3</sup> Patients undergoing major surgery for gynecologic cancer often present with compromised nutritional status due to the malignancy itself. Research has shown that a low preoperative PNI is an independent predictor of postoperative complications, including surgical site infections and prolonged ileus.<sup>3</sup> This suggests that a multi-faceted approach—combining standardized screening like BNT/NT with specific prognostic indices like PNI—could provide a more comprehensive risk profile for surgical patients.<sup>3,5</sup>

### The path to improved outcomes

The ultimate objective of nutritional assessment is to guide intervention. Identifying a patient at high nutritional risk should immediately trigger a personalized nutritional care plan.<sup>4</sup> This may involve preoperative nutritional optimization, such as the use of oral nutritional supplements or immunonutrition, and early postoperative enteral feeding.<sup>4,7</sup> In Thailand, nationwide surveys have indicated that while awareness of nutritional importance is growing, there remains a gap in the consistent application of these tools across all hospital levels.<sup>7</sup> Standardizing the use of validated tools like BNT/NT, SGA, or the others and integrating them into the surgical "check-list" are essential steps toward improving the quality of care. Moreover, the integration of the Global Leadership Initiative on Malnutrition (GLIM) criteria and muscle mass measurement provides a new framework for diagnosing malnutrition globally, which clinicians are increasingly adopting to align local practices with international standards.<sup>2,8</sup>

### Conclusion and recommendations

Nutrition assessment is the gateway to improving surgical outcomes. The evidence is clear: malnourished patients fare worse. Tools like BNT/NT in Thailand or other standard assessment tools have proven their worth in predicting mortality and morbidity in critically ill surgical patients.<sup>1,6</sup> To move forward, healthcare systems must:

1. Mandate nutritional screening for all elective and emergency surgical admissions using validated tools.<sup>4</sup>
2. Utilize objective indices like PNI and GNRI to supplement general screening, especially in high-risk groups like the elderly and oncology patients.<sup>3,5</sup>



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3. Foster multidisciplinary "Nutrition Support Teams" (NST) to bridge the gap between screening and action.<sup>7</sup>
4. Implement standardized protocols for perioperative nutritional support based on the identified risk levels.<sup>4</sup>

### Conflict of interest

The authors declare that there is no conflict of interest related to the study.

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