



## Navigating the Challenges of Clinical Scoring Systems in Thyroid Disease

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In recent years, the use of clinical scoring systems has emerged as a promising approach to improve the diagnosis and treatment of various medical conditions. These systems are designed to standardize and simplify the evaluation of patients, allowing healthcare providers to make more accurate and timely diagnoses, guide treatment decisions, and ultimately improve patient outcomes. The common types of scoring systems are illness severity scores, outcome prediction scores and decision-support tools.<sup>(1)</sup>

### The Need for Clinical Scoring Systems

A clinical scoring system typically assigns numerical values to various clinical and laboratory parameters, such as patient age, sex, symptoms, and laboratory values. These values are then used to calculate a score, which can be used to guide diagnostic and treatment decisions. For example, a clinical scoring system for cardiovascular disease may assign points for age, blood pressure, cholesterol levels, smoking status, and other risk factors. A patient with a high score would be considered at increased risk for cardiovas-

cular disease and may be recommended for further testing or treatment.<sup>(2)</sup>

Clinical scoring systems can be used in a variety of medical specialties, including cardiology, neurology, oncology, and endocrinology. In endocrinology, clinical scoring systems are particularly useful in evaluating thyroid disease, which is a common condition that affects millions of people worldwide.

### Clinical scoring system in thyroid disease

Thyroid disease is a common endocrine disorder that affects millions of people worldwide. Although thyroid disease is often treatable, it can be challenging to diagnose and manage. Clinical scoring systems have emerged as an important tool in the management of thyroid disease, providing clinicians with a standardized method for assessing patient risk and guiding treatment decisions.<sup>(3)</sup>

Thyroid disease encompasses a range of conditions, including hypothyroidism, hyperthyroidism, and thyroid cancer. Clinical scoring systems play an important role in the management of thyroid emergencies and perioperative preparation. These scoring sys-



tems help clinicians identify patients who are at high risk for complications and guide appropriate management strategies.<sup>(4)</sup>

For example, the clinical scoring system for thyroid storm includes features such as fever, tachycardia, and altered mental status. By using this scoring system, clinicians can quickly identify patients who are at high risk for thyroid storm and initiate appropriate treatment, which may include anti-thyroid drugs and beta-blockers. However, we must be wise in diagnosing thyroid storms even in patients with a history of hyperthyroidism. Inappropriate implementation of the diagnostic system can lead to misdiagnosis of thyroid storm.

One example of a clinical scoring system for hypothyroidism is the Billewicz scoring system, which assigns points for the presence of common clinical features such as dry skin, hair loss, and slowed reflexes. While these scoring systems can be helpful in guiding diagnosis and treatment, it is important to note that they are not perfect and should be used in conjunction with laboratory testing and clinical judgment. Additionally, some individuals with hypothyroidism may not present with classic symptoms or physical exam findings, which can make diagnosis challenging.<sup>(3)</sup>

One of the most widely used clinical scoring systems for thyroid disease is the Thyroid Imaging Reporting and Data System (TI-RADS), which is used to assess the risk of malignancy in thyroid nodules detected on ultrasound. The TI-RADS assigns points to various ultrasound features of thyroid nodules, such as size, composition, and vascularity. The score can then be used to guide treatment decisions, with higher scores indicating a greater likelihood of malignancy. The TI-RADS has been shown to help improve the accuracy of diagnosis and reduce unnecessary

biopsies, while also reducing the incidence of missed malignancies.<sup>(5)</sup>

In the context of perioperative preparation, clinical scoring systems can help identify patients who are at high risk for complications such as bleeding, nerve injury, and hypocalcaemia.<sup>(6, 7)</sup> In addition to clinical scoring systems, other tools such as imaging studies, intraoperative monitoring, and biomarkers also play an important role in the management of thyroid emergencies and perioperative preparation. These tools, in combination with clinical scoring systems, can help clinicians make more informed decisions and improve patient outcomes.

While thyroid scoring systems hold great promise for improving the diagnosis and management of thyroid conditions, there is still much work to be done to fully realize their potential. For example, there is a need for greater standardization and validation of scoring systems across different populations and settings. Additionally, there is a need for further research into the long-term outcomes of patients managed with thyroid scoring systems, particularly in comparison to traditional diagnostic approaches.

Despite these challenges, thyroid scoring systems represent a promising tool for improving the diagnosis and management of thyroid conditions. By providing a more standardized and objective approach to thyroid evaluation, these systems can help to reduce unnecessary interventions and improve patient outcomes. As such, it is crucial that healthcare providers continue to explore the potential of thyroid scoring systems and incorporate them into routine practice where appropriate.

In summary, clinical scoring systems are an important component of the management of thyroid emergencies and perioperative preparation. By using these scoring sys-

tems, clinicians can quickly identify patients who are at high risk for complications and initiate appropriate management strategies. However, it is important to note that clinical scoring systems are not perfect and should be used in conjunction with other diagnostic tools and clinical judgment. As research in this field continues to evolve, it is likely that new and improved clinical scoring systems will be developed to further enhance the management of thyroid disease.

## References

1. Desai N, Gross J. Scoring systems in the critically ill: uses, cautions, and future directions. *BJA Educ.* 2019;19(7):212-8.
2. Challener DW, Prokop LJ, Abu-Saleh O. The Proliferation of Reports on Clinical Scoring Systems : Issues About Uptake and Clinical Utility. *JAMA.* 2019;321(24):2405-6.
3. Kalra S, Khandelwal SK, Goyal A. Clinical scoring scales in thyroidology: A compendium. *Indian J Endocrinol Metab.* 2011;15(Suppl 2):S89-94.
4. Hussain ZS, Rao SS, Jabamalai F. Thyroid symptom scoring index: an auxiliary guide to thyroid function tests: a prospective comparative study from a general hospital in South India. *International Surgery Journal.* 2019 Dec;6(12):4476-80.
5. Grani G, Sponziello M, Pecce V, Ramundo V, Durante C. Contemporary Thyroid Nodule Evaluation and Management. *J Clin Endocrinol Metab.* 2020;105(9):2869-83.
6. Al-Aubaidi TE, Muhammed AA, Abed AB. A Scoring System for Early Prediction of Hypocalcemia after Total Thyroidectomy. *Iraqi Medical Journal* 2021;67(1):14-9.
7. Pradeep PV, Ramalingam K, Jayashree B. Post total thyroidectomy hypocalcemia: A novel multifactorial scoring system to enable its prediction to facilitate an early discharge. *J Postgrad Med.* 2013;59(1):4-8.