

Letter to the Editor

Meryem Benamour, Maria-Cristina Burlacu, Patrick Petrossians, David Unuane, Annick Van den Bruel, Vincent Vander Poorten, Bruno Lapauw, Aglaia Kyrilli, Rodrigo Moreno-Reyes, Brigitte Decallonne and Damien Gruson*

Urgent need to adopt age-specific TSH upper reference limit for the elderly – a position statement of the Belgian thyroid club

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To the Editor,

Thyroid-stimulating hormone (TSH) is a critical determinant for thyroid function, regulating the production of thyroid hormones (TH), thyroxine (T₄) and triiodothyronine (T₃),

which are crucial for maintaining metabolic balance and overall physiological homeostasis. The secretion of TSH by the pituitary gland is stimulated by the hypothalamic thyrotropin-releasing hormone and is subject to feedback inhibition by circulating TH. Due to the negative log-linear relationship between TSH and TH, TSH is used as a biomarker for TH homeostasis.

Decision for clinical intervention depends on accurate reference values for thyroid function tests. These values need to be adapted in particular populations like pregnant women or children [1]. Recent evidence points out that TSH reference values also need to be adapted in the elderly [2].

As individuals age, the regulation and baseline TSH levels undergo significant changes. In elderly over 60 years old it is well-documented that TSH levels tend to increase, especially in women [2]. This phenomenon may be attributed to several factors, including altered TH metabolism, reduced TRH pulsatility, decreased renal clearance of TSH, and other age-related changes in the hypothalamic-pituitary-thyroid axis. However, these physiological variations do not consistently lead to elevated TSH levels in all aging individuals, suggesting that the observed increase in TSH in elderly may also be influenced by the higher prevalence of Hashimoto's disease associated with aging in some populations. These complexities challenge the application of a uniform TSH reference range across all age groups. Consequently, a moderate elevation of TSH in older individuals should not be immediately interpreted as (subclinical) hypothyroidism [2].

Current clinical guidelines often use a single TSH reference range for individuals above 18 years old, potentially leading to misdiagnoses in elderly individuals. An elevated TSH level in an older individual might be misinterpreted as subclinical hypothyroidism, which biologically presents with normal T₄ and elevated TSH levels that could lead to unnecessary treatment by levothyroxine. This misinterpretation could lead to unnecessary treatment by levothyroxine. In Belgium, the number of patients treated

***Corresponding author: Pr. Damien Gruson**, Department of Laboratory Medicine, Cliniques Universitaires St-Luc and Université Catholique de Louvain, 10 Avenue Hippocrate, 1200 Brussels, Belgium; and Pôle de recherche en Endocrinologie, Diabète et Nutrition, Institut de Recherche Expérimentale et Clinique, Cliniques Universitaires St-Luc and UCLouvain, Brussels, Belgium, E-mail: damien.gruson@uclouvain.be

Meryem Benamour, Department of Laboratory Medicine, Cliniques Universitaires St-Luc and Université Catholique de Louvain, Brussels, Belgium

Maria-Cristina Burlacu, Department of Endocrinology, Cliniques Universitaires St-Luc, Université Catholique de Louvain, Brussels, Belgium

Patrick Petrossians, Department of Endocrinology, CHU de Liège, Domaine Universitaire du Sart Tilman, Liège, Belgium

David Unuane, Department of Endocrinology, Universitair Ziekenhuis Brussel, UZ Brussel, (Vrije Universiteit Brussel, VUB), Brussels, Belgium

Annick Van den Bruel, Department of Endocrinology, AZ Brugge, Brugge, Belgium

Vincent Vander Poorten, Department of Otorhinolaryngology, Section Head and Neck Surgery, UZ Leuven, Leuven, Belgium

Bruno Lapauw, Department of Endocrinology, Ghent University Hospital, Ghent, Belgium; and Department of Oncology, Section Head and Neck Oncology, KU Leuven, Leuven, Belgium

Aglaia Kyrilli, Department of Endocrinology, Hopital Erasme Bruxelles, Brussels, Belgium

Rodrigo Moreno-Reyes, Department of Nuclear Medicine, Hopital Erasme Bruxelles, Brussels, Belgium

Brigitte Decallonne, Department of Endocrinology, University Hospitals Leuven, Leuven, Belgium