

Hyperthyroidism

The Professional

Personal Professional Development:

- From a pharmacy view, professional personal development of the pharmacist, in relation to hyperthyroidism, involves an awareness of where the pharmacist's skills in prescribing and managing antithyroid drugs, radioactive iodine and thyroidectomy lie. It is also important for pharmacists to have an appreciation of when they should use longer term drug therapy for their patients.
- Graves' disease patients are treated using multiple pathways as such pharmacists require knowledge about the relapse risk, treatment burden, monitoring needs for medication and the patient's personal preferences. The management of Graves' disease patients rarely occurs by a single pathway of treatment (Shah, Adamson and Jasim, 2024; Chen *et al.*, 2025).
- **PPD → PoP: Therapeutic knowledge supports personalised treatment choice.**

Delivery of Care:

- Pharmacists are involved in the delivery of care by providing symptom control using beta blockers, supporting patients through the selection process of medicines, and assisting in the follow up of thyroid function tests during treatment.
- When patients with Graves' disease experience complications such as ophthalmopathy, pregnancy, persistent disease or cardiovascular disease, then monitoring and referring these patients become more complex, and therefore require coordination with other members of the multidisciplinary team (Shah, Adamson and Jasim, 2024).
- **DoC → CaR: Cardiovascular risk shapes monitoring intensity and referral.**

Fundamentals of Practice:

- Pharmacy practice begins by understanding how hyperthyroidism occurs through graves' disease. It is also important for pharmacy practice to understand complications that may arise from graves' disease and each treatment option's purpose in reducing thyroid hormone levels safely.
- Additionally, pharmacy practice involves evaluating the efficacy of the treatment options used to reduce hormones to a safe level and evaluating the probability of recurrence (Shah, Adamson and Jasim, 2024).
- **FoP → Ial: The disease mechanism is autoimmune, not purely hormonal.**

Population and Public Health:

- The public health significance of hyperthyroidism is more widespread than previously thought since it is estimated that if left untreated, hyperthyroidism may increase cardiovascular risk and potentially lead to increased mortality.
- Surgery, or radioactive iodine, lowers chances of serious heart issues more than medication alone, when looking at particular people (Peng *et al.*, 2024; Tefera *et al.*, 2024). What happens to groups depends on which method is picked.
- **PPH → PCCC: Population burden strengthens the case for early, patient-supported treatment.**

Patient Centered Care and Collaboration (PCCC)

- Collaborative care is essential in managing Graves' ophthalmopathy. In this condition, the patient's distress and perceived self-image issues may be greater than in other conditions (Chen *et al.*, 2025).
- **PCCC → DPN: Shared decisions improve the quality of clinical judgement.**

The Patient

Inflammation and Immunity:

- The autoimmunity of Graves' disease occurs when your body's own immune Graves' disease is an autoimmune condition. Antibodies stimulate the thyroid gland leading to a long-term production of excess hormones.
- Pharmatically this is important since new drug treatments have been developing to specifically target the immune system and the TSH receptor instead of just controlling the symptoms or destroying the thyroid gland (Viola *et al.*, 2025).
- **Ial → DTM: Understanding immune mechanisms explains why targeted therapies are being developed.**

GI and Endocrine:

- Hormonal imbalance caused by excess thyroid hormone disrupts metabolism, daily activities, and overall quality of life. Many patients will report marked discomfort, fatigue, and disruption to their social lives.
- As such, pharmacists need to consider that success of treatment is measured by both improvement in symptoms and biochemical control (Shah, Adamson and Jasim, 2024; Chen *et al.*, 2025).
- **GIE → PCCC: Symptom burden influences patient priorities and medicine discussions.**

Cardiovascular and Renal:

- Hyperthyroidism is associated with clinically significant cardiovascular consequences including atrial fibrillation.
- Tefera *et al.* (2024) identified atrial fibrillation in 14% of the population with increased risk in older adults, female, and elevated levels of FT4. Additionally, Peng *et al.* (2024) demonstrated that treatment pathway could affect future cardiovascular outcomes.
- **CaR → DoC: AF risk supports closer monitoring and earlier treatment escalation.**

Musculoskeletal and CNS:

- While these two papers provide limited detail on the musculoskeletal and CNS implications of hyperthyroidism, they clearly demonstrate that confidence, emotional well-being, and the ability to perform daily activities are affected. These findings support the use of whole person counseling when the patient is experiencing distress, non-adherence due to psychological reasons, concern about their appearance, etc. (Chen *et al.*, 2025).
- **MaC → PCCC: Distress and reduced daily functioning highlight the need for supportive, patient-centred pharmacy care.**

Deliberative Practice (DPN)

- The literature indicates there is no one single pathway which is considered to be the best, therefore, pharmacists should continue to provide individualized and clinically-reasonable recommendations (Peng *et al.*, 2024; Shah, Adamson and Jasim, 2024).
- **DPN → PoP: Reflective judgement supports personalised treatment selection.**



The Medicine

Drugs to Market:

- EMCCC
- The treatments we have today continue to rely on traditional methods like antithyroid medications, radioactive iodine and surgery. However, there is an increasing focus toward developing targeted therapies that will address the underlying causes of Graves' disease.
- As examples of these new approaches, candidate mechanisms include CD20, CD40, BAFF, CTLA-4 and TSH receptor. These new mechanisms provide evidence of a shift in drug development from broadly controlling symptoms of hyperthyroidism to mechanism-based drug development (Viola *et al.*, 2025).
- **DTM → Ial: Drug development is increasingly driven by autoimmune targets.**

Personalization of Pharmaceuticals:

- Many patients prefer the first line of treatment for their Graves' disease with antithyroid medications.
- Antithyroid medication choice can vary among patients based upon their individual preferences including whether they expect to go into remission, how quickly they want to recover, how much they are willing to spend, if they have any appearance concerns about their medication or other fears regarding radioiodine or surgery.
- Pharmacy professionals need to be involved early in the decision-making process because when choosing a medication for a patient it is most beneficial when both the efficacy and safety of the medication are discussed with the patient's personal preferences and values (Chen *et al.*, 2025; Shah, Adamson and Jasim, 2024).
- **PoP → PCCC: Patient preference directly shapes treatment acceptability.**

Enteral Drug Delivery:

- The majority of pharmacologic management of Graves' disease is delivered via the gastrointestinal tract, which includes the use of antithyroid medications and oral beta blockers.
- Adherence, counseling and monitoring are all very important due to the fact that long term oral therapy is often both effective and safe, but only if patients understand how long they will be taking their medication, the frequency of follow up testing and that they can experience relapse or remission at any point (Shah, Adamson and Jasim, 2024).
- **EDD → DoC: Oral therapy requires structured monitoring and counselling.**

Parenteral Drug Delivery:

- While parenteral therapy plays a limited role in the routine treatment of Graves' disease, it does become relevant in either acute situations or specialized clinical environments, such as the use of glucocorticoids. From a pharmacy perspective, the route of delivery changes depending on the severity of the disease, how quickly the patient needs symptom relief and what type of clinical environment the patient is being treated in (Shah, Adamson and Jasim, 2024).
- **PDD → DoC: Parenteral treatment is shaped by clinical severity, urgency, and care setting.**

Reference List

- Chen, Y. *et al.* (2025) 'A systematic review of patient preferences, expectations, and values for the management and treatment of graves disease', *Patient Preference and Adherence*, 19, pp. 2949–2957. Available at: <https://doi.org/10.2147/ppa.s540261>.
- Peng, C.C.-H. *et al.* (2024) 'MACE and hyperthyroidism treated with medication, radioactive iodine, or thyroidectomy', *JAMA Network Open*, 7(3), article number e240904. Available at: <https://doi.org/10.1001/jamanetworkopen.2024.0904>.
- Shah, R., Adamson, S.E. and Jasim, S. (2024) 'Management aspects of medical therapy in graves disease', *Endocrine Practice*, 31(4), pp. 536–546. Available at: <https://doi.org/10.1016/j.eprac.2024.12.012>.
- Tefera, E.M. *et al.* (2024) 'Atrial fibrillation and associated factors among hyperthyroidism patients attending at university of Gondar comprehensive specialized hospital, Northwest Ethiopia', *Clinical Medicine Insights Endocrinology and Diabetes*, 17, article number 11795514241285347. Available at: <https://doi.org/10.1177/11795514241285347>.
- Viola, N. *et al.* (2025) 'Graves' disease: is it time for targeted therapy? A narrative review', *Medicina*, 61(3), article number 500. Available at: <https://doi.org/10.3390/medicina61030500>.