Graves’ disease remains a challenge for the young person, their family and the managing health care team. Patients treated with anti-thyroid drug (ATD) who relapse and who do not want to return to ATD treatment have no option but to undergo definitive thyroid gland surgical removal or destruction by radio-iodine with subsequent life-long thyroid hormone replacement. Thyroid hormone replacement is straight-forwards but is not a cure and long term data suggest that individuals on thyroxine treatment are not as healthy as they would have been if they had intact endogenous thyroid hormone secretion. In contrast to type 1 diabetes, a minority of young patients with Graves' will get a prolonged remission of their autoimmune disease in the short to medium term which highlights the fact that the immune system can adapt – or be made to adapt - with time. ATD does have immunomodulatory actions and some clinical teams are advocates of long-term, low dose ATD treatment on the basis that the likelihood of adverse events after the initial phase is very low and the longer the patient is treated, the more likely it is that remission will occur. There is, nevertheless, an evolving interest in more proactive interventions that can ameliorate or modify the immune response in Graves’ disease. New strategies include targeting the B lymphocyte-derived plasma cells that manufacture antibody, the administration of small amounts of ‘immunodominant’ TSHR-specific peptides or use of monoclonal blocking TSHR antibodies. Clinical trials using novel immunomodulatory approaches are starting to show some promise with the very real prospect of an alternative to standard anti-thyroid drug therapy in the relatively near future.