

Thyroid and islet autoantibodies predict autoimmune thyroid disease already at Type 1 diabetes diagnosis

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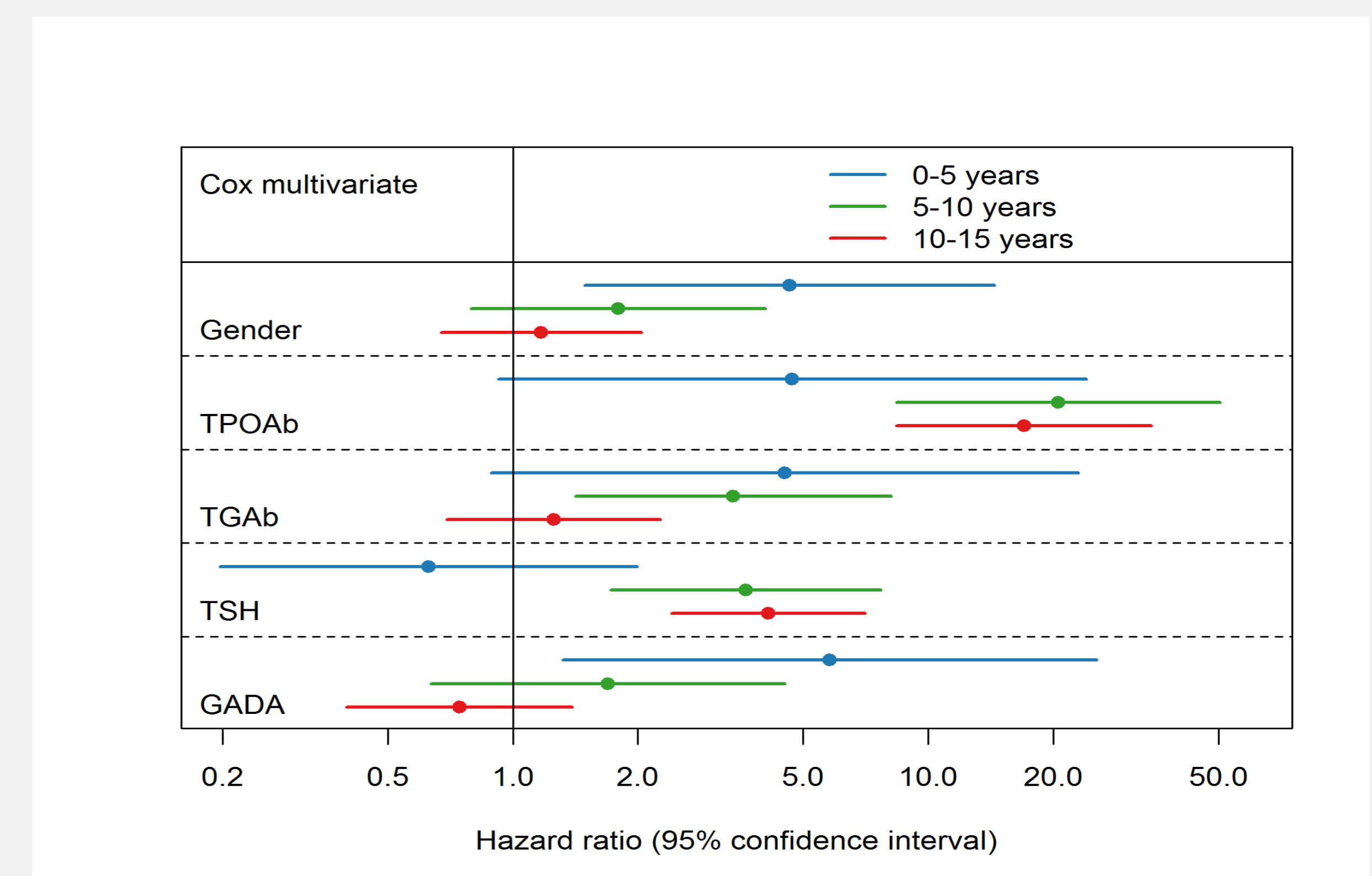
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- Introduction and objectives:** Screening of autoimmune thyroid disease in children and young adults with Type 1 diabetes is important but vary greatly between clinics. The aim was to determine the predictive value of thyroid autoantibodies, thyroid function, islet autoantibodies, and HLA- DQ at diagnosis of Type 1 diabetes for autoimmune thyroid disease during subsequent follow-up.

- Methods:** At diagnosis of Type 1 diabetes, samples from 2433 children were analysed for autoantibodies against thyroid peroxidase (TPOAb), thyroglobulin (TGAb), glutamic acid decarboxylase (GADA), insulin (IAA), insulinoma-associated protein-2 (IA-2A), and the three variants of the zinc transporter 8 (ZnT8W/R/QA) as well as HLA-DQA1-B1 genotypes and thyroid function. After 5.1-9.5 years disease duration, children treated with thyroxine were identified in the Swedish National Board of Health and Welfare Prescribed Drug Register.

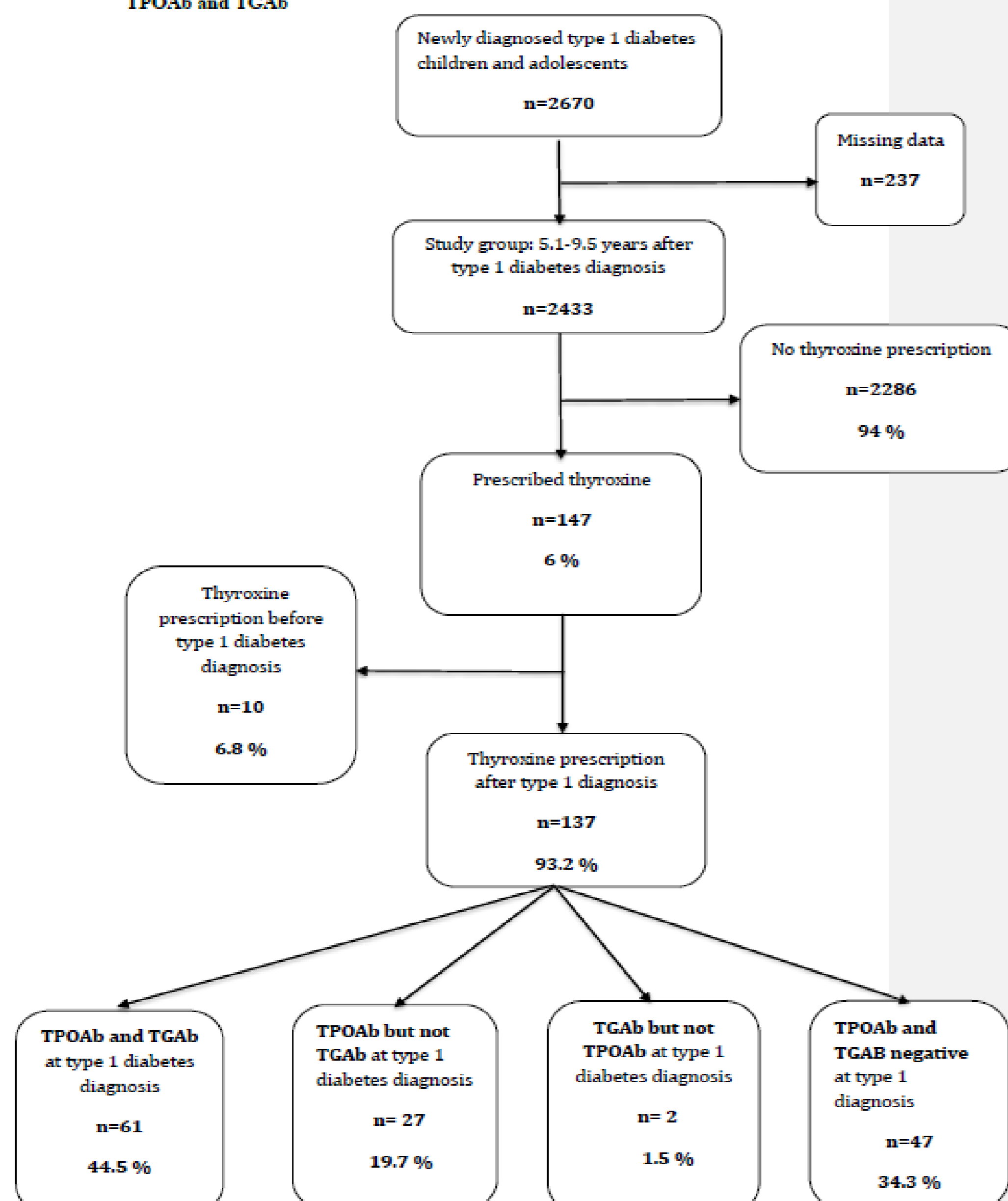
Combined predictive analyses of islet and thyroid autoantibodies and relation to age at type 1 diabetes diagnosis



- Results:** Thyroxine had been prescribed to 6% (147/2433; 66% girls). In patients below 5 years, female gender (HR=4.60, p=0.008) and GADA (HR=5.80, p=0.02) were significant predictors. In patients 5-10 years, TPOAb (HR=20.56, p<0.0001), TGAb (HR=3.40, p=0.006) and TSH outside the reference limit (HR=3.64, p<0.001) were predictors while in the 10-15 year olds, TPOAb (HR=17.00, p<0.001) and TSH outside the reference limit (HR=4.11, p<0.001) predicted future thyroxine prescription.

- Conclusions:** In addition to TPOAb and TSH, positive GADA tested at the diagnosis of type 1 diabetes is important for the prediction of autoimmune thyroid disease in children below 5 years of age.

Figure 1. Flow chart of the study population in relation to thyroxine prescription, TPOAb and TGAb



Screening suggestions for autoimmune thyroid disease in children and adolescents with Type 1 diabetes based upon markers at Type 1 diabetes diagnosis:

- TPOAb negative with normal TSH: TSH measurement every other year.
- TPOAb positive with normal TSH and/or GADA positive individuals under 5 years: TSH measurements every year.