

# Patterns of autoimmunity of genetically defined adult onset type 1 diabetes are different above and below 30 years of age, without impacting on clinical presentation

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## Background

- Robustly identifying adult onset type 1 diabetes (T1D) clinically is difficult
- Rates of autoantibody positivity and clinical features at diagnosis are unclear.

## Aim

We aimed to evaluate patterns of autoantibody positivity and clinical characteristics of genetically defined T1D presenting above and below 30 years of age.

## Methods

- We used a T1D genetic risk score (T1DGRS) to define T1D (Figure 1) within 1107 white Europeans with diabetes in the STARTRIGHT study (n=887 diagnosed >30, n=220 ≤30)
- Inclusion criteria: diagnosis age ≥18, ≤12 month's diabetes duration.
- We compared autoantibodies (GAD, IA-2, ZNT8) and clinical characteristics at presentation in genetically defined T1D diagnosed above and below 30 years of age.

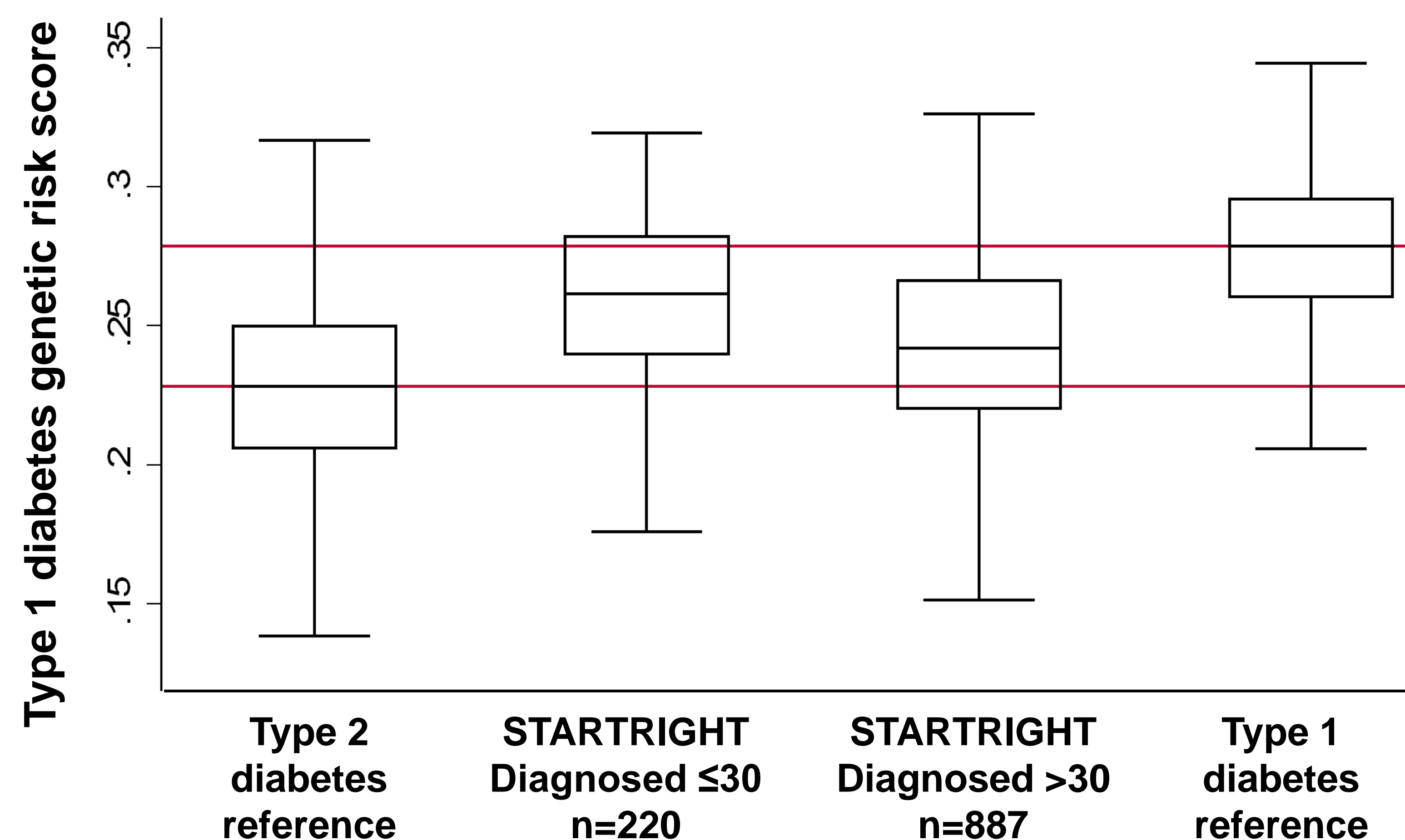


Figure 1: Distribution of genetic risk score by age group. Reference cohorts shown

## Results

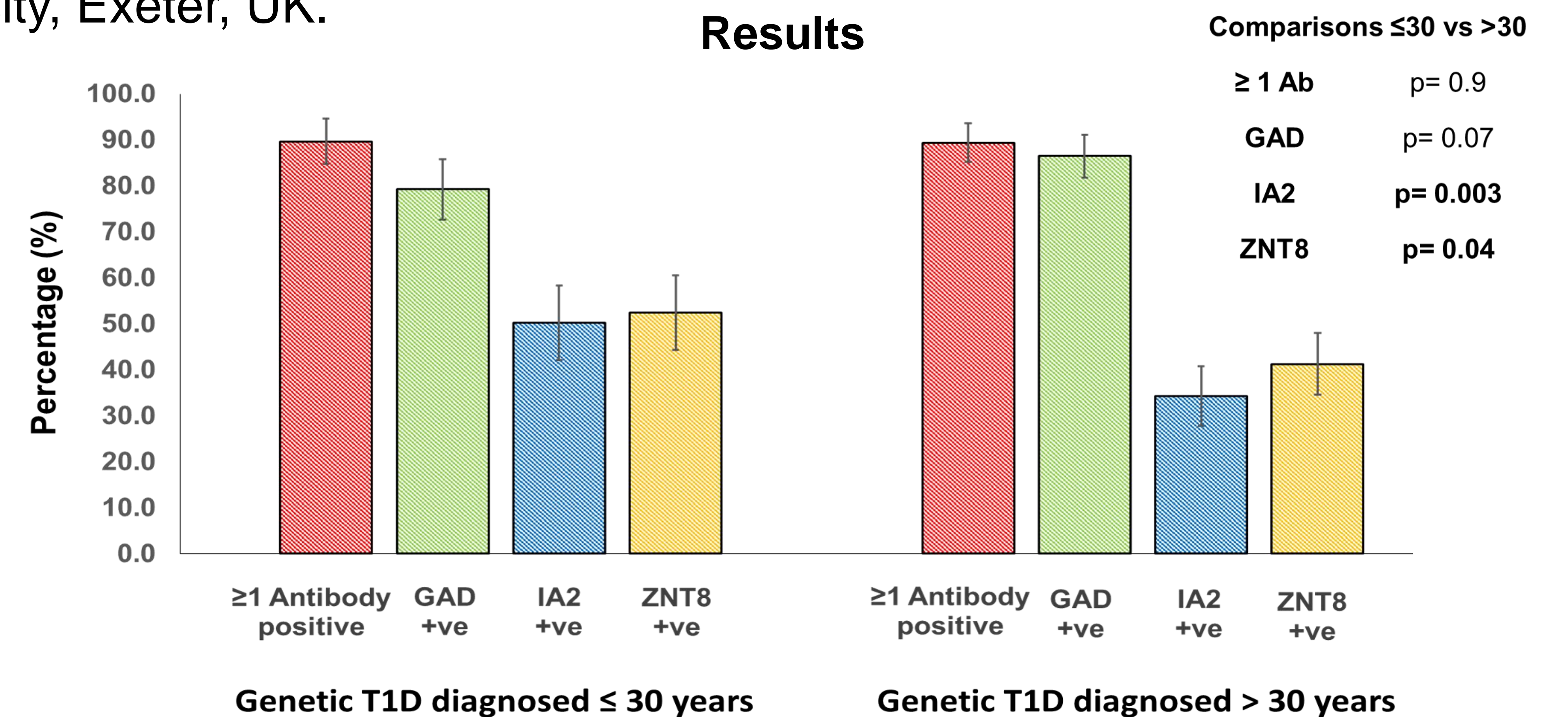


Figure 2: Distribution of autoantibodies above and below 30 years of age

Overall, autoantibody positivity (≥1 autoantibody positive) (89% vs 90%) and GAD (87% vs 79%) were similar between age groups: both p>0.05. (Figure2)

Those diagnosed older were less likely to have IA-2 (34% vs 50%), ZNT8 (41% vs 52%) and therefore multi-antibody (≥2) positivity (48% vs 61%) all p<0.05.

The severity of presentation of T1D above and below 30 years of age was near identical. (Table 1).

	T1D ≤30 N=146	T1D >30 N= 207	p
Hba1c at diagnosis (mmol/mol)	97 (92-103)	102 (97-107)	0.2
Glucose at diagnosis (mmol/l)	19.7 (18.0-21.3)	21.6 (19.6-23.7)	0.2
Diabetic Ketoacidosis at diagnosis (%)	18 (12-24)	16 (11-20)	0.6
Weight loss pre diagnosis (%)	75 (68-82)	74 (68-80)	0.9
Osmotic symptoms at diagnosis (%)	90 (89-96)	92 (89-96)	0.4
C-Peptide at recruitment (pmol/l)	424 (366-492)	428 (346-530)	0.9
BMI at recruitment (kg/m <sup>2</sup> )	24.1 (23.3-24.9)	26.1 (24.9-27.2)	0.01
Single-antibody positive (%)	90 (85-95)	89 (85-94)	0.9
Multi-antibody positive (%)	61 (53-69)	48 (41-55)	0.02

Table 1: Comparison of presentation characteristics above and below 30 years of age

**Conclusion:** We show, whilst rates of single autoantibody positivity are unaffected by age of T1D diagnosis, differences in the pattern of individual antibody positivity exists. Despite this, age of diagnosis has no impact on the clinical presentation of T1D.