RESPONSE TO COMMENT ON CRAIG ET AL.

Prevalence of Celiac Disease in 52,721 Youth With Type 1 Diabetes: International Comparison Across Three Continents. Diabetes Care 2017;40:1034–1040

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Maltoni et al. (1) report a high prevalence (9.8%) of celiac disease (CD) in 2,164 youth with type 1 diabetes from five pediatric diabetes centers in northern Italy. This is considerably higher than in our recent report (3.5%) from three continents (U.K./Austria/Germany, U.S., and Australia) (2) and the pooled prevalence of 5.1% in a systematic review of CD in type 1 diabetes (3). Maltoni et al. propose that their higher rate of CD may be explained by more active screening programs in Italy. We agree that this is likely to be a contributing factor, as previous reports of high rates of coexisting CD and type 1 diabetes in Italy (4) and of CD in the general population may have heightened awareness of CD risk. It is of note, however, that we used a stringent definition of biopsy-proven CD and that a further 2% of youth from the Prospective Diabetes Follow-up Registry (DPV) and the T1D Exchange Clinic Network (T1DX) registry were suspected of having CD on the basis of positive serology but had not undergone small-bowel biopsy.

We read with interest that the diagnosis of CD preceded type 1 diabetes in 19% of case subjects in the Italian study compared with 5.4% in our report. In keeping with Maltoni et al., we did not classify those with positive CD antibodies at diabetes diagnosis as having preexisting CD. A further 46% demonstrated their first CD autoantibody positivity at type 1 diabetes diagnosis in the Italian study compared with 37% within the first year after diagnosis of type 1 diabetes in our report. The contrasting rates prior to diabetes diagnosis imply a higher awareness of CD risk in the general population in Italy, and we speculate that clinicians may be more likely to screen for CD. The lower incidence of type 1 diabetes in Italy compared with the countries represented in our report may also underlie the different prevalence rates of CD overall. While HLA-DQ2 confers risk for both CD and type 1 diabetes, the penetrance of other risk alleles for type 1 diabetes may be lower in the Italian population. Moreover, it is plausible that the impact of environmental factors that initiate

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**A listing of information for the ADDN, the T1DX, the NPDA, and the DPV initiative can be found in the Supplementary Data online.*

and accelerate type 1 diabetes, such as viral infections (5), may vary between these populations. Another putative explanation is differences in exposure to gluten and/or methods of wheat production that may modify the antigenicity of gluten. Finally, neither report provides data on screening frequency after diabetes diagnosis, which likely influences case detection.

The contrasting findings across these populations, along with the observation that CD is diagnosed after more than 2 years of type 1 diabetes duration (in our report, 40%), highlight the importance of regular screening for CD in people with type 1 diabetes.

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