

## Higher Ultraviolet Radiation During Early Life Reduces Risk of Childhood Type 1 Diabetes in Boys

Miller, K<sup>1</sup>

<sup>1</sup>Telethon Kids Institute

### Introduction

There is increasing evidence that environmental exposures may be important in the pathogenesis of type 1 diabetes (T1D). Ultraviolet radiation (UVR) is of interest in relation to the development of T1D because of its immunoregulatory actions. Ecological studies testing the correlation between levels of UVR and T1D have shown a significant inverse relationship for both incidence and prevalence.

### Objectives and Approach

We used large linked datasets to test ambient UVR during early life against T1D risk at the individual level. We conducted a nested case-control study using linked data from state-wide administrative datasets and NASA satellites.

Cases (n=1819) were all children born in Western Australia from 1980-2014 with a diagnosis of T1D on the population-based Western Australian Children's Diabetes Database between 0- 16 years of age. Controls (n=27 259) were randomly selected from all live births in Western Australia and matched to cases on sex and date of birth.

Daily UVR data from NASA satellites, that were date-and location-specific for each individual, were used to estimate total UVR dose for each trimester of pregnancy and the first year of life.

### Results

Conditional logistic regression showed that T1D risk was 44% lower in boys of mothers with UVR levels in the highest quartile (compared to the lowest quartile) during their third trimester of pregnancy (p=0.04). Higher UVR in the first year of life was also associated with a significantly lower risk of T1D in later childhood among boys. Among girls, there was no evidence of an association between total UVR dose and T1D risk

### Conclusion

Higher UVR in the third trimester and first year of life appears to interact with sex-specific factors to lower T1D risk among boys (but not girls) in Western Australia.

