

## Assessing Generalizability of a New-Onset Type 1 Diabetes Biobank

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**Background:** Type 1 diabetes (T1D) is characterized by insulin deficiency due to autoimmune pancreatic beta cell destruction. The Wells Center Pediatric Diabetes Research Program is collecting blood and urine samples from children with new onset T1D admitted to Riley Hospital. These samples are being used to discover biomarkers predictive of disease heterogeneity and course. Since not every newly-diagnosed child enrolls in the Biobank, we examined if persons enrolled are similar or different from the at-large population of newly diagnosed children to know how generalizable samples collected are from our newly-diagnosed population.

**Methods:** Between September 2016 and May 2018, 71 newly diagnosed children (mean age  $9.6 \pm 4.3$  years) and their caregivers were approached by researchers and asked to provide blood/urine samples. Thirty-four consented/assented (as required); 21 had blood and urine collected; 13 urine only. We looked for differences in age, sex, race, BMI, socioeconomic status (based on zip code), and admission blood work parameters between participants and non-participants.

**Results:** Overall, participants were more likely to be white and have higher admission bicarbonate. Children who provided blood and urine had no other significant differences from non-participants. Children who provided urine only were more likely to be male and have higher admission bicarbonate than non-participants. Currently, we are obtaining data to make comparisons with the general population of all patients diagnosed at Riley.

**Conclusion:** Our Biobank will provide samples to explore novel biomarkers to facilitate highly targeted therapies and to screen future preventative treatments. As we continue to collect data, it will remain important to monitor and carefully consider its generalizability.



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### What is your most important takeaway from your research experience?

*The blood and urine samples of individuals' various stages of type 1 diabetes (T1D) are extremely valuable to current research, particularly biomarker research. Biomarkers are detectable molecules such as autoantibodies, microRNA, and proteins. Discovering novel biomarkers of disease onset and progression will facilitate the creation of methods to screen populations at risk, personalized preventative treatments for those developing T1D, and targeted therapies for eventual cures of those with established disease.*