

New Diagnoses of Pediatric Type 1 Diabetes are Increasing in Severity

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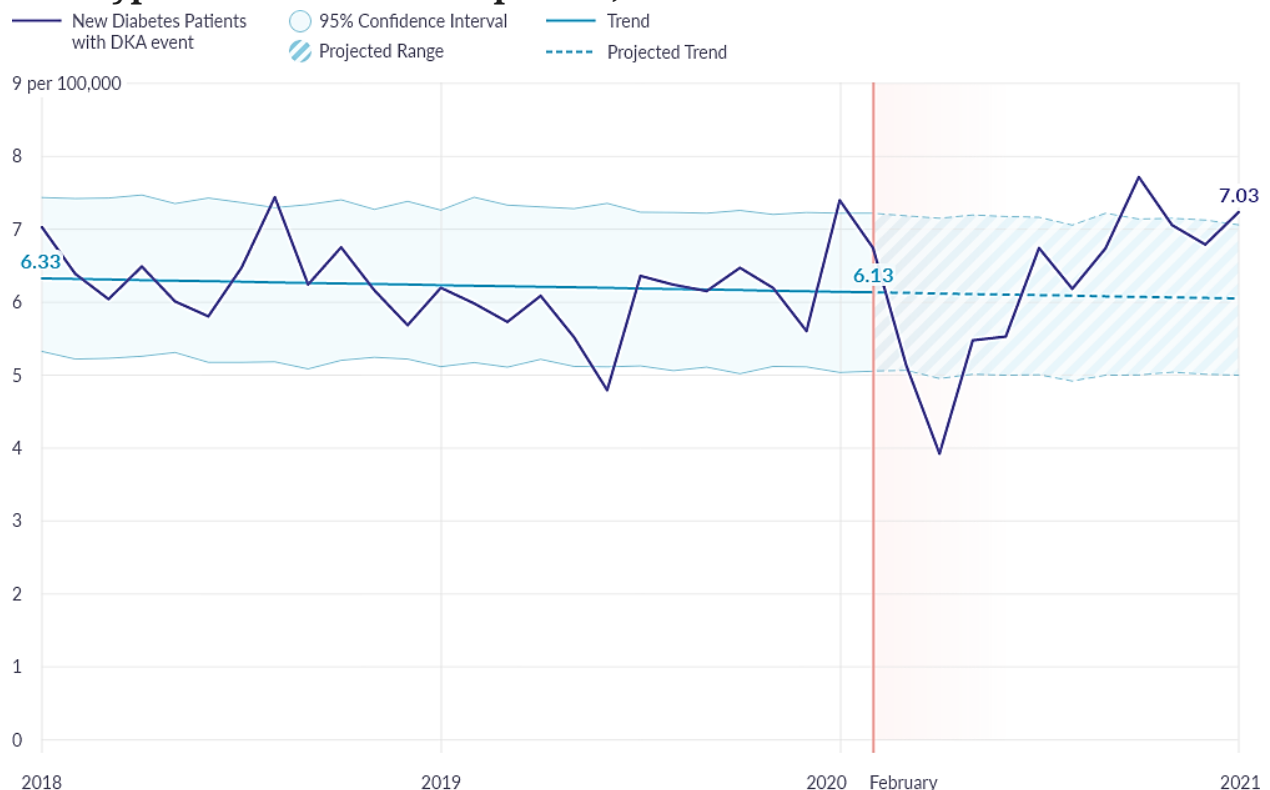
Last updated 08 June 2021 • Check for updates at EHRN.org

Recent studies indicate that the incidence of pediatric type 1 diabetes is increasing.¹ However, there is little data on whether the severity of illness at initial diagnosis is increasing. One way to define severity at diagnosis is to review incidence of DKA (Diabetic Ketoacidosis). Patients diagnosed with DKA often present with very high blood sugars and require hospitalization.

In our population of 11,273,734 pediatric patients, there was a slight long-term decrease in the number of patients per month with a new type 1 diabetes diagnosis prior to the COVID-19 pandemic. Early in the pandemic, rates of new pediatric type 1 diabetes decreased alongside the overall drop in healthcare utilization. Rates then rose in the later months of year, as shown in Figure 1.

Abstract: New diagnoses of pediatric type 1 diabetes decreased slightly from 2018-2020, but the severity of diabetes at diagnosis has increased during the pandemic.

New Type 1 Diabetes Patients per 100,000 Active Pediatric Patients



"New Type 1 Diabetes Patients Per 100,000 Active Patients" 2021. Epic Health Research Network (EHRN.org)

Figure 1. Number of patients with first diagnosis of type 1 diabetes or DKA compared to the trend seen between January 2018 and February 2020. The red line indicates the start of the COVID-19 pandemic

Figure 2 shows the number of newly diagnosed pediatric type 1 diabetes cases that presented with DKA. During the pandemic, this number increased, indicating a greater severity of diabetes at initial diagnosis. This finding suggests patients might be delaying care during the pandemic until their symptoms become more severe.

Initial Presentation of Type 1 Diabetes with DKA per 100,000 Active Pediatric Patients

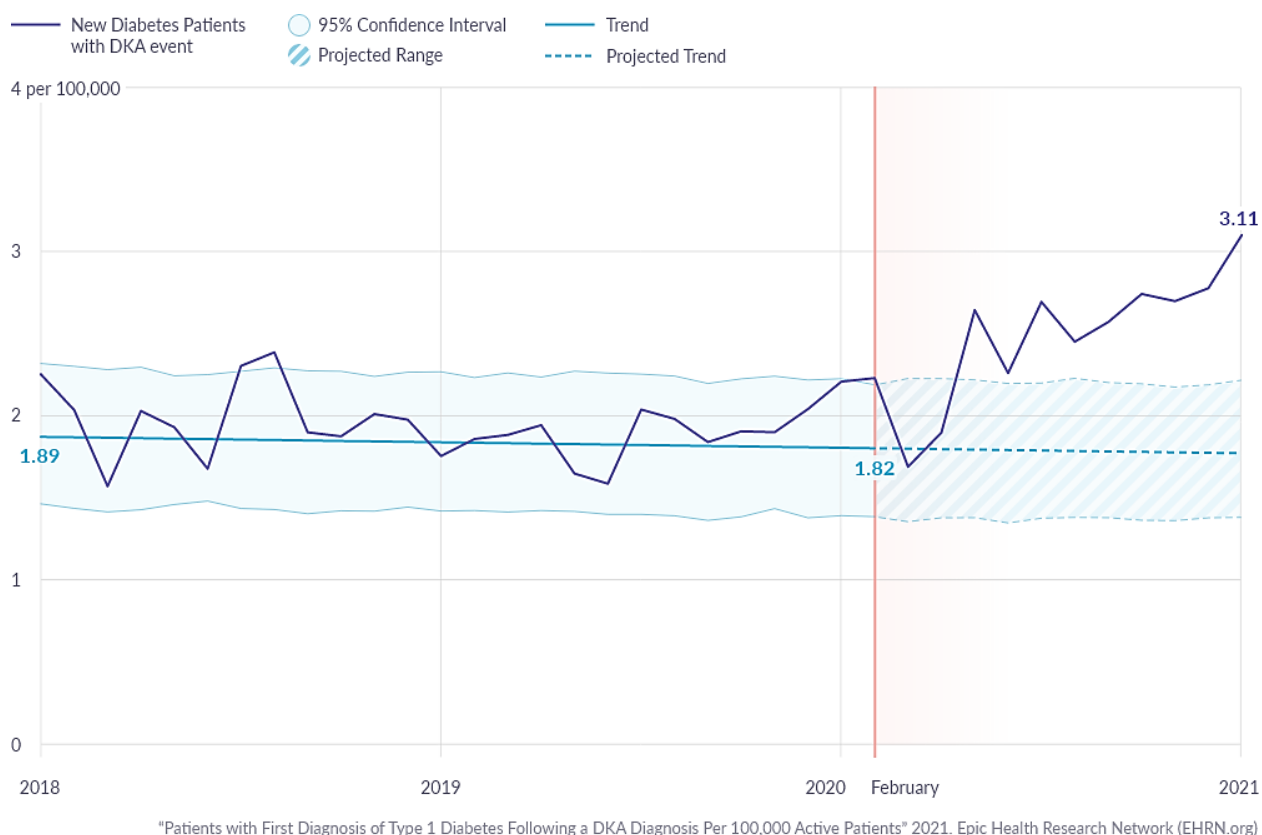


Figure 2. Number of patients with DKA as their initial presentation of type 1 diabetes compared to the trend seen between January 2018 and February 2020. The red line indicates the start of the COVID-19 pandemic.

In summary, while new diagnoses for pediatric type 1 diabetes did not increase, severity at initial diagnosis did.

These data come from Cosmos, a HIPAA Limited Data Set of more than 107 million patients contributed by Epic customers. This study was completed by two teams each comprised of a clinician and two research scientists who worked independently analyzing the data for new pediatric diagnoses of type 1 diabetes. The two teams came to similar conclusions. Data are pooled from 49 healthcare organizations representing 167 hospitals that span 30 states and cover 11.3 million pediatric patients.

References

- 1) Tuomilehto J, Ogle GD, Lund-Blix NA, Stene LC. *Pediatr Endocrinol Rev.* 2020 Mar;17(Suppl 1):198-209. doi: 10.17458/per.vol17.2020.tol.epidemiologychildtype1diabetes.

Data Definitions

Term	Definition
DKA diagnosis	An encounter diagnosis, billing diagnosis, or problem list problem categorized with at least one of the following ICD-10 or SNOMED codes: E10.1, E10.10, E10.11 SNOMED 420270002 SNOMED 111556005 All DKA diagnoses must be specific for, accompanied by, or followed by a Type 1 diabetes diagnosis.
Type 1 diabetes diagnosis	An encounter diagnosis, billing diagnosis, or problem list problem with at least one of the following ICD-10 or SNOMED codes: E10% SNOMED 420868002 SNOMED 46635009 Any of these diagnoses also mapped to SNOMED 11687002 or ICD-10 O24.4% were not included.
New Type 1 diabetes diagnosis	The earliest of any of above DKA diagnoses or Type 1 diabetes diagnoses for a patient.
DKA event	A DKA diagnosis from an encounter or billing diagnosis.
Active pediatric population	Patients under the age of 19 with a face-to-face encounter (including telehealth) with the health care system in two years prior to or during the evaluated calendar month.
Diabetic population	Patients under the age of 19 who have had a type 1 diabetes diagnosis or DKA diagnosis within two years prior to or during the analyzed month.