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Background & Goals

- The impact of the COVID-19 pandemic on diabetes in the pediatric population has not been well established.
- Our study aims to compare the presentation of newly diagnosed diabetes admitted to the American Family Children's Hospital (AFCH) in Dane County Wisconsin before and during the coronavirus pandemic.

Methods

- Retrospective chart review of the period of March-December 2020 compared to the same months of 2018 and 2019.
- Charts for all patients admitted with newly diagnosed diabetes were manually reviewed by the authors for data including dates, demographics, pH, antibody testing results, BMI, and hemoglobin A1c%.
- Type 2 diabetes was defined if all pancreatic antibody testing was negative and BMI >85th percentile.
- Covid-19 incidence data for Dane County was accessed from a publicly accessible online database from the Wisconsin Department of Health Services
- Statistics were performed as T-test or one-way ANOVA in R software.

Table 1. Characteristics of admitted new-onset diabetes patients during Mar-Dec lockdown period of 2020 compared to prior 2 years

	Mar-Dec 2018	Mar- Dec 2019	Mar-Dec 2020	P-value
Age				
<6 years	9 (23%)	4 (9%)	14 (19%)	
6-9 years	8 (20%)	15 (34%)	22 (31%)	
10-16 years	20 (50%)	21 (48%)	30 (42%)	
>16	3 (8%)	4 (9%)	6 (8%)	
Type 1 Diabetes				
N	38	39	60	
Mean A1C%	11.87%	12.06%	12.65%	0.193
Mean pH	7.23	7.27	7.18	0.023*
Mean BMI	19.2	17.7	18.7	0.543
Type 2 Diabetes				
N	2	5	12	
Mean A1C%	11.5%	12.32%	12.26%	0.863
Mean pH	7.41	7.25	7.26	0.624
Mean BMI	36.5	34.4	33.4	0.857

Results

- The total number of newly diagnosed diabetes patients was >50% higher in 2020 compared to the prior 2 years.
- The mean pH of type 1 patients in 2020 was significantly lower
- The number of type 1 diabetes cases with severe DKA more than tripled in 2020
- The number of patients admitted for type 2 diabetes increased in 2020 along with an increased total number presenting in DKA
- 3 patients were COVID-19 positive at diabetes diagnosis. There was no clear relationship between the timing of new onset cases and the local rate of COVID-19 infections.
- There were no significant differences in A1c or BMI between 2020 and prior years

Figure 1. Increased hospitalizations for new onset type 1 and type 2 diabetes in 2020, with an increased rate of both overall DKA and severe DKA.

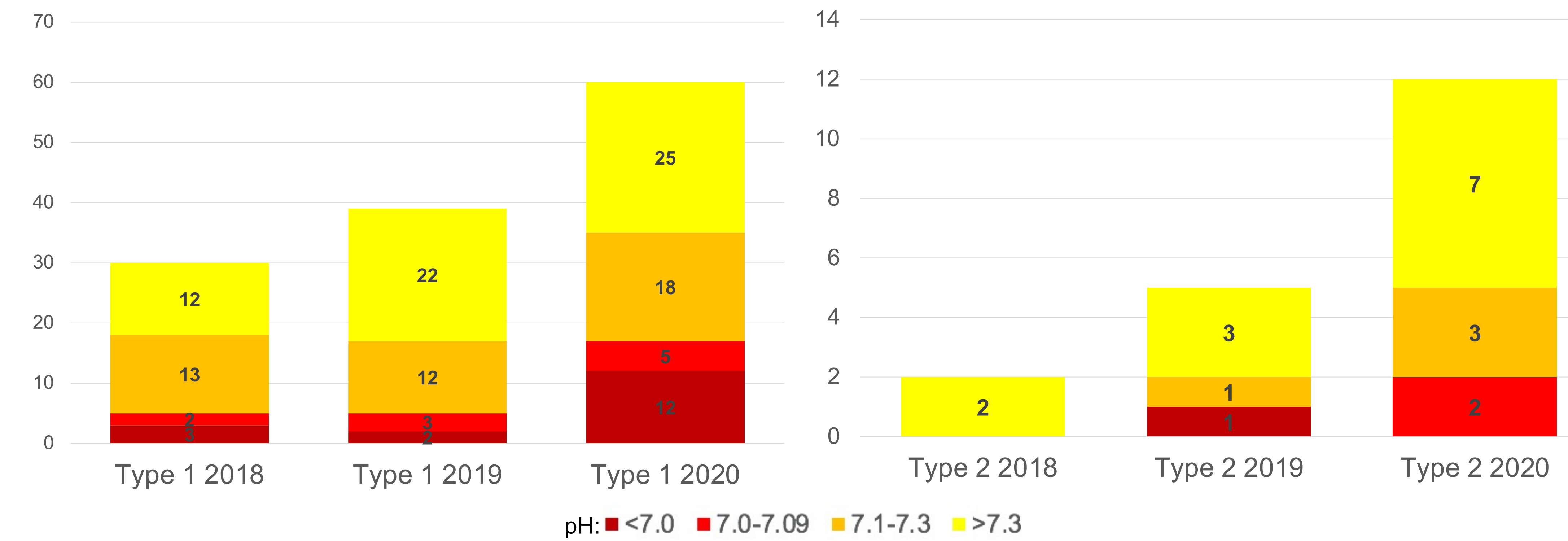
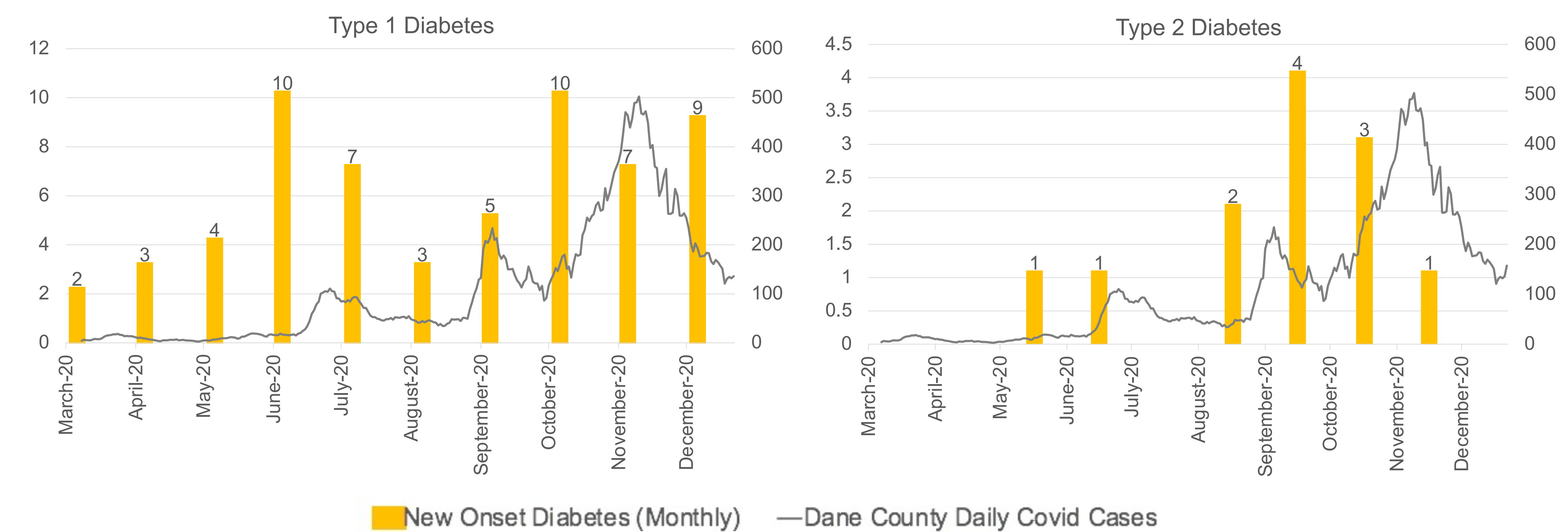


Figure 2. Timing of new-onset type 1 & 2 diabetes admissions monthly in 2020 compared to 7-day rolling average of daily COVID-19 cases in Dane County



Conclusions

- At our hospital, 2020 demonstrated an increase in both the incidence and severity of newly diagnosed diabetes, both type 1 and type 2, following the emergence and response to the Covid-19 pandemic.
- The reasons for this increase remain unclear, but may include:
 - Individual and systemic responses to the pandemic influencing how individuals access the healthcare system, especially with delayed presentation to healthcare providers due to the effect of local stay-at-home ordinances.
 - Increased chronic psychosocial stress and sedentary behaviors impacting the rate and severity of diabetes.