

COVID-19 School Closures: Implications for Pediatric Diabetes Management - A Commentary

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Objective: The United States COVID-19 outbreak shuttered public and private schools, confining more than 55.1 million students to their homes. In this paper, we discuss the unique vulnerabilities faced by families affected by pediatric diabetes as well as structural issues exposed by the COVID-19 pandemic. **Methods:** Drawing on clinical and anthropological expertise, we review the unintended consequences of remote schooling for management of pediatric diabetes and other chronic health conditions. **Results:** We identify multiple barriers to pediatric diabetes care imposed by conditions during the COVID-19 pandemic. We propose a 4-tiered policy solution that aims to improve crisis response and to protect the health of children with chronic conditions, like diabetes, long-term. **Conclusions:** The COVID-19 pandemic has precipitated wide disruptions to schooling, employment, finances, and transportation, placing enormous burdens on families that care for a child with diabetes. Comprehensive policies supporting integrated diabetes care, student accommodations in remote learning conditions, extended medication supplies, and increased healthcare access would not only prevent adverse outcomes for children with diabetes in crisis settings, but also lay a durable foundation needed to increase health equity of all children living with chronic conditions.

Key words: COVID-19; coronavirus; diabetes; pediatrics; health policy; school health

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Children are often first diagnosed with diabetes, not by their pediatrician, but in the hospital. Frightened parents rush to the emergency room, their child heaving with nausea, after insulin deficiency has sent them into life-threatening ketoacidosis.^{1,2} At discharge, parents receive exhaustive education on carbohydrate counting, glucose monitoring, and injection administration, with strict warnings about the dire consequences of failure to follow through. The diagnosis can overwhelm any family, but for those on the social and economic margins, controlling their child's glucose levels is especially taxing.³ These families rely on the support of healthcare teams and school staff to keep their children healthy.

Now, during the coronavirus disease 2019 (CO-

VID-19) pandemic, parents of children with diabetes find themselves abandoned. With school closures, stay-at-home orders and suspension of summer programs, parents working from home must balance diabetes management with employment demands and homeschool. Essential workers, who are disproportionately low-income and people of color, are forced to choose between leaving their child home alone or making informal childcare arrangements that risk illness, which can worsen glycemic control.⁴ Other parents have lost their jobs entirely, including the insurance that covers their children, jeopardizing their access to care.

In this paper, we discuss the unique vulnerabilities faced by families affected by pediatric diabetes as well as structural issues exposed by the CO-

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VID-19 pandemic. We propose a 4-tiered policy solution that aims to fill these extant gaps both to improve crisis response and to protect the health of children with chronic conditions long-term.

The Role of In-person Schooling in Pediatric Diabetes Management

The COVID-19 outbreak shuttered public and private schools, confining more than 55.1 million students to their homes.⁵ For more than 200,000 children with diabetes,⁶ these closures signify a loss of both supervision of school nurses and daily routine. School nurses supervise and direct diabetes control until children are able to manage their disease independently.⁷ Healthcare providers guide school-based diabetes management through plans that inform student disability services, including individualized education plans (IEPs) and section 504 forms.⁸ Although the United States Department of Education released guidelines for service provision to children with disabilities during the COVID-19 outbreak, these do not require schools to continue assistance with diabetes management.⁹

Amid the pandemic, many families, particularly those under socioeconomic stress, may be forced to shift responsibility for diabetes management to their child. In the absence of routines and supervision afforded by in-person schooling, children are more likely to engage in unhealthful behaviors including increased caloric intake, reduced physical activity, and decreased medication adherence.^{10,11} These place children at increased risk of irregular glycemic control, which can lead to life-threatening complications.

Structural Barriers Exposed by the Coronavirus Pandemic

The COVID-19 pandemic also has exposed many structural barriers that impede pediatric diabetes care. First, the public health crisis has revealed gaps in healthcare coverage, particularly overreliance on employer-sponsored health insurance (EPHI). Nearly 50 million Americans may lose their jobs in the immediate fallout of the pandemic, adding an additional 7 million to the ranks of uninsured workers.¹² For children with diabetes who receive health insurance coverage through their parents, this lapse in coverage could be life threatening.

Second, even with insurance, out-of-pocket ex-

penses and medication supply issues constitute significant barriers to adequate diabetes management.¹³ Monthly median out-of-pocket expenses for youth with diabetes are estimated around \$65, with 40% of families spending more than \$100.¹⁴ In addition to this financial burden, nearly all states and insurers impose dispensing limits on medications, requiring frequent pharmacy visits that may reduce adherence.¹⁵ During the current crisis, financial precarity due to job loss and stay-at-home mandates exacerbate these structural issues, making it even more difficult for families to obtain medications.

IMPLICATIONS FOR HEALTH BEHAVIOR OR POLICY

References to diabetes prevention, management, and control are replete in *Healthy People 2020*, including at least 16 objectives specific to diabetes,¹⁶ as well as recommendations related to contributing factors such as nutrition and weight management,¹⁷ physical activity,¹⁸ and community prevention initiatives.¹⁹ We propose the following 4 policy recommendations to mitigate the harms imposed by the current crisis and to promote health for children with chronic diseases in the post-pandemic period.

- *Integrate and expand access to the pediatric diabetic care and communication team.*

Increased accessibility of diabetic care teams can improve glycemic control. This can be achieved through expanded use of remote communication and increased reliance on diabetic health educators and community health workers (CHWs). Care coordination through telemedicine and CHWs has been shown to improve pediatric management of diabetes.²⁰⁻²² Furthermore, overcoming the school nurse shortage can uphold the pillar of school-based care in diabetes management.²³ During the recovery phase of the pandemic response, investment should focus on strengthening remote health communication, developing lay health workers and diabetes educators, and expanding the school nurse workforce to prevent both emergent and chronic gaps in health assistance.

- *Establish federal regulation for schools to provide chronic disease management assistance remotely.*

Public schools should be required to continue accommodations for diabetes management during periods of remote learning. IEP, section 504, and

other school service plans should include systems of online communication among children with diabetes, CHWs and school staff members. New school services plans should include contingency arrangements in the event of long-term remote learning and school closures.

- *Increase supply limits for maintenance medications to 90 days.*

Mandates for maintenance medications, including antidiabetic agents, to be dispensed in 90-day supplies may increase adherence as well as reduce costs to state and private insurers.^{15,24} Coordination among prescribers, retail pharmacists, and mail-order services can optimize the efficiency of medication delivery.^{25,26} These measures can mitigate financial, transportation, and other social barriers that are heightened during crises.

- *Adopt a single-payer, universal healthcare system.*

Ensuring that all children have access to affordable healthcare is critical to diabetes management and overall population health. A single-payer healthcare system would minimize out-of-pocket expenses and eliminate healthcare premiums, reducing the financial burden to families affected by diabetes. Universal healthcare would guarantee that families are not doubly stressed by decreased access to medical care in the event of job loss.

Disruptions to schooling, employment, finances, and transportation during emergencies place enormous burdens on families struggling to help their children with diabetes maintain adequate glycemic control. As local jurisdictions weigh public health expertise²⁷ – including new concerns over aerosol transmission of COVID-19²⁸ – against injunctions from the President and Education Secretary to reopen in-person schooling in the fall,²⁹ measures to minimize the hardships to families should be considered. Comprehensive policies implemented at the local, state, and federal levels not only prevent adverse outcomes for children with diabetes in crisis settings, but also lay a durable foundation needed to increase health equity of all children living with chronic conditions.

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Human Subjects Approval Statement

The preparation of this manuscript did not involve human subjects and therefore no institutional review was required.

Conflict of Interest Disclosure Statement

All authors of this article declare they have no conflicts of interest.

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