

## **ESPE Patient Information on COVID-19 and Pediatric Endocrine Disease**

### **Disease specific information and advice – Type 1 Diabetes**

**This information is based on current knowledge of COVID-19 and will be updated as additional scientific evidence is released.**

#### **Disease specific information and advice: Type 1 Diabetes Mellitus (T1DM)**

This flyer aims to provide guidance on prevention and treatment of COVID19 in patients with a pediatric endocrine disease. It summarizes fast facts about COVID-19, and what children with endocrine diseases and their parents need to know regarding their health and well-being. These recommendations are based on the latest knowledge and expert opinion. If, after reading, you still have concerns or questions, please contact your physician or healthcare provider.

#### **What is COVID-19?**

Infection by the new SARS-coronavirus 2 (SARS-CoV2) can lead to the disease COVID19, a flu-like illness. On March 11, 2020, WHO publicly characterized COVID-19 as a pandemic. People who are confirmed to have COVID-19 have exhibited mild to severe respiratory illness with fever, coughing and shortness of breath. Additional symptoms include chills, muscle pain, sore throat, loss of taste or smell and possibly gastrointestinal symptoms like nausea, vomiting or diarrhea, skin rash, or discoloration of fingers or toes. Symptoms may appear 2–14 days after exposure to the virus. Risk for severe course of COVID-19 is associated with older age, race/ethnicity, male gender, obesity, cardiovascular risk factors, type 2 diabetes mellitus, or other chronic underlying conditions or comorbidities.

#### **Children and COVID-19**

The true incidence of SARS-CoV-2 infection in children is not known due to lack of widespread testing and the prioritization of testing for adults and those with severe illness. Globally, fewer cases of COVID-19 have been reported in children (age 0-17 years) compared with adults, however, recent evidence suggests that children likely have the same or higher viral loads compared with adults and possibly could spread the virus as effectively as adults.

In children, the disease course of COVID-19 is generally mild. Most often no special treatment is required, besides simple supportive measures (adequate water intake, use of paracetamol, when needed). Few children have severe complaints that render hospitalization necessary.

#### **Are children with Type 1 Diabetes Mellitus at increased risk of COVID-19 infection or severe course of COVID-19?**

Currently, there is no evidence indicating that children and young adults with type 1 diabetes (T1DM) are at increased risk for COVID-19 infection. However, while there is limited evidence which

underlying medical conditions in children might increase the risk for severe illness, it is possible that similar to adults, children with T1DM might also be at increased risk for severe illness from COVID-19. It is well known that uncontrolled hyperglycemia impairs immune function in all forms of diabetes, and therefore it is likely that patients with T1DM if not well controlled, could have an increased risk of infection. The risk of getting very sick from COVID-19 is likely to be lower if diabetes is well-managed and intensifying glycaemic control could serve as a means of primary prevention.

### **What should children with T1DM do in case of an infection?**

COVID-19 infection, as all viral infections, can lead to dysregulation of glycaemic control. Any infection is characterized by inflammation and constitutes a stress condition that requires an increased level of alertness from the whole family. Whenever children with T1DM develop symptoms suspicious for COVID-19, they need to follow the plan provided by their diabetes team for “sick day management”

The main steps of this plan include

1. More frequent measurements of glucose and ketones. The range of glucose should be 70-180mg/dl (3.9-10.0 mmol/L) and the ketones in blood <0.6 mmol/L.
2. Never omitting or stopping injecting insulin. In fact, insulin requirements usually increase during infections.
3. Keeping well hydrated
4. Providing symptomatic treatment (i.e antipyretics for fever relief)
5. Contact diabetes care team for further instructions

It is important to underline that- even during the coronavirus outbreak- the family should not hesitate to seek immediate medical care or advice in case of severe symptoms, including: Persistent fever, vomiting, weight loss (indicative of severe dehydration), exhaustion, confusion, fruity breath odor or breathing difficulty and severe abdominal pain. All these are symptoms that may indicate diabetic ketoacidosis, an emergency situation that requires direct communication with the diabetes team and transition to the emergency department.

In addition, children with or without underlying conditions are at risk of developing Multisystem inflammatory syndrome in children (MIS-C), a condition where different body parts can become inflamed, including the heart, lungs, kidneys, brain, skin, eyes, or gastrointestinal organs. Presently it is unclear what exactly causes MIS-C. However, it is known that many children with MIS-C had the virus that causes COVID-19 or had been around someone with COVID-19. MIS-C can be serious and potentially life threatening, but most children who were diagnosed with this condition have gotten better with medical care. In the case child with T1DM develops difficulty breathing, shortness of breath or persistent pain or pressure in the chest, new confusion or inability to arouse, bluish discoloration of lips or face, sudden rash or inability to stay awake, it is of must to **seek emergency medical care immediately** as this could be the symptom of impending multisystem inflammatory syndrome.

**Do the corona virus prevention measures differ for children with T1D compared to the general population?**

The preventive measures against contamination with the SARS-CoV2 infection are not different for children with T1DM than for healthy children. No extra precautions are needed other than the usual advice. They should participate in school as all other classmates when allowed by the general SARS-CoV2 prevention measures. The SARS-CoV2 will be around for a long time; therefore, it is important for children to attend school regularly to obtain adequate education, while promoting their normal development and general well-being. It is also especially important to continue to have physical activity during the pandemic. Especially children with diabetes are strongly encouraged to integrate physical activity in their daily routine even during lockdowns. Cycling, walking, playing with other family members around the house and in the garden and even participating in house cleaning are all part of being physically active.

### **What should children with T1DM do to protect themselves?**

For COVID-19 prevention, there is still no vaccine available. To prevent corona virus from spreading, there are several general recommendations Wash your hands often with soap and water for at least 20 seconds; do not touch your eyes, nose and mouth with unwashed hands; avoid close contact with people who are sick; stay at home when you are sick; and disinfect frequently touched objects and surfaces. CDC recommends that children 2 years of age or older wear a mask when in public and when around people they don't live with. However, wearing masks may not be possible in every situation or for some children and in that case avoiding close contact with others and washing hands frequently should be practiced. In addition, wearing a mask is **not** a substitute for other everyday prevention actions like hand washing and social distancing.

It is important to have the phone numbers of diabetes care team ready, including how to reach them at night and on weekends or holidays.

It is important for children with diabetes to maintain a good glycemic control and to be aware of the risk and signs of diabetic ketoacidosis.

For 2020-2021, CDC recommends use of any licensed, age-appropriate flu vaccine as an option for vaccination this season. It is particularly important to consider flu vaccination for children and adolescents with T1DM.

### **What is the advice on the regular monitoring of children with T1DM?**

Even during the pandemic, children with T1DM should not omit their regular outpatient clinics and-if possible-their laboratory workups. If necessary, consultations may be provided by telephone or video-calls. In fact, the use of technology in the management of T1DM has provided the opportunity to create an interactive digital clinic, where the families can send in their data from their meters, their pumps or their sensors via e-mail or by uploading them to the "cloud" and the diabetes team can provide prompt and accurate feedback, reducing thus the need for appointments with physical presence.

Furthermore, it is important for families to ensure that they have enough medical supplies on hand, ideally in larger quantities, if possible. Insulin requirements can significantly increase during an acute infection, as well as the need for intense glucose and ketone control. Access to technical support and

back-up plans in case of pump/sensor failure must be ensured.

**Disclaimer:** Due to the emerging nature of the COVID-19 crisis this document is not based on extensive systematic review or meta-analysis, but on literature review and expert opinion. The document should be considered as guidance only; it is not intended to determine an absolute standard of medical care. Healthcare staff need to consider individual circumstances in their management for patients.

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