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Date:

Information regarding a young person with Type 1 diabetes sitting exams

To Whom It May Concern,

RE:

The above young person has Type 1 Diabetes and is under the care of the Children's Diabetes Team at Poole Hospital. Type 1 Diabetes is an autoimmune condition that affects the body's ability to regulate the blood glucose levels in the blood. Blood glucose levels outside of the target range (4.0mmols/L – 7.0mmols/L) have a cognitive and physical effect on the body that is often not appreciated.

Low blood glucose levels or hypoglycaemia (less than 4.0mmols/L) will affect the ability to concentrate and can cause confusion and disorientation. Although the child or young person will usually feel better approximately 15 minutes after treating the hypoglycaemia, there is evidence that it can take 1-2 hours following normalisation of blood glucose levels before they are able to achieve a maximum level of performance. This is because the blood/brain barrier slows down adjustments to glucose levels in the brain. The negative impact on cognitive functioning following a hypoglycaemic event is also illustrated by the studies cited below.

Furthermore, there is evidence that **high blood glucose levels (blood glucose more than 14mmol/l)** adversely affect the ability to concentrate. High blood glucose levels are associated with poorer test results and slower performance. High blood glucose levels also increase the need to pass urine and lead to dehydration, where the young person may need more frequent toilet breaks and easy access to water.

Therefore, to perform to the best of their ability on the day, it is vital that the child or young person with diabetes is given the means to monitor their blood glucose levels during exams and to correct those that are too low or too high, or that are dropping or rising too quickly. Any time taken to carry out these tasks should be added at the end of the exam (by stopping the clock as required).

Exams are a stressful time for most people and unfortunately, stress is a common cause for rising and/or fluctuating blood glucose levels in people with type 1 diabetes. Therefore, **at a time when it is especially important to optimise blood glucose control, it is particularly difficult to do so.**

Under equality laws, schools have a duty to make "reasonable adjustments" to prevent any child with a disability, from being placed at substantial disadvantage compared to non-disabled children. While children and young people with diabetes and their parents may not consider diabetes a disability, they are still covered by these laws.

All exam invigilators must be made aware of the young person with Type 1 diabetes, the kit they are required to always have access to, and what action to take if needed during an exam.

Standard exam procedures

- **Children and young people will need to be able to monitor their blood glucose levels during the exam** so that they can, where possible, prevent low and high blood glucose levels and maximise their performance in the exam. Therefore, they should be able to test their blood glucose levels in the exam and/or wear a continuous glucose monitoring system. The test itself takes seconds and should not be distracting to other candidates.

- **Children and young people will need to act when their blood glucose level is too low (less than 4mmols/L) or is dropping too quickly**. Therefore, they will need access to sugary drinks, glucose tablets or sweets. These should be taken out of their wrappers and put in a clear plastic bag or bottle. **The clock should be stopped** while the child or young person is treating and recovering from the hypoglycaemia. The clock should not be restarted until the child or young person's blood glucose level has risen above 5.5mmols/L.

- **When the blood glucose is too high (more than 14mmols/L), the child or young person will need to administer insulin to attempt to bring it back down to within the target range.** This will either be delivered by entering information into an insulin pump, which the child or young person wears continuously, or via a subcutaneous injection. For those on an insulin pump, the set and cannula may need changing if the young person has significant ketones (follow hyperglycaemia flow sheet) or a blockage or malfunction has occurred.Again, the clock should be stopped while the young person is administering the insulin and restarted when they are able to continue.

- **If a supervised break is required for monitoring blood glucose levels, treating levels out of range, or going to the toilet, the child or young person should alert an invigilator so that the clock can be stopped**. The clock should not be restarted until they have returned to their desk and/or the young person has recovered. This is common procedure for any supervised breaks.

- Some young people feel strongly that they wish to sit in the main exam hall, with their peers, as this is an important part of the exam experience for them. It is helpful, however, to consider where the young person with diabetes will sit in relation to exits, as they may have to leave the exam room for supervised breaks. Other young people feel that it is important to sit the exam in a separate room. They might feel self-conscious about carrying out diabetes tasks in such a large room, or concerned that, if they need to stop the clock, they will be disturbed by others leaving the exam hall before them. Everyone is different and this should be the choice of the young person.

Use of Continuous Glucose Sensors in school exams

Many young people now use continuous glucose monitoring devices, such as the Dexcom G6, where their mobile phone is used as a receiver. Glucose levels are sent to the phone continually, where they can be tracked and the phone will alert the young person if the blood glucose level is rising or falling, too high or too low, enabling young people to monitor and manage their blood glucose levels during exams more closely.

We understand there may be concerns about the use of mobile phones at school, and particularly in exams. As the connection of the dexcom transmitter is Bluetooth, the phone will still work as a receiver without wifi and with the phone in airplane mode. The mobile will need to be within 6 meters of the student with appropriate alerts on. The high and low alerts can be put on vibrate, so as not to disturb others, only the urgent low alarm, which requires immediate attention cannot be muted. Setting appropriate low alerts which the student will receive and can then make treatment decisions on, should help prevent an urgent low alarm level being reached. Do speak to the young person or contact the team to discuss any concerns further.

Closed Loop Systems such as AndroidAPS, LOOP

Some students now manage their diabetes using a closed loop system, such as AndroidAPS or LOOP. This is software run on a smartphone which takes readings from a Continuous Glucose Sensor and sends automatic instructions to the student's insulin pump to increase or decrease the amount of insulin being

provided. Similarly to the Dexcom G6, these can be run by Bluetooth, so the phone can be set without wifi and in airplane mode. It is important to note that in these cases the insulin pump is run by instructions from the smart phone and therefore the student may need to make additional manual adjustments to their insulin using the phone.

Special Consideration

"Special consideration is a post-examination adjustment to a candidate's mark or grade to reflect temporary illness, temporary injury or other indisposition at the time of the assessment, which has had, or is reasonably likely to have had, a material effect on a candidate's ability to take an assessment or demonstrate his or her normal level of attainment in an assessment." (Joint Council for Qualifications, 2014)

The joint council for Qualifications states that 3% of the total raw marks available in the component concerned are likely to be awarded in certain circumstances which include "flare-up of severe congenital conditions such as epilepsy, diabetes, severe asthmatic attack" (Joint Council for Qualifications, 2014).

Therefore, if the diabetes has been particularly difficult to manage during the exam and/or the child or young person has experienced several low and/or high blood glucose levels that have required treatment and/or significantly affected ability to concentrate, they should liaise with their school or college with regards to application for special consideration. This is applied for after the exam concerned. Downloads of blood glucose meters and continuous glucose monitoring devices can be used to support such an application.

If you require any further information, please do not hesitate to contact us.

Yours sincerely,

Lucy Aldous
Senior Paediatric Diabetes Specialist Nurse

References: Cox, D., Kovatchev, B.P., Gonder-Frederick, L.A., Summers, K.H., McCall, A., Grimm, K.J. and Clarke, W.L. (2005) Relationships between hyperglycemia and cognitive performance among adults with type 1 and type 2 diabetes. Diabetes Care; 28:71-7 Frier, B.M. (2004) Morbidity of hypoglycemia in type 1 diabetes. Diabetes Res Clin Pract; 65 Suppl 1:S47-52 Gonder-Frederick, L.A., Zrebiec, J.F., Bauchowitz, A.U., Ritterband, L.M., Magee, J.C., Cox, D.J. and Clarke, W.L. (2009) Cognitive functions disrupted by both hypo- and hyper-glycemia in school-aged children with type 1 diabetes: a field study. Diabetes Care; 32: 1001-6 Hanas, R. (2012) Type 1 Diabetes in Children, Adolescents and Young Adults (5th Ed.) Class Publishing, London Joint Council for Qualifications (2014) A guide to the special consideration process JCQ M. Puczynski, M., Puczynski, S., Reich, J., Kaspas, J.C. and Emanuele, M.A. (1990) J Dev Behav Pediatr; 11:170-74