



HCU and School

What is HCU?

HCU is a rare inherited condition. HCU stands for homocystinuria. People with HCU cannot use protein in the usual way. Protein is made up of amino acids, one of which is methionine. In HCU, the enzyme which breaks down methionine is absent or only present in very small amounts. This results in a build up of methionine and its product homocysteine in the blood. If treatment is not commenced high levels of homocysteine damage the body.

HCU can be treated completely by medications and a protein restricted diet. _____ has been on this diet since birth (or since ___ years of age). With effective treatment children with HCU develop in a normal way. Apart from needing medications and a protein restricted diet _____ is exactly the same as other children in the class. He/she is no more likely to suffer from illness than any other child, and can participate in normal school/preschool activities.

HCU is different from an allergy. If a child with HCU consumes food he or she shouldn't eat, there is no immediate reaction. However if this continues to happen on an ongoing basis, there will be a build-up of homocysteine which causes damaging effects over time.

How is HCU diagnosed?

All babies in Ireland have a blood sample taken between the 3rd and 5th day of life, the heel prick test. This is used to screen for HCU as well as other conditions. The incidence of HCU in Ireland is 1 in 65,000. Some people however may be diagnosed later.

What happens without treatment?

Without early treatment, the features of HCU may be:

- Thrombosis (clotting) in either arteries or veins. People with HCU not undergoing treatment have a greatly increased risk of stroke, heart attack and other thromboses.

- Dislocation of the lenses of the eyes. There is a tendency for the lenses of the eyes to be in an abnormal position, which leads to problems with vision, possibly cataracts, and eventually the need to have the lens removed.
- Mild to moderate intellectual handicap occurs in the more severe cases.
- Osteoporosis and other bone problems.

What does the treatment involve?

At present the treatment for HCU is a special low protein diet plus a synthetic protein supplement. Special medications are also recommended. This **diet is for life**. It will prevent the build up of excess methionine and homocysteine in the blood, while at the same time providing enough Methionine for growth and development. Blood levels are taken regularly to make sure ideal levels are being achieved.

What are the principles of the diet?

- Meat, fish, cheese, eggs, milk, milk products, many vegetarian foods, chocolate, bread, pasta, seeds and nuts are rich in protein and therefore methionine, so they are not allowed.
- Protein is not totally excluded as the child requires a small amount of methionine for growth and development. Foods that contain a small amount of protein such as potato, and cereals are given in small measured quantities so that the blood methionine, which is measured regularly, is kept within safe limits. These measured foods, known as protein 'exchanges', are spread out between the day's meals. The number of exchanges that a child is on changes regularly depending on the blood methionine and homocysteine level.
- Most fruit, vegetables, salads and also sugar, jam, syrups and fats such as butter, fat spreads and cooking oils are protein free. There are also many specially manufactured foods which are low in protein. These include low protein bread, biscuits, chocolate, flour, spaghetti and other pastas and milk substitutes. They are available on prescription for the child with HCU.
- As the high protein foods such as meat, fish, cheese and eggs cannot be eaten, they have to be replaced by a special *synthetic protein* from which the methionine has been removed. This is given in the form of a drink or paste. Vitamins and minerals are also

included in this drink. The synthetic protein should be spread out over the day. It is very important for the child's growth and development and it helps with the good control of blood methionine and homocysteine levels. It has a strong taste and smell. It is important that the teacher has a positive attitude towards the synthetic drink or paste as it is a vital part of the HCU diet. It may be necessary for _____ to take their synthetic protein once or twice per day at school. Some children can struggle at times to take their synthetic protein. Therefore it is very beneficial if the adults around them including teachers can support them and praise their efforts to take the drink or paste. If the child does not finish their synthetic protein at school please inform parents.

How should this be managed at school?

It is important that all those who are involved in the care of the child are informed about the diet. As a teacher you can play a valuable role in helping the child manage their diet whilst at school. Avoid being over sympathetic to the child. While the diet is difficult, we have found that a matter of fact approach is the most helpful. This restricted diet is important for their ongoing well being. It is important that exact amounts of protein (exchanges) and the synthetic protein drink are taken each day.

School lunches

The child's parents will advise on suitable lunches for school. Many families prefer their child to have a packed lunch.

In order to ensure that the child adheres to his/her protein exchanges accurately, it is important to ensure that:

- Food should not be swapped with other children as this would lead to incorrect protein being taken. You may already have some class rules about food and sharing of food. Having class rules prevents the child from feeling isolated or 'different'.
- Only food provided by parents should be given (or foods from the list that parents have provided that are protein free or low in protein)
- Leftover food needs to be kept and sent home in the lunch box to help parents to keep track of the child's protein intake for the day.

- If the synthetic protein drink is taken to preschool/school it is important to ensure that this is taken.
- If the child has eaten any food that has not been provided by parents or is not allowed or if the child has not taken his/her synthetic protein drink, it is important parents are informed that day so changes can be made to the diet for the rest of the day. This can be written into the child's homework journal for example.
- If the class is learning about food or cooking, recipes may be adapted to low protein versions. Talk to the child's parents as they will be able to help you with ideas or alternatively you can contact the Metabolic Unit on 01 8784317.

Treats and parties

There are a number of sweets allowed in the diet and these can be used for treat days or parties. A piece of fruit also makes a good snack food. The majority of fruit is protein free. If parties or treats are to be given at school it would be advisable to check with the parents and have some suitable foods available for the child with HCU. Families can provide you with a list of suitable treats for parties.

Difficulties with the diet

If a child with HCU eats foods they are not allowed there will not be an immediate effect. Accidental intake of high protein foods will not cause any lasting harm. However regularly eating the wrong foods or having more protein exchange foods that they are allowed can have a detrimental effect long term on the child's health. Therefore, incidents where the child eats foods that they are not allowed should not be ignored. They need to be addressed with the child. *Parents should be informed if the child takes a food or drink that he or she cannot have.* If non HCU children eat the low protein foods it will do them no harm. However, this should not be encouraged.

Children with HCU can sometimes experience teasing because the food they eat is different. This should be dealt with in the same way as other teasing or bullying behavior. This can be discussed within the general context of respect for others and acceptance of differences.

Educational achievement

Children with HCU should be treated in the same way as all other children in the class. Early diagnosis and careful management of the condition results in normal healthy children who should aim for the same educational goals as their classmates. Young people with HCU have developmental assessments, as part of their routine care within the National Centre for Inherited Metabolic Disorders. They may also have additional assessments, such as a psychoeducational assessment, should there be any concerns about the child.

If you have any concerns regarding the child's educational achievement, talk to the child's parents who will pass on the concerns to the psychologist working in the Metabolic Unit.

If you have queries or required more information you can contact the Metabolic Unit in Temple Street on 018784317.