INSULIN PUMPS - Frequently Asked Questions

How many children in Glasgow have pumps?
Currently just over 30 patients are on pump therapy

How many pumps are available?
We have authorisation for 15 new pump starts per year - this number will be reviewed annually.

NICE guidelines recommend that pumps should be available for children so why are so few available?
Of course it would be wonderful to be able to offer a trial of pump therapy to any patient who wished but this is simply not possible because of financial constraints. The current limit is already much better than things were in the last few years. Nonetheless, the Diabetes Team in GGC are committed to pressing for more resources for diabetes including provision of pump therapy.

Should all children be on a pump?
In short, no. Many children and families would not wish a pump even if one is offered and many would be unsuitable for a wide variety of reasons including not monitoring often enough or acting appropriately on the results.

How are pump candidates chosen?
Candidates for pump therapy are chosen on the basis of clinical need. In GGC we have developed a system of bringing details of possible candidates to a regular multidisciplinary meeting where the whole team will discuss the pros and cons. If it is agreed that a patient justifies pump therapy then the next step is to make an assessment of priority. In most cases this results in the name being placed on a waiting list but if there is an urgent requirement e.g. diabetes in a baby (which is extremely difficult to manage with injections) arrangements will be made to commence with a pump as quickly as possible. In most cases families will be aware that pump therapy is highly likely but we cannot commit to an exact date until a month or two before starting. This is because we constantly have to re-prioritise depending upon individual clinical circumstances. While this may mean a delay for some families, this is the only way to best use our limited resources. There is a firm agreement between management and the Diabetes Team that this prioritisation will be based only upon clinical grounds.

What if we pay for a pump ourselves?
While the cost of the pump and supplies is significant, this is not the only issue to be considered. The evidence shows that in order to use a pump safely and to get the best possible results requires intensive training and support. Of course some patients can learn the basics very quickly but all require support and this implies time especially from the Diabetes Nurses but also the Dietitians, Doctors and Psychologists. Fortunately, GGC Health Board has recently promised us some more personnel and we expect that this will make it much easier to support families who wish to buy their own pumps and supplies.
However, it remains vital that anyone considering such a move should discuss their intentions with the team before buying anything.

**How much does a pump cost?**
The average cost of an insulin pump is around £2500-2800 with annual supply costs (excluding insulin) of about £1500.

**Why can't we choose the pump make we prefer?**
There are two reasons for this; one financial and the other practical. The NHS in Scotland always wishes to get best value for money so ran a procurement for insulin pumps. This limits the range of technology available unless a strong clinical case is made for something else. From a practical perspective, it is important that the staff supporting patients on pumps are fully familiar with the buttons, nomenclature and detail of how the products work. Therefore, we have deliberately limited our use to very few pumps.

**Once you are started on a pump is that it for good?**
If a pump works well for a patient and family and diabetes control is good then pump therapy will continue but, especially in teenage years, some patients will decide that they no longer wish to be on a pump. Additionally, and where the pump has been supplied by the NHS, if the clinical outcome is unsatisfactory e.g. poor control, inadequate monitoring etc. the Team reserves the right to withdraw the pump. Such a step would not be taken without prolonged discussion with the family and strenuous efforts to improve the situation.

**Are there any pre-requisites to using a pump?**
Yes, it is essential that anyone thinking about starting pump therapy is already competent at carbohydrate counting and would normally have been using multiple injection (basal-bolus) therapy for some time. In addition the patient/family will have demonstrated that they have the skills in monitoring blood sugars, adjusting insulin etc. that will be essential for safe pump use.

**How long does it take to learn to use a pump?**
In GGC, a structured 'pump start' takes a week and during this time the patient and parents would be obliged to attend hospital for several formal teaching sessions. Beyond this, the speed at which the details are learned and grasped varies but support is supplied daily or weekly until this point is reached. In most cases recently we have used email extensively for the sharing of detailed blood glucose and insulin dose information. This is done on the explicit understanding that email is not a secure form of communication so no sensitive information will be exchanged this way.

**I've heard pumps can be dangerous. Is this true?**
Yes, while properly managed pump therapy can be very effective and is safe, lax practices can be very dangerous. Unlike injected insulin, which remains active for some time, a pump delivers such small amounts only a very tiny insulin depot is in the body. Not testing blood glucose for 12 hours could easily mean a displaced cannula is not noticed. Ketoacidosis can then develop very quickly as no insulin is being infused.

**Does a pump mean that I will never have to give injections again?**
No. When things are going well, no conventional insulin injections with a pen or syringe are required. However, if your blood glucose goes high and you have ketones, it is important to have insulin by injection until you have sorted out whether the pump is
working properly. Also, you may want to have a break from the pump (e.g. for a holiday), so have to go back to conventional injections for a while.

What is CGMS?
Continuous Glucose Monitoring Systems have been around for quite a few years and use a cannula placed under the skin (very like inserting a pump giving set). However, until recently, these systems involved professionals fitting a device for a few days, disconnecting it then using a separate computer to study the results. Now there are 'patient use' systems which allow live reading of continuously measured glucose levels. One manufacturer has a system that links directly to their pump. While this sounds like a perfect world, this is a new technology which has still to prove its worth and is very expensive. Although, in rare circumstances we may use this approach, the GGC team believes that it is premature to campaign for wide adoption of CGMS while our pump access remains restricted.

Why do we have to be seen by a psychologist before starting on a pump?
Looking after a child or adolescent with diabetes is tough on all members of the family and if we could, we would have psychology support for all. However, like all NHS resources, psychologist time is limited but we feel strongly that the extra pressure put on patients and families going on to use pump therapy justifies arranging a discussion of expectations and concerns. In extreme circumstances (and it has not yet happened) the psychologist may recommend not proceeding.

The following few questions are pump-specific and are included here only for general information as the terms may be heard in clinic or seen in literature.

What is a Wizard?
Different manufacturers use different terms but a 'wizard' is a piece of software in the pump that does a clever calculation of the recommended insulin dose based upon many factors including the current blood glucose, what carbohydrate is to be eaten, exercise performed and what recent insulin has been given.

What is insulin sensitivity?
Insulin Sensitivity measures how well someone responds to an insulin, and describes the fall in blood glucose for each unit of insulin taken. It is determined by a number of factors including weight and duration of diabetes. Pumps (wizards) use this information when calculating how much insulin to suggest.

What is insulin on-board?
Since insulin is being administered continuously by a pump and boluses (individual doses) are taken with food, it would be possible for doses to "build-up" and cause hypoglycaemia. The insulin on-board function therefore keeps track of previous doses and ensures that not too much is given with next dose.

How does a pump give fast and slow acting insulin?
It doesn’t. It only gives fast acting insulin. By having a very slowly delivered background (basal) rate that can be changed as necessary, the pump copies or mimics the way the body keeps producing insulin when we are not eating. Although a fast acting insulin is being delivered, the slow rate means it works more like a long acting insulin (which actually
works by entering the bloodstream slowly) With snacks and meals pulses (boluses) of the same insulin are given rather like conventional mealtime injections.