

INSULIN  
PUMP  
THERAPY

SELECTING THE PATIENTS  
WHO WILL BENEFIT

Healthcare professionals make judgements on whether a patient can manage insulin pump therapy before referring them. A new study shows that these assumptions are not always correct and, by challenging them, pump therapy could be offered to more people with Type 1 diabetes who meet the clinical criteria

**I**n Type 1 diabetes, insulin is usually administered by multiple daily injections (MDI), with quick-acting insulin injected before meals and long-acting basal insulin injected once or twice a day. This regimen, while improving glycaemic control, cannot really reproduce physiological insulin profiles. Better control may be achieved through the use of an insulin pump. This device

delivers quick-acting insulin slowly over 24 hours, while the patient activates delivery of bolus insulin to cover meals and snacks. Basal rates are adjustable, on the pump, on a daily or hourly basis to account for situations like physical activity, shift working and illness.

The most recent NICE appraisal recommends insulin pump therapy be extended to those adults with Type 1 diabetes who are at risk of disabling

hypoglycaemia when attempting to reach their HbA1c targets with MDI as well as those whose HbA1c levels remain high ( $\geq 69$  mmol/mol) even with a good level of care.

However, despite the NICE recommendations, uptake of insulin pump therapy in the UK remains low. Only 6 per cent of the Type 1 diabetes population here uses an insulin pump, which is low in comparison with other

European countries and the United States. In Germany and Norway, for instance, around 15 per cent of those with Type 1 use a pump, while usage is as high as 40 per cent in the USA.

These low rates of insulin pump therapy have prompted questions about whether UK policy and guidelines might be depriving some people with diabetes who could benefit. On the other hand, insulin pump therapy is expensive and there have been calls to restrict access to those who show the requisite level of motivation and competence to make the most of the technology.

To explore the issue of which people with diabetes should be offered insulin pump therapy, studies have looked at the perspectives of adult and adolescent users, as well as those of parents caring for a child using a pump. However, no one has investigated how healthcare professionals view pump therapy, even though they are the ones who decide which of their patients might benefit from an insulin pump. Healthcare professionals are also responsible for educating patients in pump therapy, starting them on it and providing ongoing support.

Accordingly, a team of researchers from Edinburgh, Sheffield and Cork, Ireland, set up a study in which they interviewed a group of healthcare professionals about their views and perceptions of pump therapy and about which people with diabetes they thought would benefit most, and why. The team was led by Professor Simon Heller from the Unit of Diabetes, Endocrinology and Metabolism, University of Sheffield.

### The REPOSE trial

This new study comprises findings from part of the Relative Effectiveness of Pumps Over MDI and Structured Education (REPOSE) trial. This was set up to look at whether insulin pump therapy provides added benefit compared with optimised MDI therapy after participants with Type 1 diabetes have received structured education. This trial is particularly interesting as it includes a wider population than would normally be considered for pump therapy under current NICE guidelines.

In short, REPOSE is a multi-centre, parallel group, cluster-randomised trial involving 321 adults with Type 1 diabetes from eight UK secondary centres. Participants had to have had Type 1 for at least a year and have no preference for either a pump or MDI. They had not previously had structured education and had not used a pump in the last three years. Those who had a strong need for a pump were excluded from the trial.

Participants were first randomly allocated to either MDI or pump therapy and then took part in a 5-day Dose Adjustment for Normal Eating (DAFNE) course. After attending either pump or MDI training, the patients returned to their usual care routine. In many cases, the healthcare providers were the same as those responsible for trial recruitment and delivery. Recruitment began in November 2011 and data were collected at six, 12 and 24 months. The REPOSE trial ended in July 2015 and will report in due course.

### Exploring attitudes to pump therapy

The REPOSE trial provided an ideal context for interviewing a small group of healthcare professionals about insulin pump therapy. Here they were seeing people with diabetes that they knew living with a pump for the first time. Some were, inevitably, individuals they might not have recommended for a pump. This was an ideal opportunity to explore and challenge a number of assumptions.

The interviews that form this basis of this study were conducted between December 2012 and April 2013, by which time the healthcare professionals

had had a chance to familiarise themselves with REPOSE and its participants. A topic guide was developed to underpin the interviews and was used to explore the following aspects of insulin pump therapy:

- previous experience of working with insulin pumps
- perception and understanding of insulin pump technology and its perceived benefits and drawbacks as compared with MDI
- perception and views (prior to the trial) of which patients would, and would not, gain clinical benefit from pump therapy and why
- how decisions about moving patients onto a pump were made in their routine clinical practice
- views and opinions about the randomisation process – which patients did, and did not, benefit from this and why
- how and why, in the light of emerging findings from REPOSE, might routine clinical practice change when it comes to recommending individuals for pump therapy.

The healthcare professional participants comprised 12 diabetes specialist nurses and six dietitians, who had been working in diabetes for 5 to 29 years. They accounted for 72 per cent of the diabetes educators working in seven of the eight REPOSE trial sites and thus were closely involved with it. All were trained DAFNE educators. The interview findings were analysed by theme and cross-checked by the researchers.

### Findings – pump v MDI

Participants all said that MDI, with DAFNE, was a very good tool kit for

**...there are some people [using MDI] who probably still haven't optimised their control because they're not really putting everything into practice. So they might have slipped a bit with their monitoring or keeping a diary and really reflecting on what their blood sugars are doing and making adjustments. And a lot of people just need some extra reminders and support with doing that rather than a pump.**



Consider offering a pump to all patients who meet clinical criteria

diabetes self-management. They believed that most patients had little to gain from switching to a pump. Referral, therefore, was unlikely until they had had the chance to achieve optimal glycaemic control with MDI.

### Findings – which people with diabetes could benefit?

It was widely acknowledged that the drip feed mechanism of an insulin pump, the ability to adjust basal rates and other features could help some achieve better glycaemic control than on

MDI. These individuals would include those whose background insulin cannot meet their changing needs, particularly those who are experiencing the ‘dawn phenomenon’, those who have night time hypos and those who are very sensitive to insulin. Type1 diabetes patients with unpredictable lifestyles and those who did a lot of sport could also benefit, the participants said.

However, it was emphasised that to gain clinical benefit, patients had to know how to use their pump properly. More skill and effort is needed for a pump than for MDI.

“It’s a lot harder to use a pump and, although they’ve got the potential to make these really fine adjustments to basal rates, in practice, whether people are able to do [so] is another matter... ”

### Findings – personal and psychological characteristics

Participants revealed how, for the above reasons, they tended to use tacit and informal criteria – alongside clinical criteria – when it came to selecting individuals for pump therapy. They made judgements based upon whether they thought someone had the right personal and psychological attributes to be able to use their pump effectively.

Specifically, they would not recommend ‘troublesome and heart sink’ individuals for a pump, even if they met the clinical criteria. These included those who ‘have always had poor control, poor compliance, you know, had some education around how to adjust their insulin, but have never achieved anything’ and those who did not want to put any effort into their diabetes management and thus would expect the pump to ‘do all the work’. Older people and technophobes were also seen as unsuitable for pump therapy. People who might be more suitable were those who were ‘more technically able, possibly that means younger’ and ‘more intelligent, you know, more educationally able to take on board all of the information needed to use the pump properly’.

### Lessons learned from REPOSE

In REPOSE, allocation to pump therapy was random, rather than being informed by the healthcare professionals' judgements. Thus, staff were able to observe patients that they would not normally have recommended using a pump.

“What I’ve also noticed, and this is a new thing for me, is that I’ve had patients that I thought previously I would never give a chance on a pump but, because the way the trial’s worked, we’ve given that person a chance.”



PHOTOS: THINKSTOCK/DIABETES UK

“I have a lady, she’s 72, she came and her first comment to me, bless her, was, you know, ‘I can’t text. Can’t text’. And she’s doing really well... So I’ve stopped having preconceptions about who it will suit.”

Staff reported that working on REPOSE made them question the criteria they had previously used to predict potential success on a pump.

“Some of the ones who you think are very good with the mechanics of the pump and everything, you think ‘oh they will pick it up very quick’, but, actually, it’s too quick, they go off and do all their own thing, whereas the ones where I’m thinking ‘ooh, I don’t know if they’d manage the pump’ in actual fact turn out to be perfect candidates for a pump because they do it by the book.”

Thus, participants had revised their views about who should be referred for pump therapy in routine clinical practice.

“I’ve stopped having preconceptions about who it suits. They just have to be engaged and motivated... and we’d only know if we ask them, in terms of how much their diabetes is debilitating them or affecting their daily routine to whether they really felt they needed something different to manage it.”

As the previous comments highlight, some staff said they now look at motivation as a key criterion for pump therapy, where they had not previously. Motivation issues should, they said, be explored with individuals with a view to referral. On the other hand, some noted that there were individuals who had initially seemed to lack motivation and interest in their diabetes management who had changed on pump therapy.

“There was this girl who we would probably never have given a chance on a pump. She really was struggling, going through a phase of not caring about her diabetes, always putting herself down, saying she couldn’t do anything. But actually she can, and she’s done really well. She could see the flexibility really worked for her and actually was able to get better control... It really boosted her and gave her the confidence to think, ‘oh, I can do this’.”



Thus staff concluded that insulin pumps should be made available to all people with diabetes meeting the clinical criteria. As one DSN put it 'How are we ever going to know, unless we give them all a chance?'

### In conclusion

This is the first study to explore, in depth, what healthcare professionals think about insulin pump therapy and those people with diabetes who might benefit. It appears that, besides clinical criteria, staff use a second informal type of judgement when recommending patients for a pump. This centres around whether they think an individual possesses the personal and psychological attributes and the technical know-how to be able to benefit from a pump.

Being involved in the REPOSE trial enabled them to challenge these assumptions, as they saw how individuals they might not have recommended actually coped with using a pump. Pump therapy is more

expensive than MDI and there is pressure to identify those who have the motivation and ability to gain the most clinical benefit. This new study shows that such selection is not easy or straightforward. What also emerged was that starting on pump therapy can, in itself, be a motivating factor, regardless of the criteria applied in selection.

There are clearly barriers to pump therapy access existing in the UK, given that fewer than half of those eligible actually receive the therapy. Besides restrictions in the selection process, as described in this study, there are also issues around lack of funding and availability of clinical support. Taken together, this means some people with Type 1 are quite likely missing out on the benefits of an insulin pump. As this new

study shows, more patients with Type 1 diabetes might be offered the opportunity of insulin pump therapy if healthcare professional attitudes towards patient referral were explored and challenged.

**i** This is a digested version of Lawton J, Kirkham J, Rankin D et al (2016). Who gains from using insulin pump therapy? A qualitative study of the perceptions and views of health professionals involved in the Relative Effectiveness of Pumps over MDI and Structured Education (REPOSE) trial. *Diabetic Medicine* 33 (2); 243–251. To download the article go to <http://onlinelibrary.wiley.com/doi/10.1111/dme.12879/epdf>

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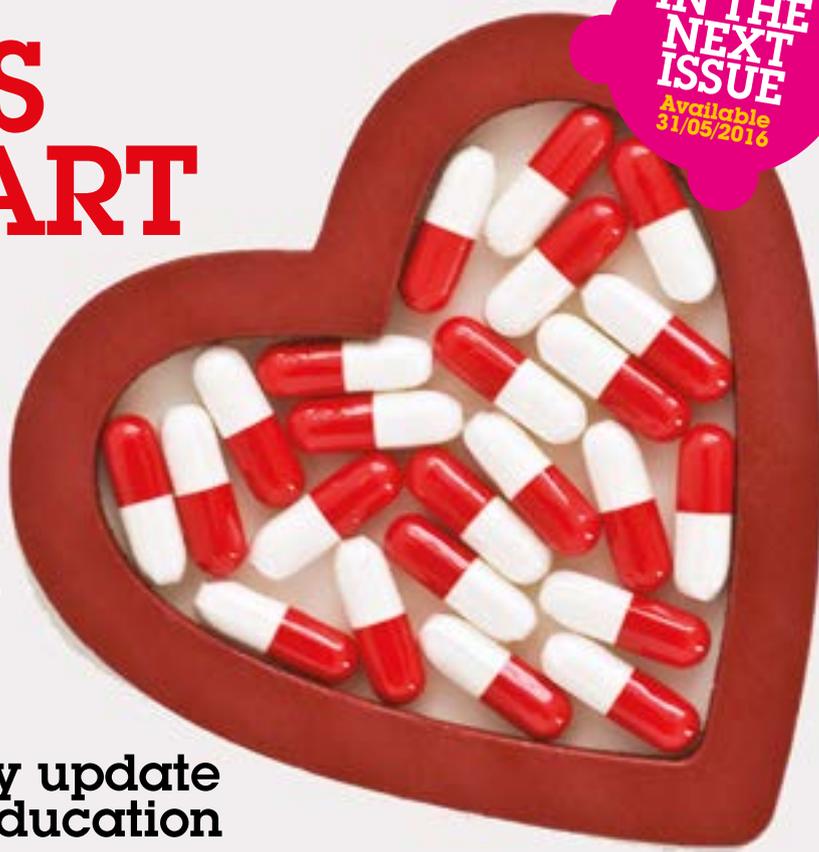
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