The uptake of insulin pump therapy by people with type 1 diabetes in Ireland: do we meet expectations?

POLICY BRIEF (July 2020)

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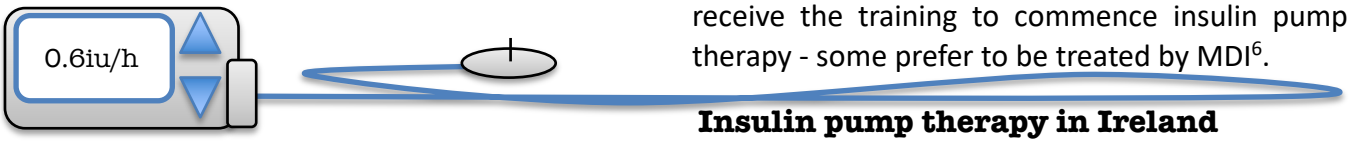
Context

Why insulin pump therapy?

Insulin pump therapy is accepted as an **effective and safe** method of insulin delivery for people with type 1 diabetes (T1D) of all ages.[1] Many systematic reviews and meta-analyses suggest that insulin pump therapy provides better treatment outcomes (blood-sugar control, reduced risk of developing diabetes-related complications)[2,3], reduces the frequency of hypoglycaemia[3], is cost-effective[2,4] and increases the quality of life[3] when compared with the most popular treatment for T1D – Multiple Daily Injections (MDI). Insulin pumps are also recommended by international organizations as a first-choice therapy for preschoolers [5].



How does it work?

Insulin pumps deliver insulin in two ways: as a pre-programmed basal rate (24/7) and bolus (meal-time/correction dose). Insulin is delivered via an infusion set that is changed every 3 days and so injections are not required. It provides insulin replacement that this the closest to physiological insulin secretion, thus it facilitates more flexible and accurate insulin administration than MDI[7]. This type of therapy is, however, more complex than MDI and diabetes teams are required to spend more time providing diabetes education and treatment support to patients, it is more expensive, and not every patient accepts being "attached" to a device or is motivated enough to receive the training to commence insulin pump therapy - some prefer to be treated by MDI[6].

Insulin pumps in Western countries

Data on the uptake of insulin pumps in people with T1D is scarce, but according to the existing evidence it varies worldwide and usually depends on the reimbursement scheme in a particular country and age-group. Usually, pumps are much more popular in children than in adults[6].

Insulin pump therapy in Ireland

Although insulin pump therapy is provided free of cost to patients with diabetes in Ireland through the Long-Term Illness Scheme, the availability of pumps is unequal, and less than half of the adult diabetes clinics offer training to commence insulin pump therapy[8]. **The aim** of our study was to estimate the uptake of insulin pumps in Ireland.

What did we do and how?

To estimate the uptake of insulin pump therapy in Ireland, we utilized the Irish Health Service Executive Primary Care Reimbursement Service (HSE-PCRS) national pharmacy claims database data from the years 2011-2016. People with T1D were identified by co-prescription of insulin and glucometer test strips without a prolonged course (>12 months) of oral hypoglycaemic agents prior to commencing insulin. Those on long-acting insulin were excluded[9]. Of this group, insulin pump users were identified by at least one **prescription of infusion sets** prescribed in 2016.

SEE THE FOLLOWING ARTICLES:

Gajewska KA, Biesma R, Bennett K, Sreenan S. BMC Endocrine Disorders 20 (1): 92. Low uptake of insulin pump therapy **HERE.**

Gajewska KA, Biesma R, Bennett K, Sreenan S. Acta Diabetologica 57 (7): 875-882. Availability of CSII in Irish diabetes clinics **HERE**.

Gajewska KA, Biesma R, Sreenan S, Bennett K. BMJ Open 2020;10:e032916. Prevalence and incidence of type 1 diabetes **HERE**

Gajewska KA, Biesma R, Bennett K, Sreenan S. Acta Diabetologica (online first). Barriers and facilitators to accessing insulin pumps **HERE**

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What is the uptake of pumps in Ireland?

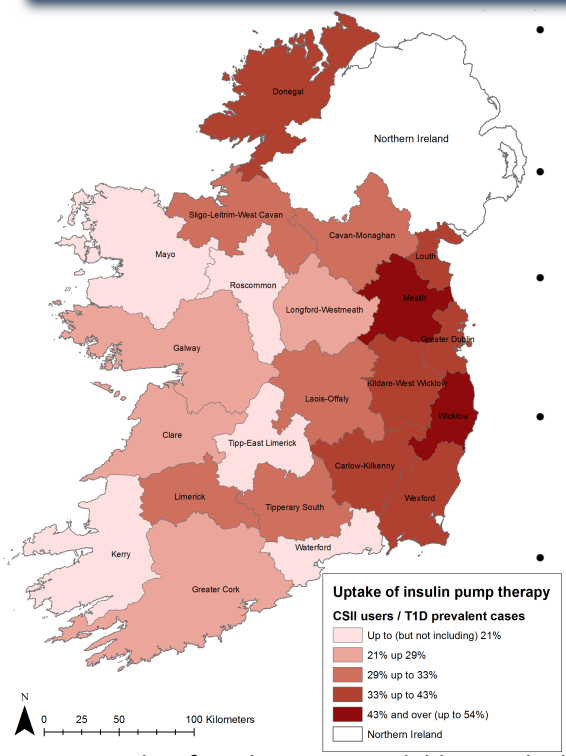

Fig 1. *Uptake of insulin pumps in children and adolescents (<18)*

- There were **20,081** people with type 1 diabetes in 2016 in Ireland
- **2111** were using insulin pumps in 2016: **10.5%** of the total population.
- Uptake was **five-fold** higher in children and adolescents **(34.7%)** than in adults **(6.8%).**
- The uptake varied from **12.6% (Co. Mayo)** to **53.7% (Co. Meath)** in children & adolescents
- The lowest uptake was **2% (Co. Roscommon),** and the highest **9.6% in (co. Kildare & Wicklow)** in adults.

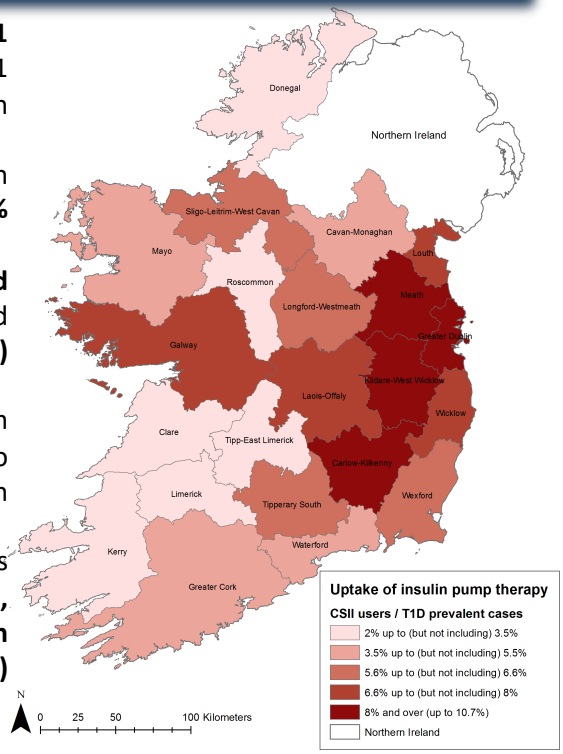

Fig 2. *Uptake of insulin pumps in adults (≥18)*

What does it mean?

The uptake of insulin pump therapy is low in Ireland compared to the European average (10.5% vs. 15%)[7], despite treatment being available free of cost to patients. The difference was observed both in adult and paediatric populations. Almost half of children and adolescents with T1D in the United States, Germany and Austria were on pumps in 2015[11], comparing to 1/3 of the paediatric population in Ireland[6]. 6.8% uptake in adults is less than in the UK, Sweden and Germany and other countries were reimbursement is provided[6]. Local heterogeneity in the uptake is large and suggests unequal access to insulin pump therapy in Ireland.

Conclusions and Recommendations

This policy brief was prepared to inform policy makers about the current gaps in health service delivery for people with type 1 diabetes: the low uptake of insulin pumps and significant local geographical variation in access to pumps. It is recommended to:

- Continue to monitor the uptake of insulin pump therapy in people with diabetes.
- Explore the barriers and facilitators in accessing insulin pumps to inform policy makers on possible steps required to improve the uptake of pumps.
- To improve the access to insulin pump therapy in all, but in particular in rural, areas of Ireland.

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