

EXPERIENCE OF ODESA DOCTORS IN USING AN INSULIN PUMP IN CHILDREN AND ADOLESCENTS WITH TYPE 1 DIABETES MELLITUS

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ABSTRACT

Children and adults living with type 1 diabetes require daily multiple subcutaneous insulin injections or continuous subcutaneous insulin infusion, commonly referred to as pump insulin therapy. Pump insulin therapy for type 1 diabetes in children is known to be associated with improved glycaemic control. In 2010, a Cochrane systematic review of 23 randomised controlled trials comparing the use of PIT with multiple daily injections found a significant difference in glycaemic control, namely HbA1c levels, with pump insulin therapy. In a recent meta-analysis, similar results were obtained when comparing insulin pump therapy with multiple daily injections using different types of bolus and basal analogue insulin. Population-based studies have also reported improved glycaemic control for patients using pump insulin therapy. The SEARCH for Diabetes in Youth study, a US population-based study of newly diagnosed diabetes in youth, found that participants with type 1 diabetes who used pump insulin therapy had lower mean HbA1c levels than those on other treatment regimens. In addition, pump insulin therapy was associated with a lower risk of severe hypoglycaemia and diabetic ketoacidosis.

Although the use of insulin pumps has increased over time, there has not been a dramatic increase in the use of insulin pumps globally or even in individual countries. In the SWEET

registry (Better control of diabetes in children and adolescents: working towards the establishment of reference centres) 49% of children aged 6 to 11 years and 42% of children aged 12 to 18 years used insulin pumps in 2016, with rates ranging from 0 to 90% among 46 diabetes control centres worldwide. In the US Type 1 Diabetes Clinic Registry, insulin pump use between 2016 and 2018 was 68% for patients aged 6-12 years and 62% for patients aged 13-17 years.

Unfortunately, today we do not have clear statistics on the prevalence of type 1 diabetes in Ukraine. According to the Diabetes Atlas resource, the last time we had an accurate figure was in 2017, but we do have some statistics. So, as of today, 389 children in Odesa are living with type 1 diabetes. However, the number of such patients is growing every year.

The diagnosis of type 1 diabetes mellitus often becomes a critical situation in the life of not only the child, but the whole family. Therefore, it is the long-term support of this family that is key to the management of diabetes in children. By "support" we mean teaching the child and his or her caregivers how to control glycaemia, nutrition, therapies, tactics in acute emergencies, etc. That is why the Type 1 Diabetes School was established and is actively operating in Odesa on the basis of the municipal non-profit enterprise "Children's Consultative and Diagnostic Centre named after Academician B.Y.

Reznik". In this publication, we would like to share some of the successes of this project.

We have developed a specific algorithm for providing care, namely, transferring a child to pump insulin therapy:

1. the day before the pump is installed, the child is registered for hospitalisation in the day care centre;

2. during the week before hospitalisation, a glycaemic profile is analysed (a written diary of the child's blood sugar readings recorded by parents at home) and insulin doses are calculated to be entered into the pump parameters;

3. conducting group classes with parents and children in the office of the School of Diabetes1:

First lesson - theory of pump insulin therapy (3 hours),

Second lesson - practical work with the pump (3 hours).

4. installation of the pump (up to 6 hours)

5. intensive supervision for 10-14 days (round-the-clock contact with a doctor)

6. continuous follow-up with counselling in 1, 3, 6, 9.12 months (more often if necessary)

7. monitoring the effectiveness of pump insulin therapy by comparing the ADDQoL diabetes quality of life questionnaire scores now and after 1 year.

The results we get from our patients inspire us to continue our work. After all, glycaemic control and, most importantly, the quality of life of the child and his or her family improve almost immediately.