

**This prospective 1-yr study on a large cohort of Italian children and adolescents with type 1 diabetes using insulin pump therapy showed a low total failure rate, highlighting the importance of continuous education to reduce failures” Rabbone et al (2018).**

Abstract:

AIMS: Incidence of insulin pump failures in a cohort of children and adolescents with type 1 diabetes was evaluated prospectively during a 1-yr follow-up.

MATERIALS AND METHODS: Insulin pump breakdown and infusion set failures were prospectively registered in a cohort of 1046 children and adolescents from 25 tertiary pediatric diabetes centers (50% males, mean age  $12.2 \pm 4.1$  yrs), with type 1 diabetes since  $6.7 \pm 3.6$  yrs, and using insulin pump since  $3.3 \pm 2.2$  yrs.

RESULTS: An average rate of 4.5 failures/person-years was registered; the incidence (events per person-year) for each failure was the following: 8.4 for hyperglycemia episodes solved with infusion set change; 7 for bubbles; 2.8 for kinking; 2.4 for bleeding; 2 for set dislodge; 2 for pump blockage; 1.9 for tunneling; 1.8 for lipohypertrophy; 0.3 for infection. At multivariate analysis significant association between HbA1c and lipohypertrophy ( $p < 0.0028$ ) was shown. Analysis by age-group (<6, 6-11, >11 years) showed a higher frequency of bubbles, hyperglycemia episodes and lipohypertrophy in preschoolers; tunneling and pump blockage were more frequent in adolescents. Aspart was associated with a lower risk of bubbles and hyperglycemia whereas glulisine was associated with a higher risk of lipohypertrophy and pump blockage. The usage of oblique cannula was associated with a low risk of all failures except infections.

CONCLUSIONS: This prospective 1-yr study on a large cohort of Italian children and adolescents with type 1 diabetes using insulin pump therapy showed a low total failure rate, highlighting the importance of continuous education to reduce failures. Lipohypertrophy was the only issue associated with a worsening of metabolic control.

Reference:

Rabbone, I., Minuto, N., Toni, S., Lombardo, F., Iafusco, D., Marigliano, M., Schiaffini, R., Maltoni, G., Frongia, A.P., Scardapane, M., Nicolucci, A., Cherubini, V., Bonfanti, R. and Scaramuzza, A.E. (2018) Insulin pump breakdown and infusion set failure in Italian children with type 1 diabetes: 1-year prospective observational study with suggestions to minimize clinical impact. *Diabetes, Obesity & Metabolism*. June 12th. .

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