

KidsAP01 Lay summary

Between August 2017 and May 2018, we conducted a study using the artificial pancreas (closed-loop system) at home in 24 very young children (aged 1 to 7) from seven different centres across Europe (UK, Austria, Luxembourg and Germany). The aim of the study was to compare whether diluted insulin led to better glucose control than standard strength insulin when using the hybrid closed-loop system.

Participants underwent two periods of 21 days of closed-loop insulin delivery. During one period, standard strength insulin (100 units/ml) was used and in the other period diluted insulin (20 units/ml) was used. The order of the two periods was random. The closed-loop system consisted of an insulin pump, continuous glucose monitor and a smartphone hosting the Cambridge control algorithm.



There was no difference in the amount of time spent in the target glucose range (3.9-10 mmol/L) when participants used diluted insulin compared with standard strength insulin (72% vs. 70% respectively). The time spent in hypoglycaemia with the closed-loop system was low, and there was no difference when dilute insulin was used compared with standard strength insulin (4.5% vs. 4.7% respectively). There were no episodes of severe hypoglycemia or ketoacidosis.

This study shows that home use of closed-loop systems in very young children with type 1 diabetes is feasible and safe but diluted insulin during closed-loop does not provide additional benefits when compared with standard strength insulin. You can read about the study in greater detail in the article published in the March 2019 issue of *Diabetes Care*. (<https://www.ncbi.nlm.nih.gov/pubmed/30692242>)