

Short-Term Economic Benefits of an Advanced Hybrid Closed-Loop System in People with Type 1 Diabetes and Above-Target HbA1c in France

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1. OBJECTIVE

Improved glycaemic control, measured by HbA1c, is associated with reduced diabetes-related complication risks. The use of an advanced hybrid closed-loop (AHCL) system with automated basal and bolus correction insulin delivery, improves glycaemic outcomes in a cost-effective manner for people with type 1 diabetes (T1D) with above-target HbA1c, in France.

As AHCL is associated with higher costs, this study's aim was to assess the potential short-term economic benefits of adopting AHCL for T1D from a French healthcare system perspective.

2. METHODS

A previously published probabilistic budget impact model with a 5-year time horizon was used [1].

Complications cost data were derived from published literature and inflated to 2023 prices. [2]

Clinical inputs were sourced from a regression model developed based on the results of a prospective, multicentre, randomized control trial [3].

The cost savings modelled through 5 years were converted into average per person per year.

3. RESULTS

With AHCL use, HbA1c decreased from 9% to 7.38%. This improvement in glycaemic control would potentially lead to a **~46% reduction in vascular complications and ~70% reduction in diabetic ketoacidosis event rate**, yielding **€2794 per person cumulative savings in complications avoided over 5 years**. (Figure 1)

When annualized, the results corresponded to an **average savings of €559 per person per year in complications avoided**. (Figure 2)

Figure 1. Projected 5-year Cumulative Costs Per Complication (per person per annum)

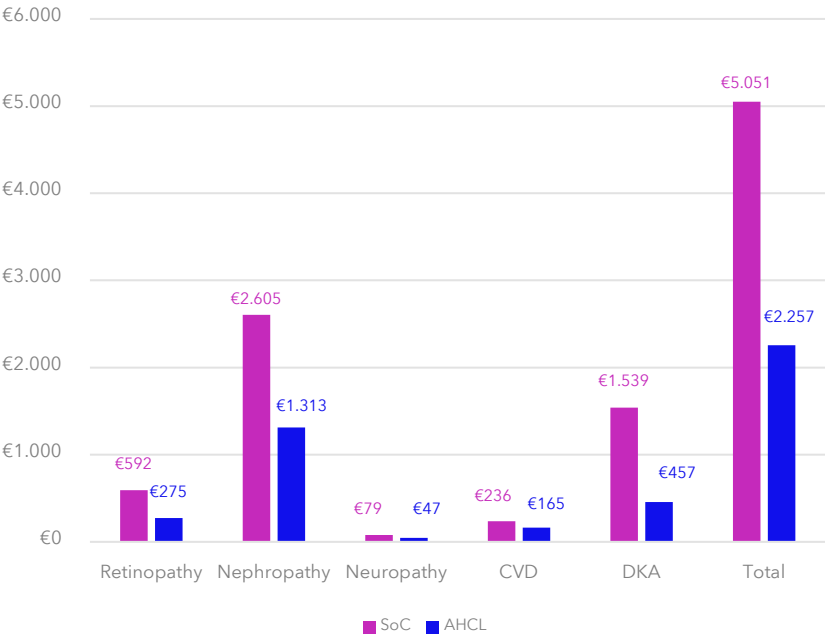
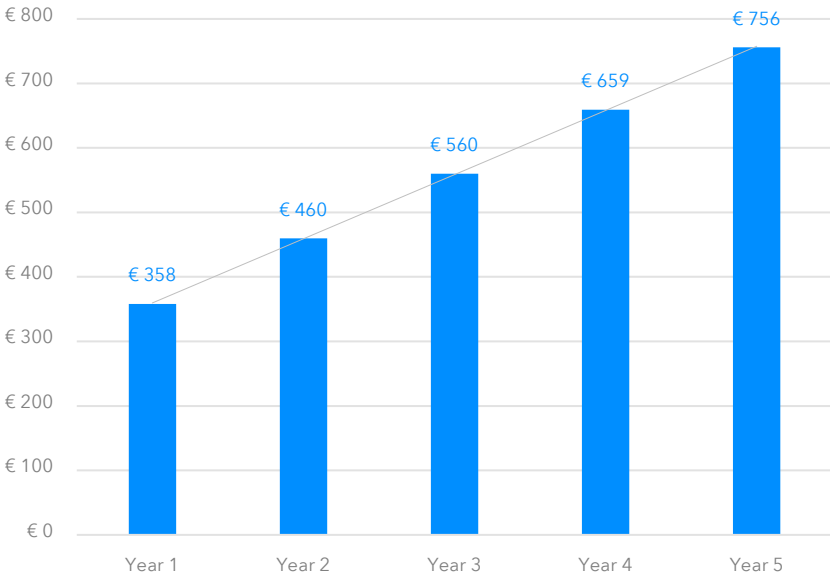


Figure 2. Yearly expected total savings in complications avoided with AHCL



4. CONCLUSIONS

The improved glycaemic control **with AHCL** can be translated into **potential cost savings thanks to reduced complications cost**. Therefore, higher AHCL therapy acquisition costs can be partially offset, even in a 5-year time horizon.

These findings complement the **longer-term cost-utility results of AHCL**, suggesting it also offers **good short-term monetary value for people with T1D and above-target HbA1c in France**.

References:
[1] Choudhary P, et al. Diabet Med . 2019;36(8):988-994. [2] Roze S, et al. Diabetes Ther. 2021;12(1):235-246. [3] Choudhary P, et al. Lancet Diabetes Endocrinol . 2022;10(10):720-731.