

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)

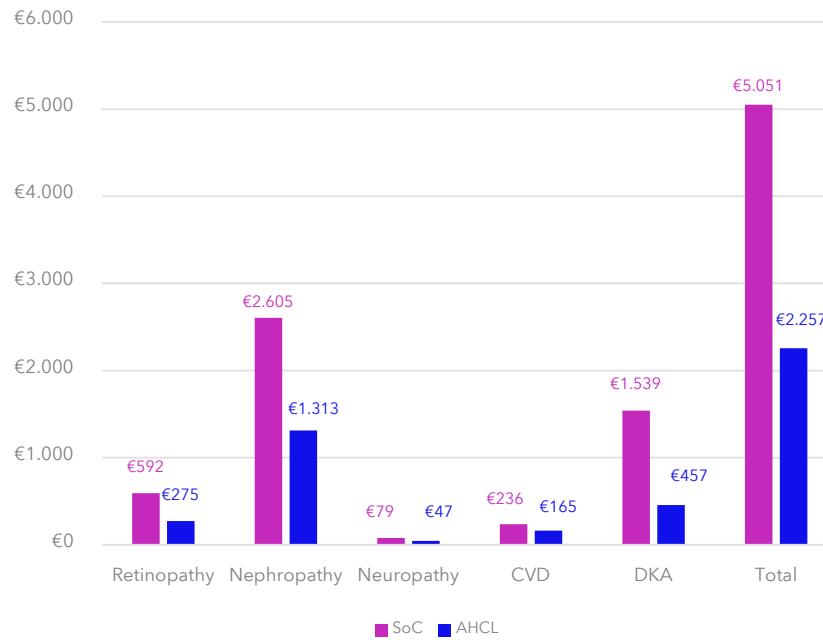
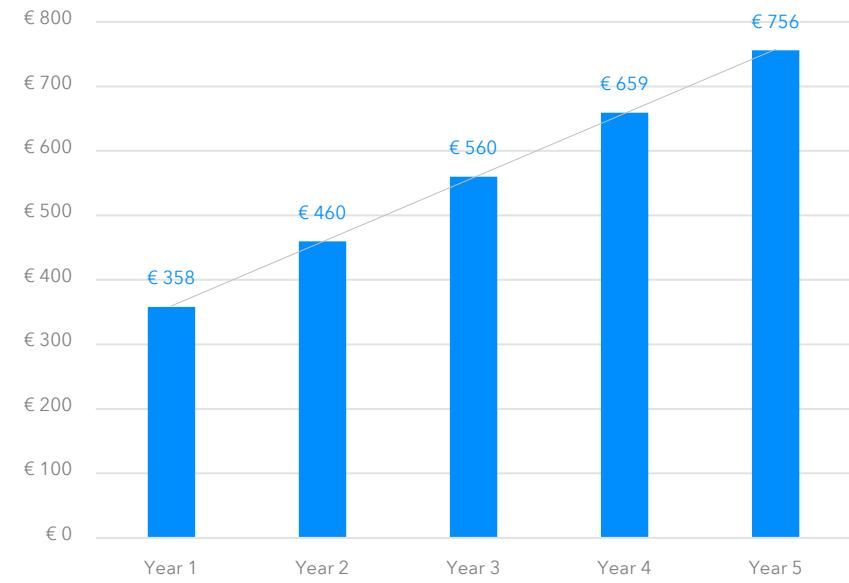


Figure 2. Yearly expected total savings in complications avoided with AHCL



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.