Poster number: EE346

Copies of this poster obtained through Quick Response (QR) Code are for personal use only

Comparative cost and saving analysis of Insulin Glargine-300U/mL (Gla-300) vs Insulin Degludec 100 U/mL in the treatment of Type 2 Diabetes Mellitus based on the Bright study

Mimouni S[1], Hachelaf Z[2], Aissaoui A[2], Mahieu A[3], Omar Alsaleh A[4],

[1]Endocrinology and Metabolic disease Department, EHS CPMC ; [2]Sanofi Algeria; [3]Sanofi Paris France; [4]Sanofi Milan Italy

BACKGROUND

- Diabetes Mellitus (DM) is a chronic and progressive metabolic disorder that affects million of people, with increasing incidence and prevalence[1]. It is a leading cause of cardiovascular and kidney disease. T2D is caused by progressive insulin resistance and relative insulin deficiency.
- In Algeria the prevalence of diabetes continues to increase, and it is about 14.4%[2] among 20–69-year-old people.
- Hypo study, carried during 2019-2020 among Algerian patients with T2D diabetes treated with basal insulin showed that the hypoglycemia rate was 29.5%.[3]
- Bright study demonstrated that both insulins (Gla-300 and Ideg 100) produced the same, optimal, glucose control with a low risk of hypoglycemia.

OBJECTIVES

- **The objective of this study was to conduct a comparative analysis of the long-acting insulin Glargine-300U/mL (Gla-300) vs Insulin Degludec 100 U/mL in the treatment of type 2 diabetes mellitus**
  - based on the input of the BRIGHT
  - assuming only 2nd Generation basal insulin is used

METHODS

Model structure	
Population	• **Type 2 diabetes** in adults patients
Intervention	Insulin glargine U-300 : long-acting second-generation basal insulin analogues indicated for the treatment of both type 1 diabetes (T1D) and type 2 diabetes (T2D)
Comparator	Insulin degludec, U-100 is included as a treatment comparator in the model.
Perspective	**Algerian Social Security perspective**
Country	• Algeria
Time horizon	• The is analysis assumes a **5-years time horizon** to capture the potential financial impact of **Gla -300 vs Ideg-100** • A cumulative analysis is provided.
Model structure	• The model with follow a **prevalence-based structure**. This cohort is followed until the end of the model time horizon to capture treatment costs. • Epidemiology data references were from National office of statistics, Stepwise WHO and IDMPS wave 7, the eligible population considered was T2DM adults patients, all treated with 2nd generation BI . The following inputs were extracted from the BRIGHT RCT (Open label active controlled parallel-group trial): demographics (weight) efficacy outcomes (dose), Safety outcomes (glycemic events)

All costs were reported in euros. Deterministic sensitivity analysis was carried out on all relevant costs and parameters included in the budget impact assessment.

RESULTS

- Introducing Gla-300 into the Algeria market, with a 100% market share led to an average cost-saving of -2.4 millions euros in the first year and an overall 5 years cumulative cost saving of (-12 millions euros) per (Table 1 & Figure 1),
- Results for the cumulative budget impact per costs category are provided in (figure 2). It is important to highlight that the highest contributor to the cost-savings are drug acquisitions costs which represents 74.45% of cost savings vs 25.55% are for the cost of management of glycemic events.
- A change in population size over time and patient weight considered may impact the potential cost saving, per the deterministic sensitivity analysis conducted in the model structure (figure 3)

Table 1: Incremental Budget impact

	Without Gla-300	With Gla-300	Incremental Budget impact
Gla 300	0 €	384,256,766 €	384,256,766 €
Ideg 100	396,450,332 €	0 €	-396,450,332 €
Total	396,450,332 €	384,256,766 €	-12,193,566 €

-12 millions euros cumulative
-Budget impact

Table 2: Model setting

	Populations	Mean weight (kg) (adult)	Daily basal insulin dose (U)	Hypoglycemia event per year	Drug Acquisition Costs	Direct Costs for Management of Hypoglycemia (Event/Euros)	Market share	Deterministic sensitivity analysis
Model Inputs	N= 841296 (Year 1) Adults T2D Adults patient eligible to basal insulin treatment	91.95	Gla-300 = 50.5 Ideg-100=39.2	Hypoglycemia < 70 mg/dl (diurnal) : Gla-300=9.34/Ideg-100 =10.83 Hypoglycemia < 70 mg/dl (nocturnal) : Gla-300=1.83/Ideg-100 =2.26	Public Price calculated from IRP basis of List Price	Hypoglycemia < 70 mg/dl (diurnal)=1.13 Hypoglycemia < 70 mg/dl (nocturnal)=0.72	*Ideg-100* 0% 100% / *Gla-300* 100% 0%	A variation of -10% lower and Upper 10%
Description and References	National office of statistics, [4] Stepwise WHO [2] IDMPS wave 7 [5]	Demographics-Bright Study	Efficacy outcomes-Bright study [6]	Safety outcomes-Bright study	List Price -According to Local pricing rules* Public Price - According to local commercial rules**	Direct costs related to the management of hypoglycemia (glycemic control costs + assistance costs, transport, healthcare utilization)- Sellam & al [7]	Market share assumption based on : market with and without Gla-300	Parameters variation to test the base case results

*Official journal decree for pricing guidelines (26th Dec 2020)
**Official journal decree for medicines margins (1st Feb 1998)

Figure 1: Budget impact Results

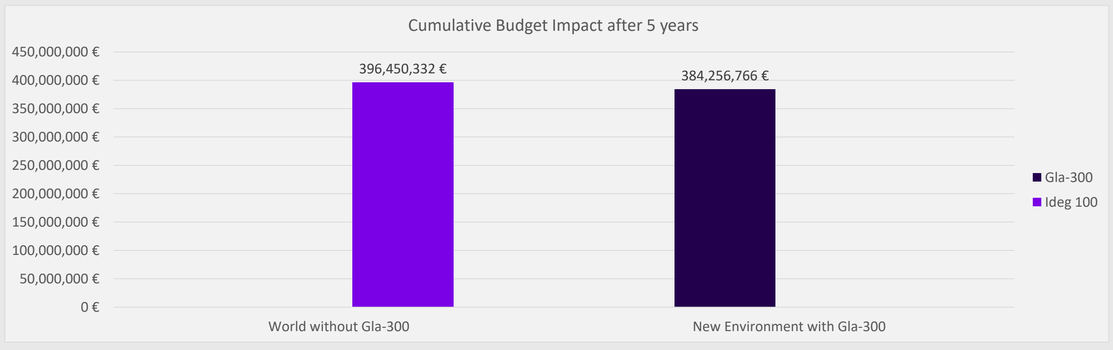


Figure 2: Cumulative budget impact per cost category

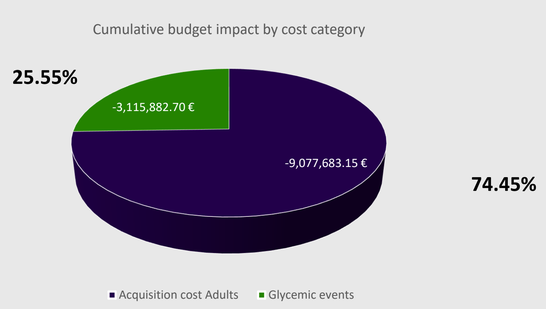
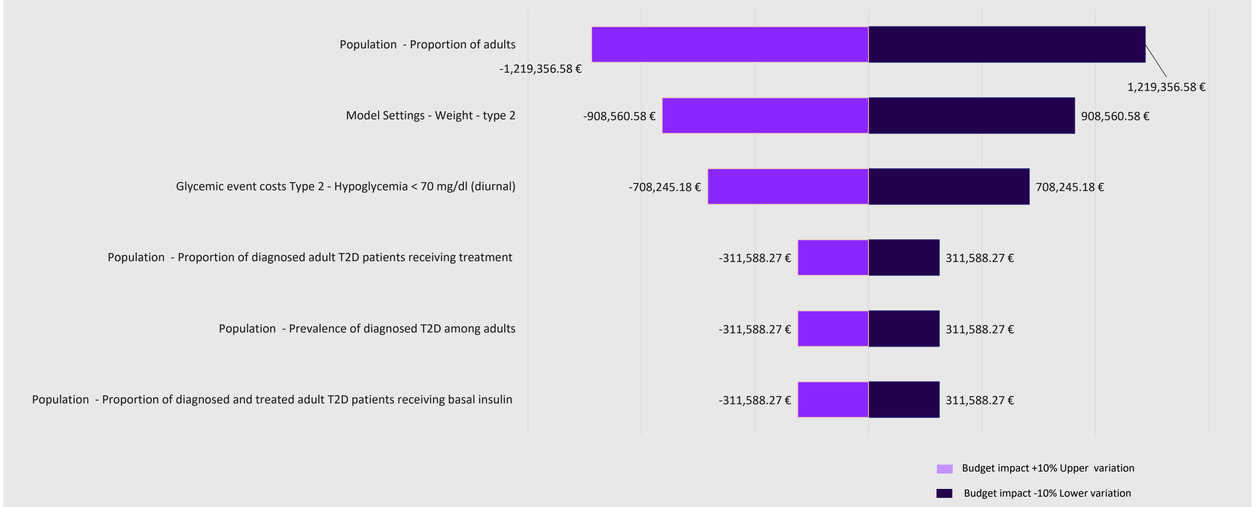


Figure 3: Tornado Diagram - Sensitivity Analysis



DISCUSSSION

Model

Costs

Results

"

✓ The model follows a prevalence-based structure, in which in the first year of the model, a prevalent cohort of patients initiate treatment and enter the model. This cohort is followed until the end of the model time horizon to capture treatment costs.

✓ This is the first budget impact model in Algeria that compared the 2nd Generation insulins Gla-300 vs IDeg-100.

"

"

✓ Insulin consumption from the BRIGHT study is relatively high for Gla-300, still this insulins demonstrates that treatment costs were lower due to drug acquisition costs are also low.

✓ Glycemic events costs trigged for both insulins are comparable.

"

"

✓ The utilization of Gla-300 is associated with relevant savings for Algerian social security.

✓ The sensitivity analysis has shown that the budget impact is sensitive to the proportion of patient population considered.

"

LIMITATIONS

- The current model assumes that the market shares are the same for type 2 diabetes, and they are constant over the five years' time horizon
- Costs related to the management of severe hypoglycemia are not considered as the Bright study includes only non-severe hypoglycemia diurnal and nocturnal.

CONCLUSIONS

- **This analysis of insulin Glargine-300U/mL in Algeria demonstrated the considerable saving on health expenses vs Insulin Degludec. This shows that Gla-300 could improve glycemic control at lowest cost.**
- **In conclusion, initiating Gla-300 in treating people with T2DM would lead to a relevant cost saving and potentially minimizing the burden of diabetes management, further studies are suggested to validate these results.**

REFERENCES:
1. Saeedi & al, IDF Atlas 2019.
2. MOH, STEPwise WHO. 2018,
3. Mimouni & al Hypo study, 2002.
4. National office of statistics N°890 2020
5. Malek R & al, IDMPS Wave 7, 2019
6. Rosenstock et al. 2018, RIGHT study
7. Sellam Y, & al Value in Health. 2020

CONFLICTS OF INTEREST:
AA, ZH, AM and AOA : Sanofi — employee, may hold stock and/or stock options in the company.
SM: — have no conflicts of interest to disclose

FUNDING:
This study was sponsored by Sanofi.

ACKNOWLEDGEMENTS:
Medical writing support for this poster was provided by Zakia Hachelaf of Sanofi.

Poster presented at ISPOR EU 2024 Barcelona, Spain