



# Effect of the intensive treatment with the hybrid closed loop system *MINIMED™ 670G* in patients with Type 1 Diabetes Mellitus from Tamaulipas, Mexico Public Health System.



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## INTRODUCTION.

The care and management of type 1 Diabetes Mellitus (T1D) patients is essential for preventing and delay the presence of chronic complications and improve quality of life.

Nowadays, the hybrid closed loop system *MiniMed™ 670G* with *SmartGuard™* technology allows the administration of basal insulin in a more physiological like way depending on patient's requirements, it also allows the real time measurement of glucose and novel indicators like

Time in Range (TIR) and Variation Coefficient (VC) for a more adjusted treatment along with good nutrition, physical activity and diabetes education.

Mexico's public health system does not consider the use of this technology for diabetes management.

## AIM.

To assess the effect of the intensive treatment with the use of the *Minimed™ 670G SmartGuard™* system for the metabolic control in patients with T1D who are treated in Tamaulipas, Mexico public health system.



## EXPERIMENTAL METHODS.

Longitudinal semiexperimental study in 40 patients with T1D at Tamaulipas Children Hospital, between April and October 2022. With previous protocol approval and signed consent, all the patients were instructed on the use of the *MiniMed™ 670G* system.

Measurement time points were, 0, 3 and 6 months.

Height, bodycomposition (bioelectric impedance TANITA DC430-U), HbA1c, total cholesterol, triglycerides, HDL-C, LDL-C. Additionally, demographic information and time of T1D evolution were registered. All the patients had a closed follow up by the multidisciplinary medical professional with weekly assessments by using the CareLink report to make adjustments on their treatment. Data was collected on an MS Excel spreadsheet for further statistical analysis on STATA 11.0.



## RESULTS.

21 females (53%) and 19 (47%), mean age  $12.82 \pm 2.89$  years, residents of 12 different municipalities of Tamaulipas, mean T1D evolution time was  $4.85 \pm 3.42$  years. Mean values for the control parameters are shown on the next table.

	1 month	2 m	3 m	4 m	5 m	6 m	P value
TIR %	66.3*	70.3	72.4*	71.3	69.8	70.7	*0.000
TAR %	30.59*	26.16	24.65*	26.03	27.78	27.06	*0.0012
TBR %	3.05	3.05	2.84	2.5	2.47	2.19	0.12
CV %	33.43	33.34	32.89	32.69	32.69	32.33	0.08

For basal HbA1c only 15% showed good control values after 6 months the presence of good control values increased to 42% of the patients. For the TIR values on months 2, 3 and 4, 60%, 64% and 64% of the patients reached the goal values.

However, at the final measurement timepoint only 50% kept these values. We didn't find significant changes on body composition and lipidic profiles.

## CONCLUSION.

Intensive treatment using the *Minimed™ 670G SmartGuard™* system overall improved the metabolic control by reaching control metrics similar to the ones reported in international studies. Its use on the public health system was possible due to the support of the Government, the company and Organized Civil Society.

## REFERENCES.

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