

# Multicentric Study RENACED Diabetes Tipo 1: Metabolic differences between insulin pump users and those on basal bolus by injection.



Faradji RN<sup>1,2</sup>, Valenzuela-Lara M<sup>3</sup>, Bustamante-Martínez JF<sup>4</sup>, De La Garza-Hernández NE<sup>5</sup>, Díaz-Barriga-Menchaca AP<sup>2</sup>, Escobedo-Ortiz A<sup>6</sup>, Flores-Camargo A<sup>7</sup>, Islas-Ortega L<sup>7</sup>, López-Miramontes C<sup>8</sup>, Martínez-Ramos-Méndez A<sup>9</sup>, Miracle-López S<sup>10</sup>, Ramírez-Toscano LA<sup>8</sup>, Rodríguez-Sánchez E<sup>11</sup>, Tavera-Hernández M<sup>10</sup>, Valenzuela-Montoya JC<sup>12</sup>, Vidrio-Velázquez M<sup>8</sup>, Sainz de la Maza-Viadero ME<sup>13</sup>, Niño-Vargas RS<sup>3</sup>, Magis-Rodríguez C<sup>3</sup>

1. CENTRO MEDICO ABC; 2. INSTITUTO TECNOLÓGICO DE MONTERREY; 3. CENTRO NACIONAL PARA LA PREVENCIÓN Y EL CONTROL DEL VIH Y EL SIDA; 4. SERVICIOS DE SALUD DE NAYARIT, HOSPITAL GENERAL DE TEPIC; 5. CEMEDIN; 6. HG DR. MIGUEL SILVA, SS, MORELIA; 7. HOSPITAL DIF DE LA NIÑEZ HIDALGUENSE; 8. HGR 110 IMSS GUADALAJARA, JALISCO; 9. HOSPITAL ESPAÑOL; 10. HOSPITAL ANGELES LOMAS; 11. HOSPITAL ROVIROSA SS, TABASCO; 12. HOSPITAL DE GINECOPEDIATRIA 31 IMSS, MEXICALI; 13. UNIVERSIDAD IBEROAMERICANA. MÉXICO.

## INTRODUCTION

There is limited information regarding the differences in metabolic control in patients with Type 1 Diabetes (T1D) treated with insulin pump therapy (CSII) or basal-bolus (BB) regime by injections in Mexico. We developed an online system, “RENACED Diabetes Tipo 1”, to have a longitudinal registry of real life data of T1D patients. Our aim is to evaluate the differences in metabolic control between patients treated with CSII or BB.

## METHODS

Multi-centric study where a bivariate analysis (alfa=0.05) was performed in 363 T1D patients, that use CSII or BB, registered in the RENACED DT1 system up to 10/5/2016. Registries without data were considered as lost.

## RESULTS

Of the 363 patients, 121 are on CSII (33%) and 242 on BB (67%).

Patients on CSII had lower HbA1c levels (7.9; CI 95% 7.6–8.1) than those on BB (8.8; CI 95% 8.5–9.1) (p<0.05). The total insulin daily dose was lower on CSII (0.60 IU/kg; CI 95% 0.5-0.6), than on BB (0.76 IU/kg; CI 95% 0.7-0.8) (p<0.05) (TABLE 1).

	CSII (CI 95%)	BB (CI 95%)	P
HbA1c (%)	7.9 (7.6 – 8.1)	8.8 (8.5 – 9.1)	< 0.01
Mean daily insulin dose (kg/day)	0.60 (0.54 - 0.66)	0.76 (0.71 – 0.81)	< 0.01
Age (years)	27.4 (24.9 – 30.0)	25.3 (23.7 – 26.9)	0.15
Age at diagnosis (years)	13.5 (11.5 – 15.4)	12.4 (11.3 – 13.4)	0.32
Time from diagnosis to 1st visit (years)	8.8 (7.3 – 10.3)	11.1 (9.9 – 12.2)	0.02
Lispro Insulin (%)	34.7 (26.1 – 43.3)	82.6 (77.8 – 87.5)	< 0.01
Aspart Insulin (%)	64.5 (55.8 – 73.1)	13.2 (8.9 – 17.5)	< 0.01

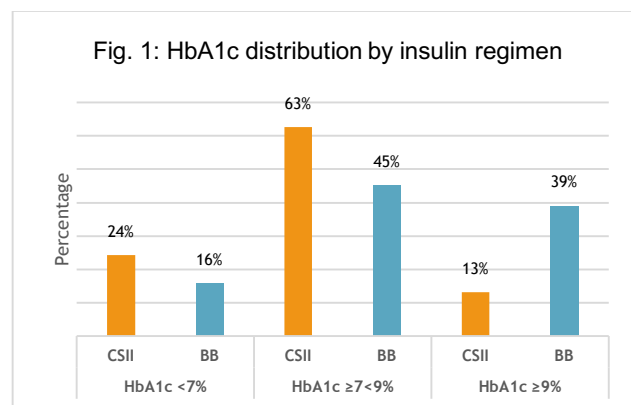
CSII was associated with higher SMBG (self-monitor of capillary blood glucose) per day, as well as use of continuous glucose monitor (CGM) (p<0.01) (TABLE 2).

	CSII (CI 95%)	BB (CI 95%)	P
SMBG per day (times per day)	3.8 (3.5 – 4.2)	3.0 (2.8 – 3.2)	< 0.01
HDL (mg/dl)	60.0 (52.7 – 67.1)	54.0 (50.0 – 58.1)	0.12
Exercise (%)	75.0 (66.7 – 83.3)	32.3 (26.2 – 38.4)	< 0.01
Count carbohydrates (%)	93.3 (88.7 – 97.8)	66.3 (60.2 – 72.3)	< 0.01

A significantly higher event rate of mild/moderate hypoglycemia/week was observed in the CSII group (4.3 vs. 2.5; p = 0.02) (TABLE 3). An interesting finding is that the patients on CSII exercise more.

	CSII(CI 95%)	BB (CI 95%)	P
Mild/Moderate hypoglycemia (%)	71.1 (55.9 – 86.2)	67.7 (59.5 – 75.8)	0.7
Mild/Moderate hypoglycemia per week (events)	4.3 (2.8 – 5.7)	2.5 (2.4 – 2.7)	0.02
Severe Hypoglycemia (%)	13.2 (1.9 – 24.4)	19.1 (11.8 – 26.4)	0.4
Chronic Complications (%)	5.8 (1.6 – 10.0)	8.3 (4.8 – 11.8)	0.4

Figure 1 shows the HbA1c distribution by insulin regimen. All differences were statistically significant.



## CONCLUSIONS

According to the literature, CSII use, higher number of SMBG/day and CGM is associated with better glycemic control.

It is interesting that those on CSII exercise more, a finding that will need to be confirmed with higher number of patients in the registry.