

# EVALUATION OF BOLUSES DELIVERED BY INSULIN PUMP IN TYPE1 DIABETES MELLITUS PEDIATRIC PATIENTS

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54th ESPE 2015, Barcelona, 01 - 03. 10. 2015.



## BACKGROUND

Insulin pump (IP) is very popular and efficient mean for T1DM treatment in pediatric population. Delivery of basal insulin is automatically regulated by 24 hour basal set up. But, boluses must be delivered manually in meal time and their number and type are different.

## AIMS AND OBJECTIVES

To evaluate number and type of boluses in T1DM children with IP treatment and to correlate them with clinical features of the patients and metabolic control of their T1DM.

## METHODS

T1DM patients from Pediatric Clinic in Sarajevo with insulin pump treatment were participants in this study. We used two consecutive download data and data from corresponding two controls.

## RESULTS

We analyse data from 41 patients (M24/F17), mean age 13,5 years, 15 prepubertal/26 pubertal, mean diabetes duration 7,1± 2,4 years, mean HbA1c 8,9±1,3 %, delivered mean 5,4±1,65 boluses daily. Lowest HbA1c (7,6± 1,0 %) was in patients delivered 8-10 boluses daily, and the worst HbA1c (11,1±2,1%) was in patients with 1-3 boluses daily. NS difference was between bolus number (5,6/5,3) in prepubertal and pubertal patients. Only 12 patients (29%) used Bolus Wizard (BW) calculation in everyday pump use, and they had significantly lower HbA1c than non BW users (8,22/8,99 %, p < 0,05). Patients who delivered more insulin of total daily insulin intake in bolus form had significantly lower HbA1c level (p<0, 05). There was no significant difference in correlation of number of delivered boluses and diabetes duration, and with duration of insulin pump treatment.

Picture 1, 2 and 3. Bolus patterns in different patients

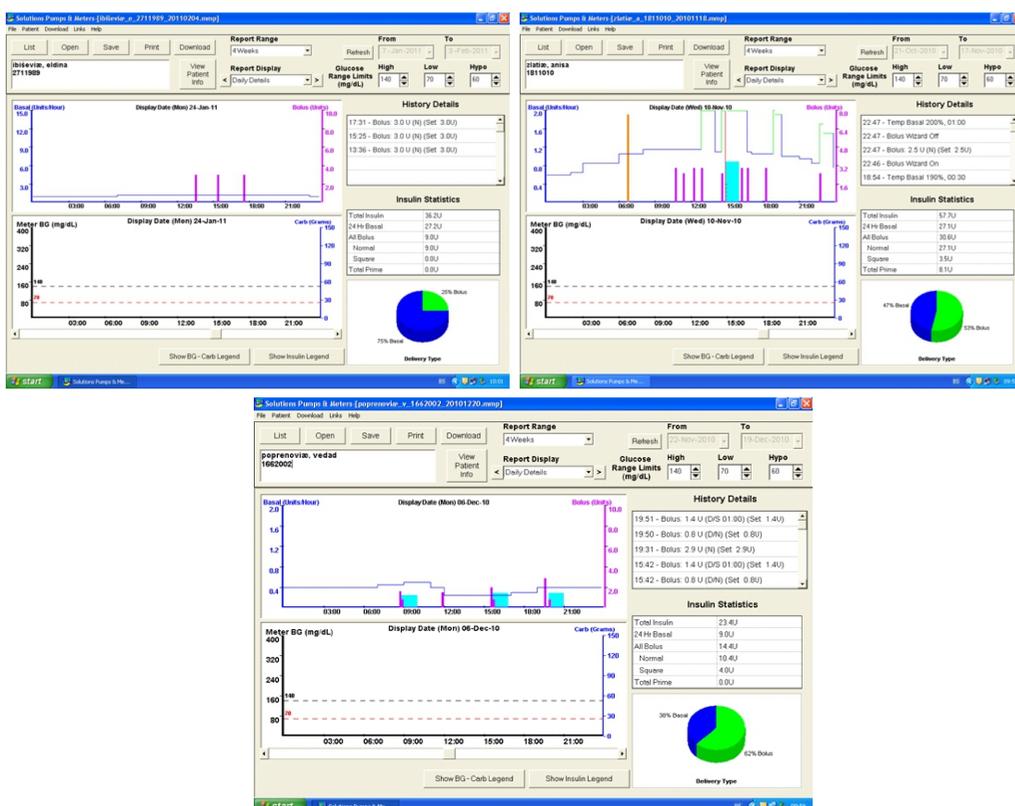
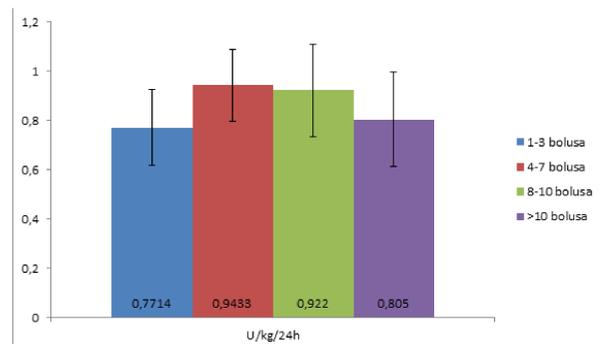
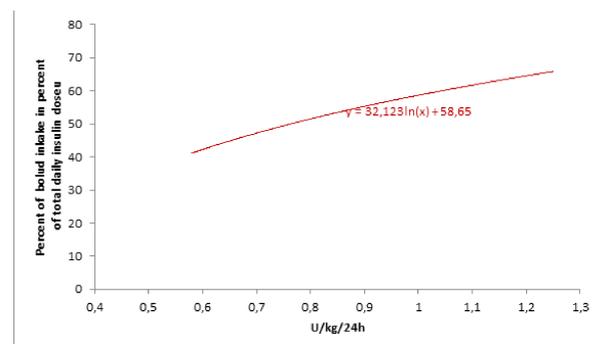


Table 1 Distribution of mean HbA1c according boluses' number in patients on insulin pump treatment

	HbA1c (%)					
	N	X	S	Sx	Min	Max
1-3 boluses	7	11,057	2,1493	,8124	8,2	14,2
4-7 boluses	27	8,585	1,3040	,2510	6,1	12,3
8-10 boluses	5	7,620	1,0060	,4499	6,2	8,7
>10 boluses	2	8,600	1,6971	1,2000	7,4	9,8
TOTAL	41	8,890	1,7498	,2733	6,1	14,2
p	0,001					
F	6,882					



Graph 1. Distribution of mean daily insulin dose (U/kg/24h) according bolus number in patients with insulin pump treatment.



Graph 2. Correlation of mean daily insulin dose inzulina U/kg/24h i and quantity of total bolus intake (percents) in patients on insulin pump treatment

## CONCLUSIONS

Frequent downloading and analysing data from IP memory especially bolus delivery evaluation are very important for better regulation of T1DM in pediatric patients with IP treatment..

## LITERATURE

1. Cukierman-Yaffe T, Konvalina N, Cohen O. Key elements for successful intensive insulin pump therapy in individuals with type 1 diabetes. *Diabetes Res Clin Pract.* 2011;92(1):69-7.
2. Lau YN, Korula S, Chan AK, Heels K, Krass I, Ambler G. Analysis of insulin pump settings in children and adolescents with type 1 diabetes mellitus. *Pediatr Diabetes.* 2015. doi: 10.1111/pedi.12285.
3. Patton SR, DeLurgio SA, Fridlington A, Cohoon C, Turpin AL, Clements MA. Frequency of mealtime insulin bolus predicts glycated hemoglobin in youths with type 1 diabetes. *Diabetes Technol Ther.* 2014;16(8):519-23.
4. Walsh J, Roberts R, Bailey T. Guidelines for optimal bolus calculator settings in adults. *Diabetes Sci Technol.* 2011;5(1):129-35.
5. Olinder AL, Nyhlin KT, Smide B. Reasons for missed meal-time insulin boluses from the perspective of adolescents using insulin pumps: 'lost focus'. *Pediatr Diabetes.* 2011;12(4 Pt 2):402-9.

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