

BASAL INFUSION RATE SELF-MANAGEMENT IN CSII AND METABOLIC CONTROL

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BACKGROUND

Basal Infusion Rate (BIR) in Continuous Subcutaneous Insulin Infusion (CSII) therapy is established by the diabetologist, but smart patients are changing it for short or long periods. It is not clear how (BIR) self-management *per se* contributes to the metabolic control, particularly to prevent hypoglycaemic events.

AIM

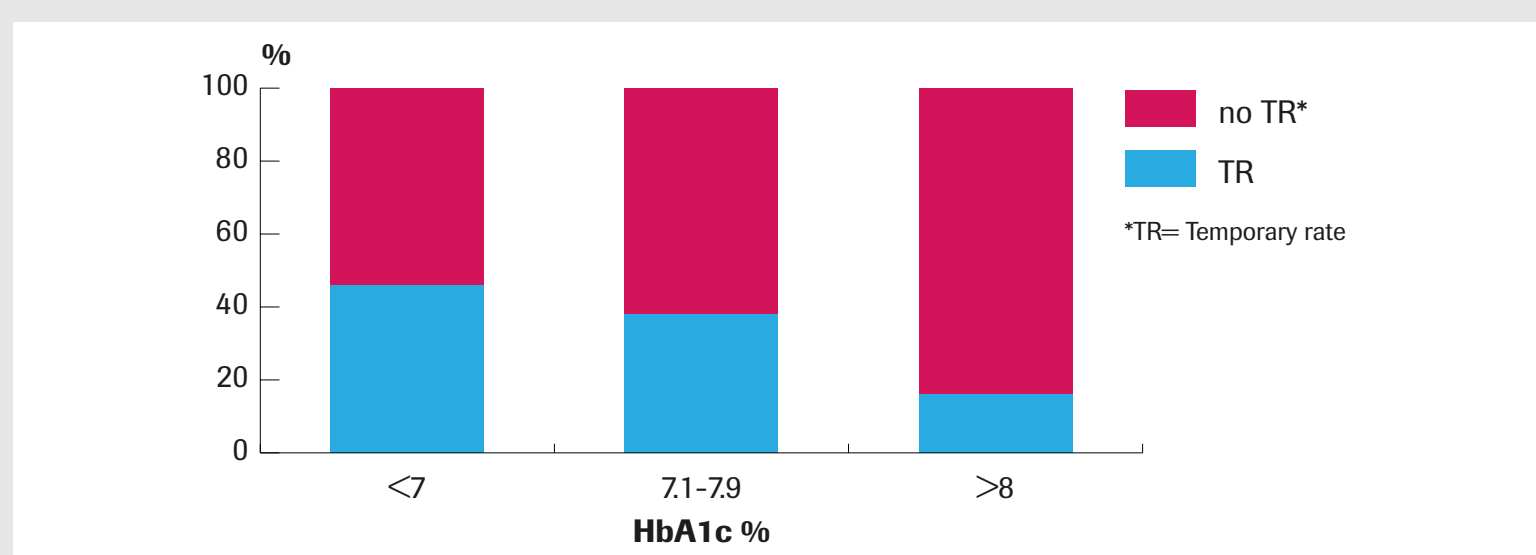
Evaluate the correlation between BIR self-management and metabolic control in adult type 1 diabetic subjects in real life.

METHODS

109 outpatients were stratified in 3 groups according to HbA1c:

- 1) < 7% (n=50; 45.8%);
- 2) between 7.1 and 7.9% (n=29; 26.6%);
- 3) > 8.0% (n= 30; 27.5%), sex, disease duration, CSII duration, insulin doses (as total, basal and meal boluses: U/day), weight standardized basal requirement (U/kg), daily average basal rate (U/h), number of basal rate daily changes, basal fixed algorithms temporary basal rate frequent usage (≥ 3 times/week), severe hypoglycemic events (<50 mg/dl) in the last 2 weeks.

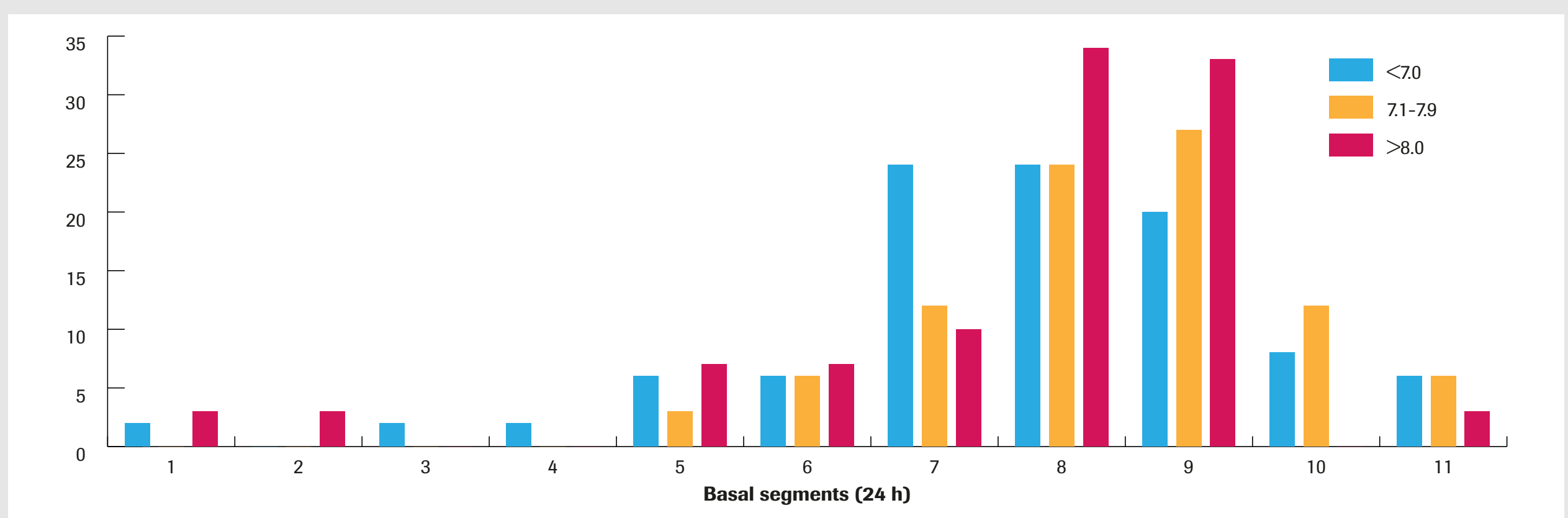
The collected data were compared (T test).



Age (yrs)	47 ± 12.0 (21 - 77)
M/F	54/55
Disease duration (yrs)	20 ± 11.7 (3 - 51)
CSII duration (yrs)	7 ± 4.5 (0.5 - 22)
HbA1c %	7.4 ± 1.0 (5.5 - 10.7)

109 Outpatients	Group 1 (HbA1c <7.0%) (53 mmol/mol)	Group 2 (HbA1c 7.1-7.9%) (54-63 mmol/mol)	Group 3 (HbA1c >8.0%) (64 mmol/mol)
Number	50	29	30
Age (yrs)	41 ± 12.5 *	50 ± 12.3 *	46 ± 10.7 **
Basal insulin (%)	55.5 ± 7.7 %	57.7 ± 13.9 %	56.8 ± 10.8 %
Insulin requirement (U/kg)	0.28 ± 0.1	0.29 ± 0.09	0.34 ± 0.14
Infusion rate (U/h)	0.82 ± 0.3	0.85 ± 0.3	1.09 ± 0.5
Hypoglycemia	5 (10%)	3 (10%)	5 (18%)

*p=0.002; ** p=0.005



RESULTS

Well controlled pts. (group 1) were significantly younger (41 ± 12.5 yrs.) than groups 2 (moderately uncontrolled: 50 ± 12.3 yrs.; p< 0.005), and 3 (severely uncontrolled: 46 ± 10.7 yrs.; p<0.005) ones. No significant difference was found regarding disease and CSII duration. Group 1 delivered 55.5 ± 7.7 % of total insulin as basal, group 2) 57.7 ± 13.9 %, group 3) 56.8 ± 10.8 %. The body weight standardized insulin requirements were 0.28 ± 0.1, 0.29 ± 0.09, 0.34 ± 0.14 U/kg (p<0.03 between groups 1 e 3); the average infusion rate was 0.82 ± 0.3, 0.85 ± 0.3, 1.09 ± 0.5 U/h (p<0.004 between groups 1 e 3). Severe hypoglycemic events were reported by 5 (10%) well controlled patients, 3 (10%) by moderately uncontrolled, 5 (18%) by severely uncontrolled ones. There were not significant differences about the routine usage of more than 2 fixed basal rates. In group 1 the temporary basal rates usage was more frequent than in the other two groups.

CONCLUSIONS

Pump users with lower HbA1c levels have total and basal insulin requirement significantly lower than uncontrolled ones and are likely to use pump advanced functions such as temporary basal rates frequently (46%). Multiple predetermined basal rates do not seem influent on metabolic control. The higher hypoglycemic events number in uncontrolled subjects may be related with the higher basal insulin amount. Disease and CSII duration do not seem relevant regarding metabolic control. Basal rate self-management as a part of advanced pump functions seems to be effective to maintain good HbA1c levels and to prevent hypoglycemic events.