

# Metabolic improvement offered by Medtronic Minimed 640G™ associated to transient insulin perfusion suspension before hypoglycemia in young patients with type 1 diabetes

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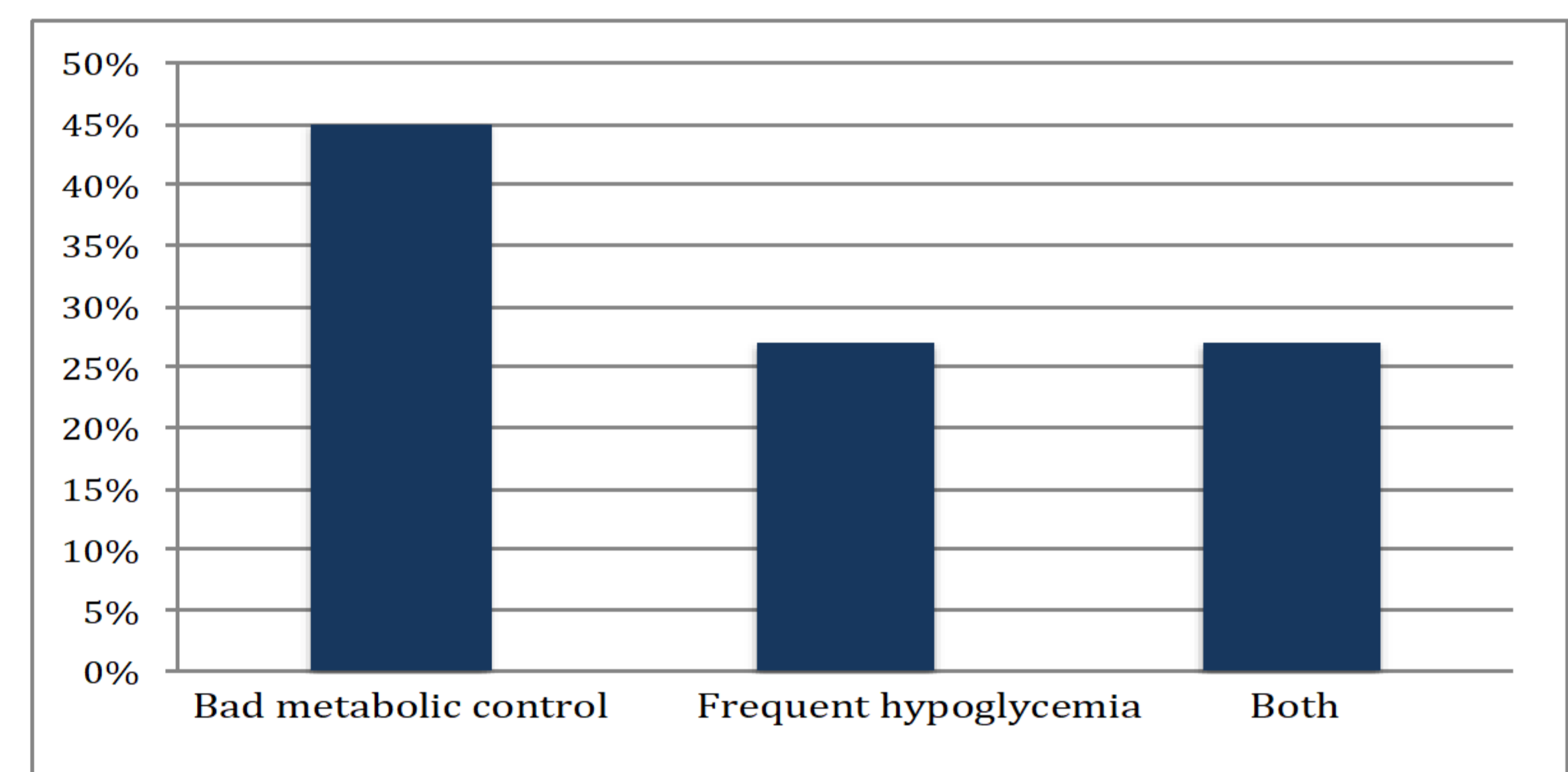
## INTRODUCTION

One major difficulty in treating children with type 1 diabetes is hypoglycemia, limiting the metabolic control of the disease and affecting the quality of life of the patient and his family.

Intensive treatment is recommended as indicated in the Diabetes control and complications trial.

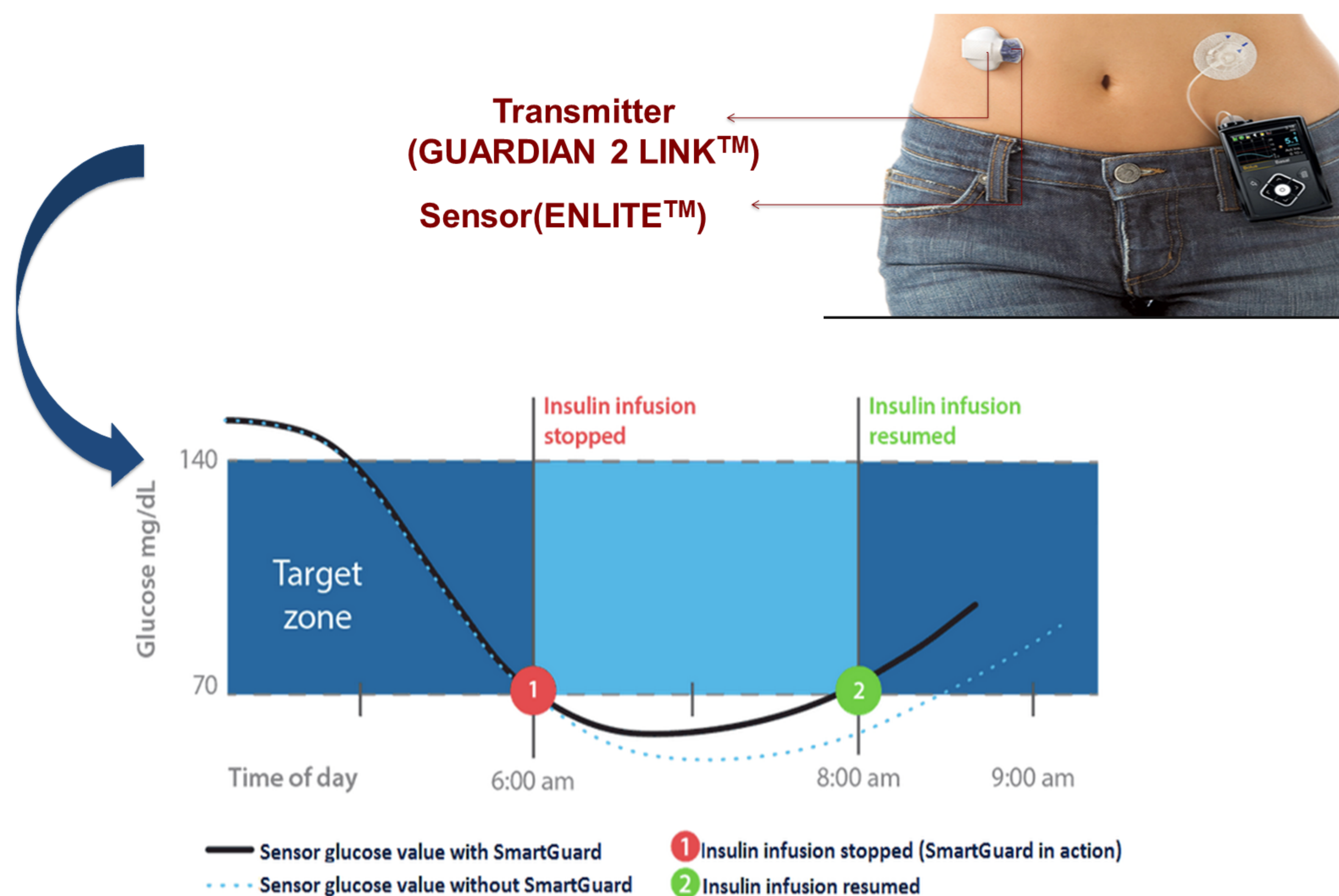
Combining CGMS to Smart Guard technology (Medtronic Minimed 640G™) allows a transient suspension of insulin perfusion when glucose levels attempt a predefined limit and resume function when reestablishment of equilibrium without elevated risk of secondary hyperglycemia or Ketosis.

## Motivating factors for using the Medtronic Minimed 640G™

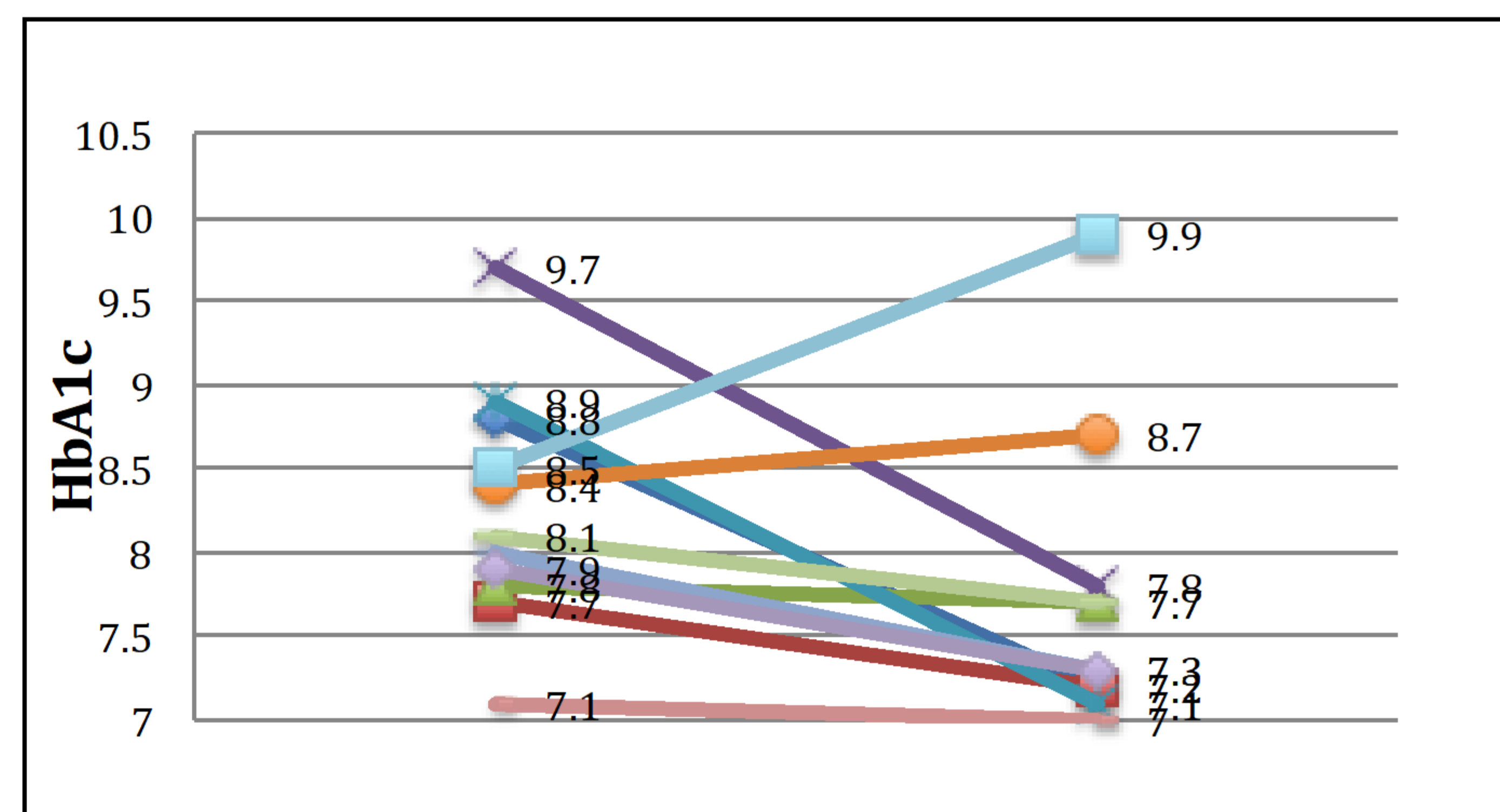


Main factors motivating the use of Medtronic Minimed 640 G™

## Smart Guard Technology



## Metabolic control



HbA1c levels for each patient before and at the end of the intervention.

## METHODS

Medtronic Minimed 640 G™ - real time treatment of children with type 1 diabetes (up to two years follow-up: 9 months – 2years).

Initial cut-off points (eventually adjusted depending on the follow-up of each child):

- Insulin infusion stop: 20 mg/dl above hypoglycemia (considered initially 70 mg/dl during day time and 60 mg/dl during night)
- Reinfusion limit (40 mg/dl above suspension limit).

HbA1c evolution was favorable with a significant reduction of 0.56% = reduction of 6.8% from its baseline before intervention: average HbA1c 8.26% before intervention - 7.7% at the end of the follow-up (pvalue – 0.0234, paired Student Test with a confidence interval of 95%).

## Clinical data

Median age	4.38 years old (2 – 8 years old)
Girls / Boys	27% (3) / 73% (8)
Median age at diagnosis	22 months (11 -40 months)
Insulin pump introduction	12.54 months after diagnosis
Smart Guard system	7 months after insulin pump introduction

## Contributions of Medtronic Minimed 640G™

Hypoglycemia before intervention	22.5 episodes/month(3 – 90)
Time within target glyceic levels	45% (21% – 62%)
Time of insulin suspension	144 min. (113 – 204 min.)/month
Hypoglycemia after intervention	2.45 minutes (0 – 10 minutes)/ month

## CONCLUSION

Smart Guard technology seems well effective in young children with bad metabolic control and frequent hypoglycemia. It shows a positive impact on the treatment of type 1 diabetes in particular situations by attempting the different therapeutic goals and reducing the risk of hypoglycemia and her negative impact on the quality of life especially by limiting the fear of hypoglycemia.