



Diabetes

Pump discontinuation in children and adolescents with type 1 diabetes

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Disclosures

- Diabeter was acquired by Medtronic in April 2015. Diabeter is compliant with legal and healthcare policies and laws on independency for prescription, patient data, research and employee data
- In the context of this presentation there are no conflicts of interest

Background

- Continuous subcutaneous insulin infusion (CSII) improves glycaemic control² and quality of life¹
- However, many T1D patients on CSII are experiencing problems in reaching good glycaemic control³
- Healthcare providers may advise patients to discontinue CSII
- It is important to assess which factors determine successful pump treatment

¹Cummins et al., Health Technology Assessment. 2010;14(11):1-208

²Karges et al., JAMA. 2017 Oct 10;318(14):1358-1366

³Perry et al., J Eval Clin Pract. 2017;23:554-61

Research questions

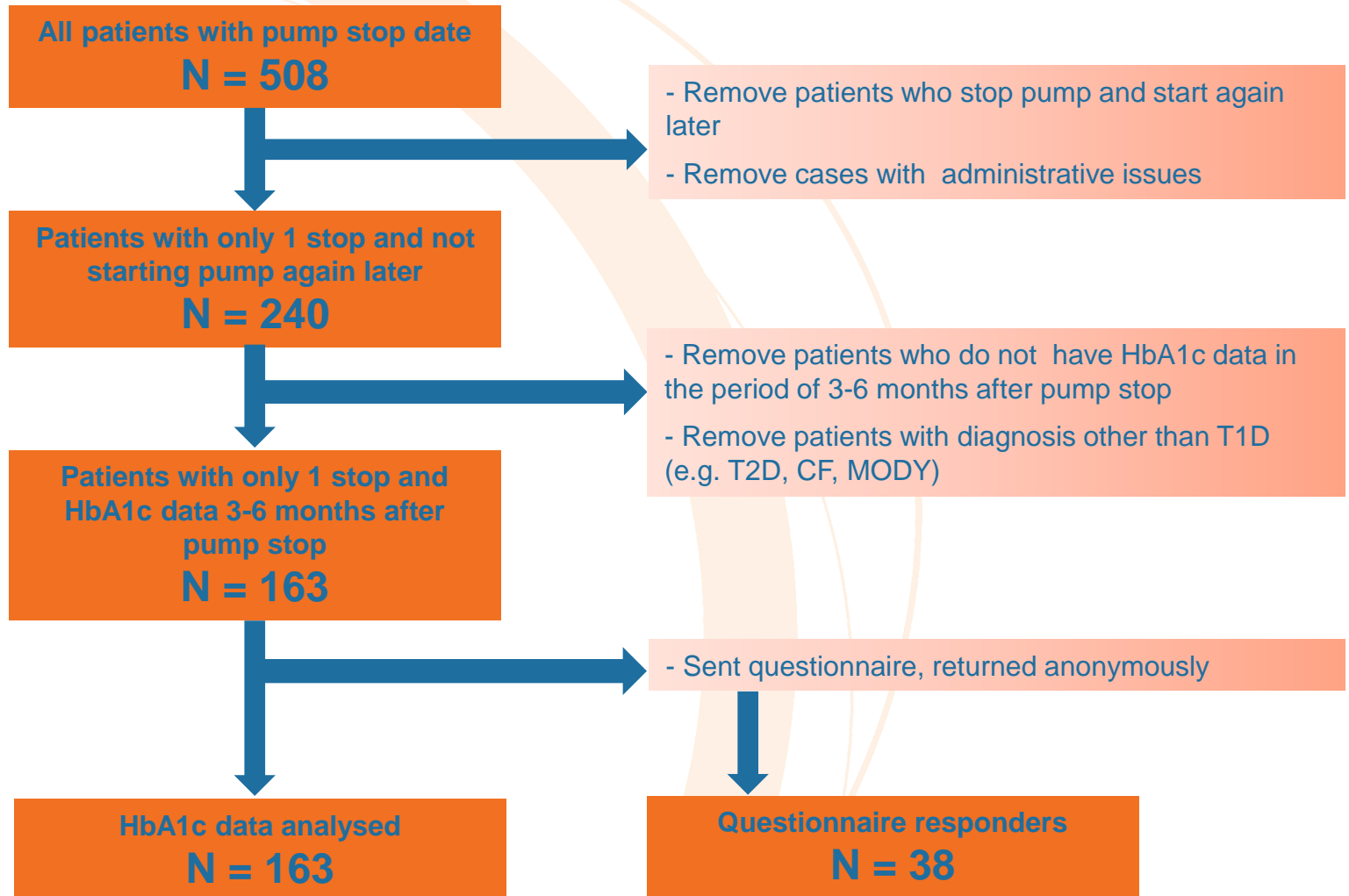
- **What are reasons for discontinuing CSII treatment among type 1 diabetes patients?**
- **How does CSII discontinuation affect glycaemic control?**



Study design

- Retrospective observational study among patients from Diabeter, a Dutch certified diabetes center
- Patients selected from electronic health records based on discontinuing CSII between 2007 and 2018
- HbA1c data were retrieved from electronic health records
- Questionnaire sent to included patients (returned anonymously), including questions on:
 - Age, gender, diabetes duration and duration of pump use
 - Statements regarding 4 categories of factors influencing refusal to start CSII or decision to discontinue CSII¹ (Likert scales):
 - Practical
 - Emotional
 - Clinical
 - Technical

Study population



Questionnaire

53 questions

- Multiple choice questions
 - e.g. “How long have you had a pump?”
(< 1 year, 1-5 year, 5-10 year, > 10 year)
- Agree/disagree on 5-point Likert scale
 - e.g. “My doctor/nurse felt that I should stop using the pump.”
- Grade on 10-point Likert scale
 - e.g. “How difficult or easy was the decision to stop using the pump?”
(‘very difficult’ to ‘very easy’)
- Open questions
 - e.g. “Were there reasons other than the above-mentioned reasons for your decision to stop using the pump? If so, which reasons?”

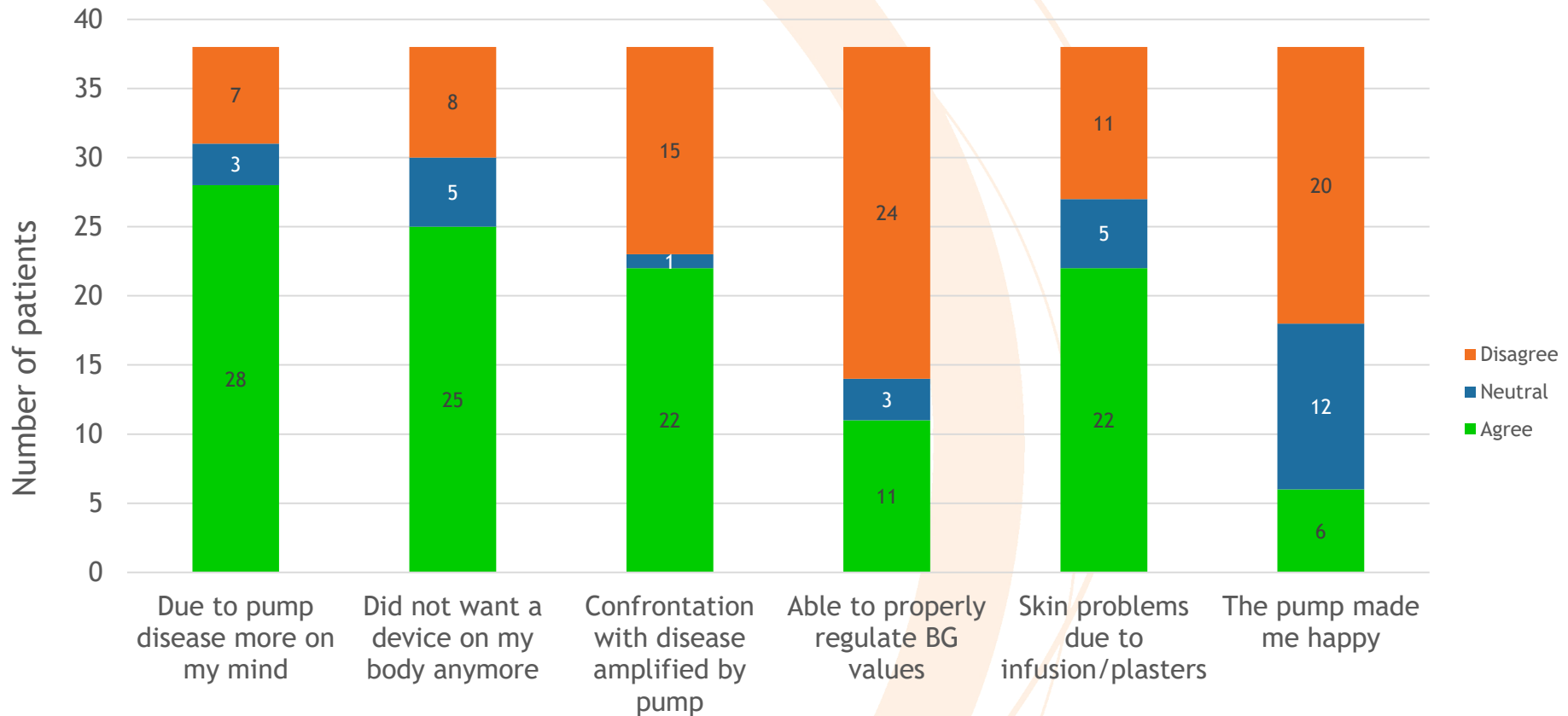
Patient characteristics

All included CSII discontinuers	
Period	2007-2018
N	163
Current age (SD)	20,5 (5,9)
Age diagnosis (SD)	7,9 (4,6)
Gender (% male)	46
Age CSII start(SD)	11,7 (5,3)
Age CSII discontinuation, years (SD)	15,8 (5,1)
CSII duration (SD)	4,1 (3,3)
HbA1c at discontinuation % (SD)	9,7 (1,7)
mmol/ml	82 (18)

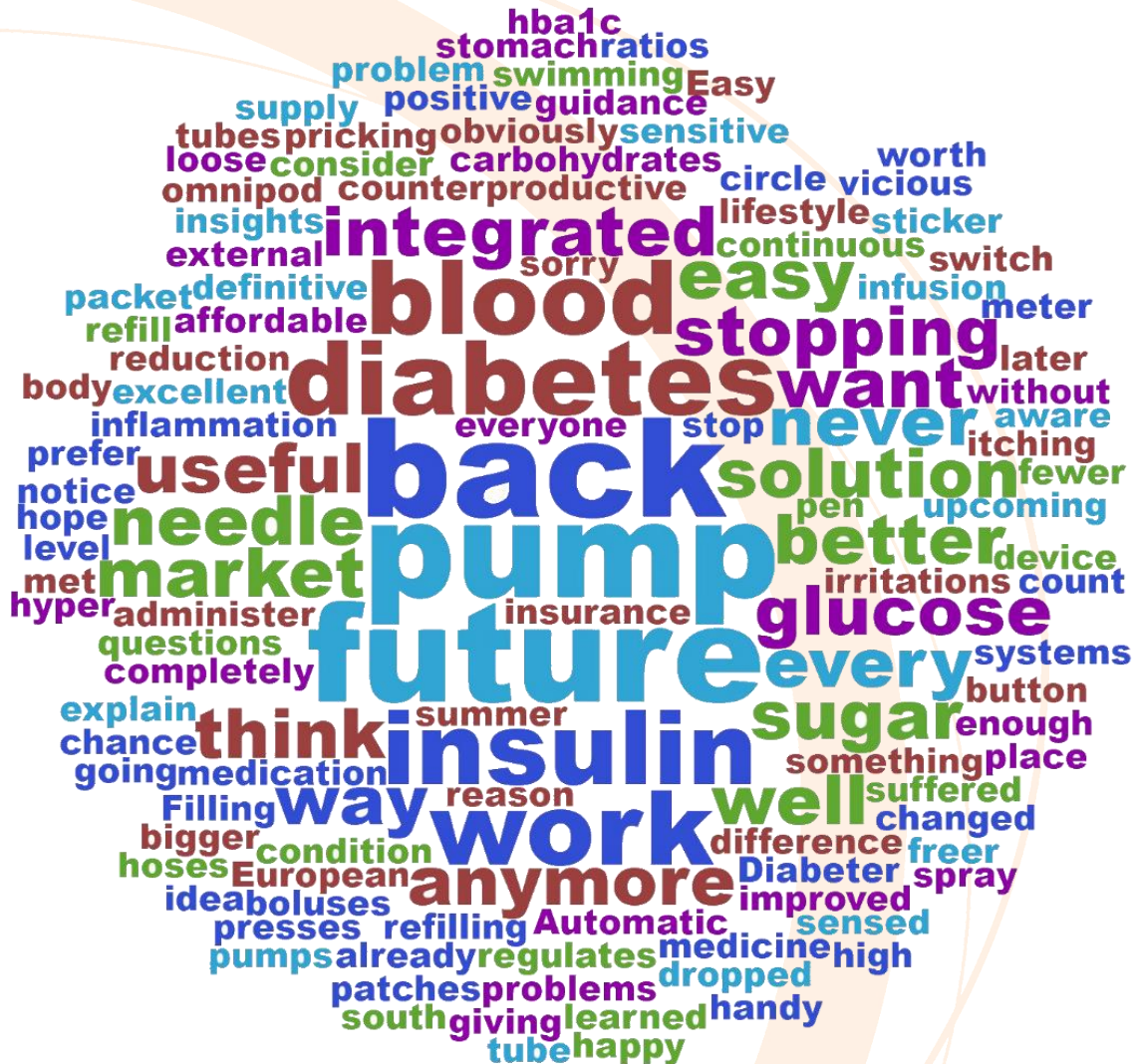
Questionnaire responders	
Period	2007-2018
N	38
Current age (SD)	23 (10)
Gender (% male)	26
Diabetes duration (%)	
< 5 years	5
5-10 years	32
10-15 years	26
15-20 years	16
> 20 years	21
CSII duration (%)	
< 1 year	16
1-5 years	39
5-10 years	24
> 10 years	21
Primary patients (%)	29

Results: questionnaire

- 20 of 38 responders indicated that their HCP felt they should discontinue CSII: 80% of patients agreed
- Most striking results:



Results: questionnaire



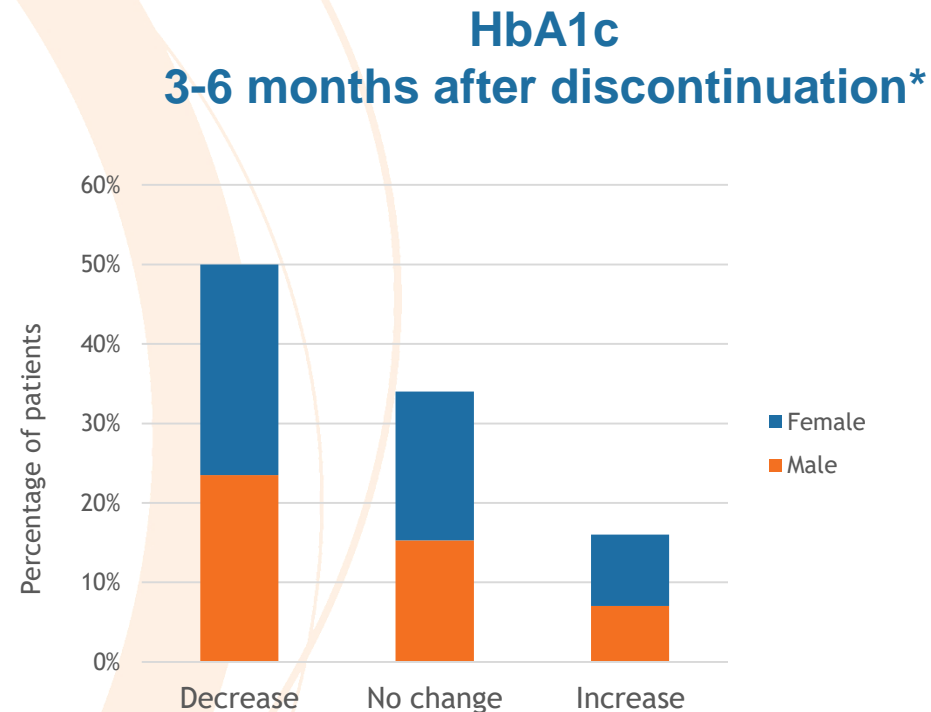
Results: questionnaire (2)

Supporting quotes:

- **Emotional category:** *"Use of the pump continuously made me realize that I have diabetes and this made me rebel more and more, resulting in further deregulation."*
- **Clinical category:** *"My expectation, which was also suggested by my HCPs, was that my HbA1c would dramatically improve, which would also result in fewer boluses and glucose measurements. Unfortunately the opposite happened for me, sinking my spirits."*
- **Practical category:** *"[...] Furthermore, I really don't like having a device attached to my body 24/7. I'd much rather prefer the insulin pen, which I only need a few times a day and doesn't need looking after for the rest of the day."*

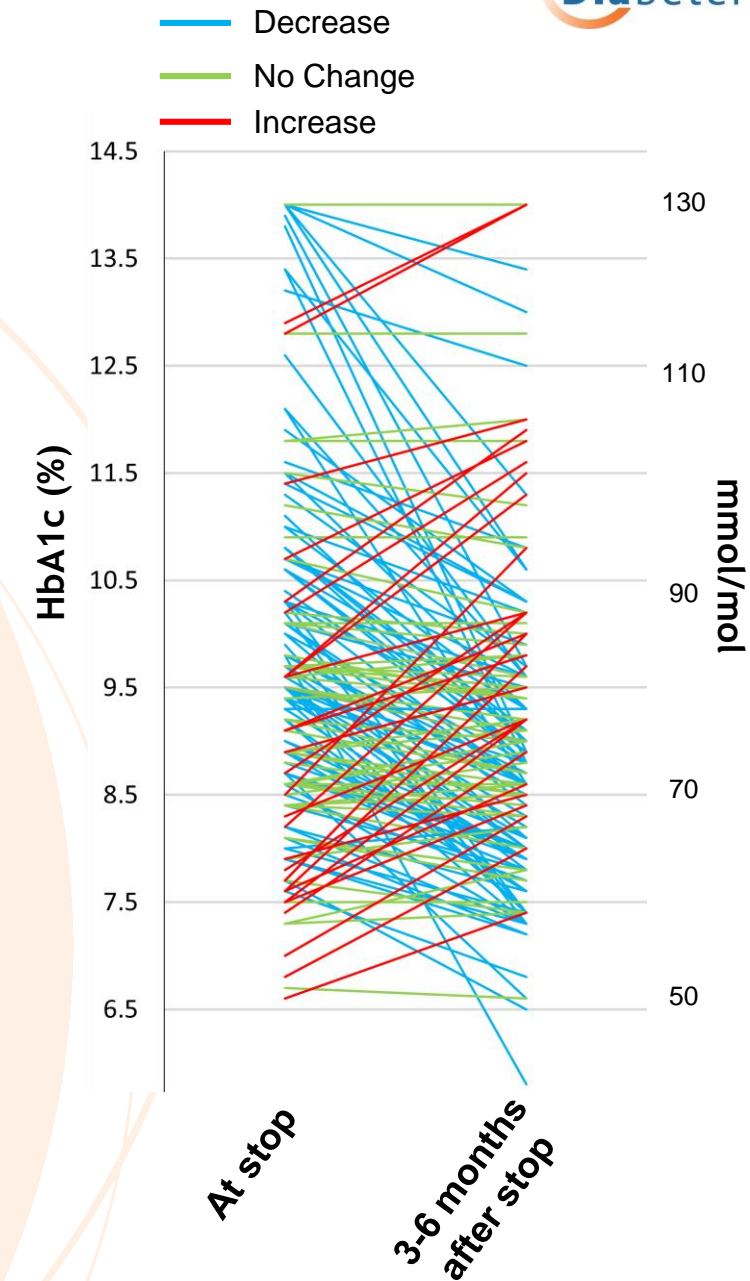
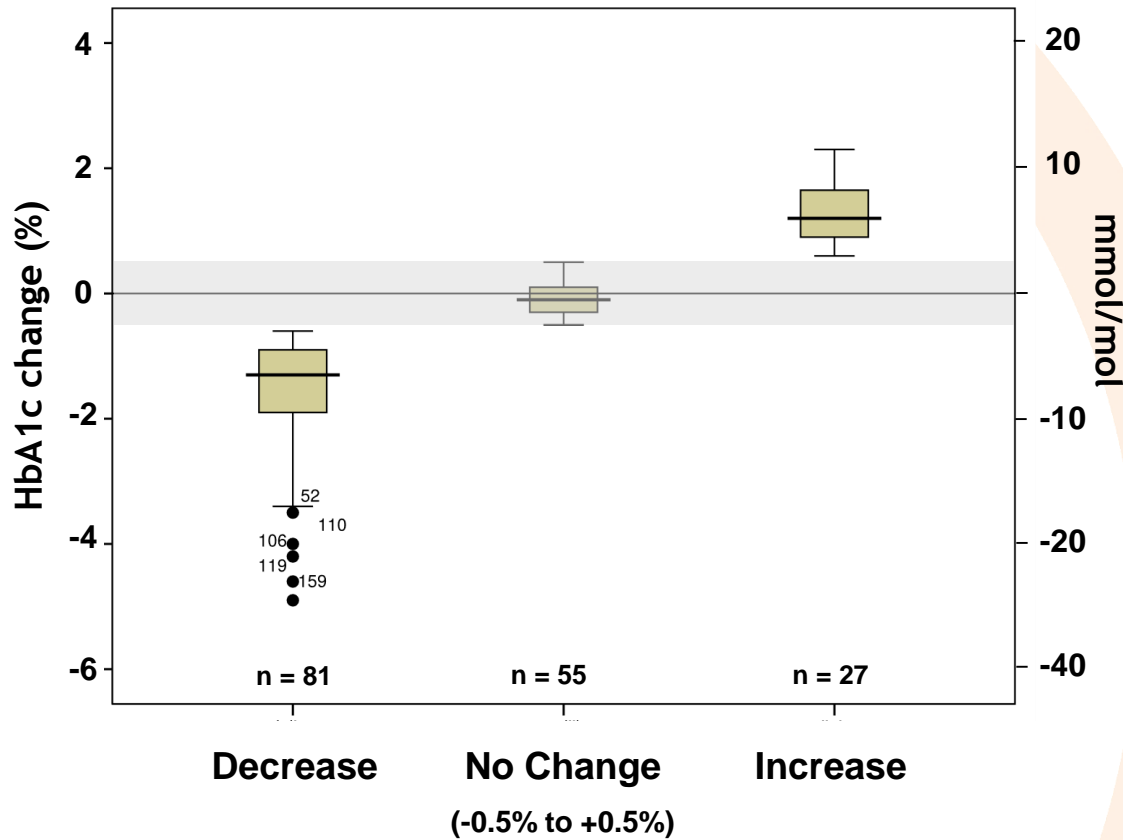
Results: HbA1c

	2007-2018
HbA1c	N = 163
At CSII discontinuation % (SD) mmol/mol (SD)	9,7 (1,7) 82 (18)
3-6 months after CSII discontinuation* % (SD) mmol/mol (SD)	9,1 (1,5) 76 (16)
Change, % (SD) mmol/mol (SD)	-0,6 (1,3) -7 (14)
DECREASE % (SD) mmol/mol (SD)	n = 81 -1,6 (1,0) -17 (10)
NO CHANGE % (SD) mmol/mol (SD)	n = 55 -0,09 (0,27) -1 (3)
INCREASE % (SD) mmol/mol (SD)	n = 27 +1,3 (0,53) +14 (6)



*When a patient had multiple HbA1c values in this period (n = 66), these were averaged

Results: HbA1c (2)



Conclusions

- For about half of patients, HbA1c improved considerably 3 to 6 months after discontinuation of CSII.
- Reasons for discontinuing CSII involved various factors:
 - emotional (e.g. body image, disease acceptance),
 - practical (e.g. flexibility doing activities),
 - technical (e.g. device failure, blockages)
 - clinical factors (e.g. skin irritations/infections, worse glycemic regulation)
- Mostly discontinuation of CSII was suggested by HCPs: however, most patients agreed

- Longer follow-up duration: permanent improvement?
- Future studies should aim to correlate questionnaire (qualitative) results with clinical (quantitative) results
- Before initiating CSII, suitability of this treatment should be assessed, not only based on clinical factors, but also on emotional and practical factors
 - Tools for this aim should be developed
- Future studies should test if more extensive training (knowledge) or preparation (psychosocial impact) would allow certain subgroups of patients to take advantage of CSII



Thank you!