

# DIABETES CLINICAL SUMMARIES



## OPT2MISE, 2015: A RANDOMISED CONTROLLED TRIAL COMPARING INSULIN PUMP THERAPY WITH MULTIPLE DAILY INJECTIONS IN TYPE 2 DIABETES

### STUDY RATIONAL

- 51% of type 2 subjects on MDI are in poor control (HbA1c>8%)<sup>1</sup>
- There is an increased risk of hypoglycemia and weight gain as insulin regimens intensify<sup>2</sup>
- There is an increased risk of diabetes related complications associated with Hyperglycaemia<sup>3</sup>
- 57% of type 2 MDI subjects admit to noncompliance by omitting insulin injections<sup>4</sup>

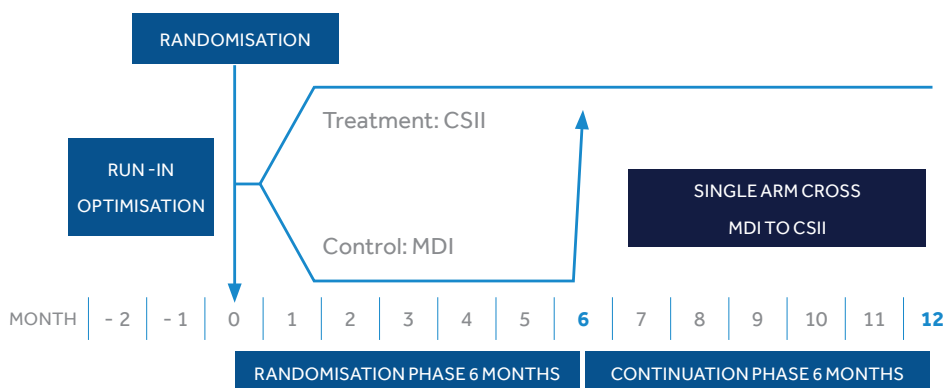
### OBJECTIVES

- To compare the efficacy of pump therapy or Continuous Subcutaneous Insulin Infusion (CSII) and multiple daily injections (MDI) in patients with type 2 diabetes who had not responded to a basal-bolus regimen after optimal insulin intensification

### DESIGN AND METHODS

- This study was a multicentre, randomised, controlled trial conducted at 36 diabetes centers in Europe, Israel, Canada, South Africa and in the United States and consisting of an 8 week run-in period; a 6-month randomisation phase (RP), and a 6-month continuation phase (CP).
- Following the RP, MDI patients were switched to CSII. Both groups were followed-up during the CP for a further 6-month period.

FIGURE 1: Study Design



### Subject eligibility criteria:

- Insulin-taking type 2 on MDI (≥ 3 injections/ day)
- 8.0% ≤ HbA1C ≤ 12%
- Insulin dose: 0.7 to 1.8 units/kg/day (≤ 220 units/day)
- Mean number self-monitoring of blood glucose (SMBG) measurement ≥ 2.5 times/ day

### KEY TAKEAWAYS

- Significant clinical benefits demonstrated for poorly controlled T2 subjects on MDI when switched to CSII
- Sustained clinical benefits were observed over 12 months
- Reproducible benefits after 2 or 8 months of insulin intensification.

### DESIGN AT A GLANCE

- Randomised Controlled Trial
- CSII vs MDI
- 12 months duration
- 331 T2 subjects (35-75 years old)
- 8.0% ≤ HbA1C ≤ 12%

### PRIMARY ENDPOINT

- Between-group difference in mean change in HbA1c from baseline to 6 months.

### SECONDARY ENDPOINTS

- Within-group differences at 12 months in HbA1c
- AUC in hypo/ Hyperglycaemia
- Patient treatment satisfaction
- Safety: Number of severe Hypoglycaemic events and diabetic ketoacidosis events

### REFERENCE

Sustained efficacy of insulin pump therapy, compared with multiple daily injections, in type 2 diabetes: 12-month data from the OpT2mise randomized trial. Ronnie Aronson, Yves Reznik, Ignacio Conget, Javier A Castañeda, Sarah Runzis, Scott W Lee, and Ohad Cohen for the OpT2mise Study Group. DOI: 10.1111/dom.12642



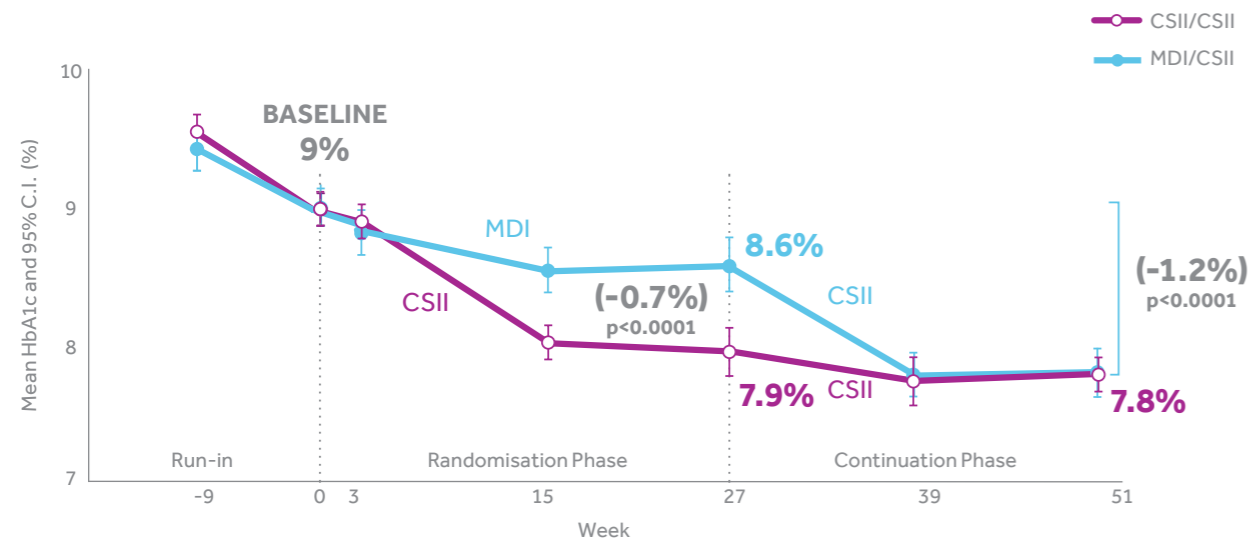
## RESULTS

- 495 subjects entered the 8-week run-in phase and 331 were randomised to either CSII (N=168) or the MDI group (N=163).
- 308 subjects completed the RP. Of the 152 subjects in the CSII group who completed the RP, 146 completed the CP. Of the 156 subjects initially assigned to MDI therapy who completed the RP, 145 were switched to CSII and completed the CP.

### HbA1c

- Mean baseline HbA1c was 9.0% in both groups
- At 6 month (RP), HbA1c improved to 8.6% in the MDI group (-0.4±1.1%) and to 7.9% in the CSII group (-1.1±1.2%); the between group difference was -0.7% (CI -0.9 to -0.4, P<0.001) in favor of CSII.
- At 12 month (CP), a 0.1% further reduction in CSII group from 6 months and a 0.8% reduction in the MDI group was seen compared to 6 months. For both groups, a 1.2% (SD CSII ±1.14, MDI ±1.28) reduction from baseline was observed with the same final value of 7.8%.
- At 6 months, the proportion of patients reaching HbA1c <8% was 55% in the CSII group and 28% in the MDI control group.
- At 12 months, the proportion of patients reaching HbA1c <8% was 57.2% in CSII/CSII group and 56.9% in MDI / CSII group.

**FIGURE 2: CHANGE IN HbA1c AT 6 (SP) AND 12 MONTHS (CP)**



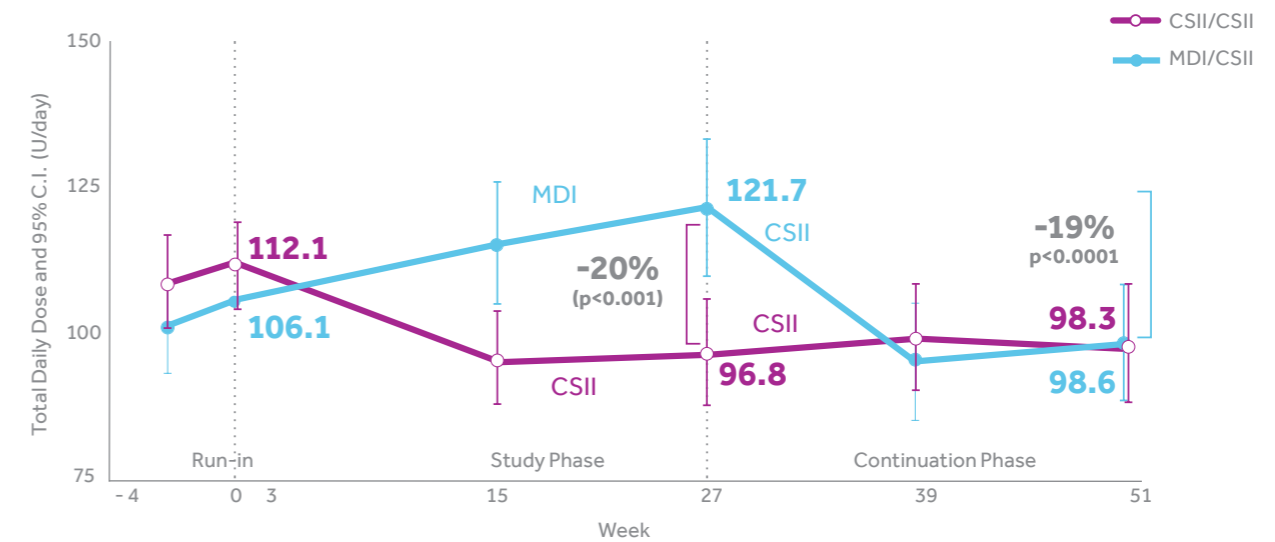
### Blood pressure, lipid parameters, weight, and safety

- Blood pressure and lipid parameters did not change significantly during the study.
- Weight gain at 12 months did not differ significantly between the two groups (2.1±5.2 and 2.3±4.9 kg, CSII/CSII and MDI/CSII group, respectively)
- No episodes of ketoacidosis occurred in either group.
- In the CP, one episode of severe hypoglycaemia occurred in the CSII/CSII group, and two episodes occurred in the MDI/CSII group.
- In total 7 diabetes, device or study procedure related SAEs occurred in the CSII/CSII group, and 11 SAEs in the MDI/CSII group

### Insulin dose

At 12 months, the final TDD was 98.3 ± 57.9 U/day in the CSII/CSII arm and the MDI/CSII group showed a 19% decline in TDD following initiation of CSII (total decline from baseline: 19.7U ± 42.2, P<0.0001)

**FIGURE 3: INSULIN UTILISATION**



### Frequency of SMBG

Both groups showed a similar frequency of SMBG at 12 months (3.6±1.3 vs. 3.4±1.3, p=0.34).

### Change in AUC for hyperglycaemia and change in 24-hour glucose value

At 12 months:

- Mean 24-hour glucose level reduced significantly in both groups (CSII/CSII group 12.5% and MDI/CSII group 8.9%)
- AUC for hyperglycaemia (>10 mmol/L) was significantly decreased and similar in both groups (CSII/CSII group 39.1%; MDI/CSII group 36.2%).

## CONCLUSIONS

- The 12-month results indicate that improvement of glycemic control observed after 6 months of CSII is maintained over one year, confirming the sustained and durable effect of CSII on glycemic control. It also demonstrates the reproducibility of the clinical benefit when switching from MDI to CSII, after short or longer term insulin intensification.

#### **Additional References**

1. Annali AMD 2011. [http://www.aemmedi.it/pages/annali\\_amd/](http://www.aemmedi.it/pages/annali_amd/)
2. Reznik Y, Cohen O, Aronson R, et al. Insulin pump treatment compared with multiple daily injections for treatment of type 2 diabetes. *Lancet*. 2014; 384: 1265-72.
3. Stratton I, et al. Association of glycaemia with macrovascular and microvascular complications of type 2 diabetes (UKPDS 35). *BMJ*. 2000; 321: 405-412.
4. Peyrot M, Rubin RR, Kruger DF, Travis LB. Correlates of insulin injection omission. *Diabetes Care*. 2010 Feb; 33(2): 240-5.