

ORAL PRESENTATION

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# Continuous subcutaneous insulin infusion is associated with a reduced rate of microvascular complications

Bedowra Zabeen<sup>1\*</sup>, Maria E Craig<sup>1</sup>, Alison Pryke<sup>1</sup>, Albert K.F Chan<sup>1</sup>, Yoon Hi Cho<sup>1</sup>, Paul Benitez Aguirre<sup>1</sup>, Stephen Hing<sup>2</sup>, Kim C Donaghue<sup>1</sup>

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## Aim

To determine whether use of continuous subcutaneous insulin infusion (CSII) is associated with lower rates of microvascular complications than use of multiple daily injections (MDI) in adolescents with type 1 diabetes from 2000-2014.

## Methods

We assessed microvascular complications in 1152 adolescents aged 12-20 years with diabetes duration  $\geq 5$  years. Retinopathy was detected using seven-field fundal photography, albumin excretion rate (AER) using overnight urine collections or albumin-to-creatinine ratio (ACR) and peripheral nerve function by thermal and vibration threshold.

## Results

Median age was 17 years [IQR 15-18] and median diabetes duration 9.0 [7.0-12.0] years. CSII was used by 29% and MDI 72%. CSII was associated with a lower rate of retinopathy than MDI (16% vs 22%;  $p=0.025$ ) across the entire study period and in the latest time period with lower rate of AER elevation ( $\geq 7.5 \mu\text{g}/\text{min}$ ) (26% vs 37%;  $p=0.012$ ); microalbuminuria (1.3% vs 5.5%;  $p=0.016$ ) and peripheral nerve abnormalities (27% vs 32%;  $p=0.139$ ) although the latter did not reach statistical significance.

In multivariable analysis, retinopathy was negatively associated with CSII Odds ratio (OR) 0.68 (95%CI:0.47-0.98) and positively with higher HbA1c OR 1.20 (1.08-1.32), older age at diagnosis 1.12 (1.02-1.22), longer

diabetes duration 1.26 (1.15- 1.38) and lower height SDS 0.78 (0.67-0.91). Early elevation of AER was associated with higher HbA1c OR 1.33 (1.20-1.47), insulin dose 1.86 (1.22-2.82) and lower socioeconomic advantage 0.66 (0.46-0.94). Microalbuminuria was associated with higher insulin dose 2.64 (1.07-6.50) and HbA1c 1.34 (1.07-1.68). A peripheral nerve abnormality was negatively associated with CSII OR 0.66 (0.44-0.97), insulin dose OR 0.50 (0.26- 0.94) and positively with higher BMI SDS OR 1.31(1.06-1.63).

## Conclusion

While the benefits of CSII on glycaemic control and quality of life are recognised, this is the first study to show a beneficial association of CSII vs MDI on microvascular complications.

## Authors' details

<sup>1</sup>Institute of Endocrinology and Diabetes, The Children's Hospital at Westmead, Australia. <sup>2</sup>Ophthalmology Department, The Children's Hospital at Westmead, Australia.

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<sup>1</sup>Institute of Endocrinology and Diabetes, The Children's Hospital at Westmead, Australia

Full list of author information is available at the end of the article