



Type-1-Diabetes: The problems associated with comparing Integrated Sensor-Augmented Pump Therapy systems for managing blood glucose levels with Multiple Daily Injections

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INTRODUCTION / BACKGROUND

The objective of this project was to summarise the evidence on the clinical effectiveness of the MiniMed Paradigm Veo System (Veo) and the Vibe and G4 PLATINUM CGM system (Vibe) in comparison with multiple daily injections (MDI) or continuous subcutaneous insulin infusion (CSII), both with either self-monitoring of blood glucose (SMBG) or with continuous glucose monitoring (CGM) for the management of Type-1-Diabetes (T1DM) in adults and children.

METHODOLOGY

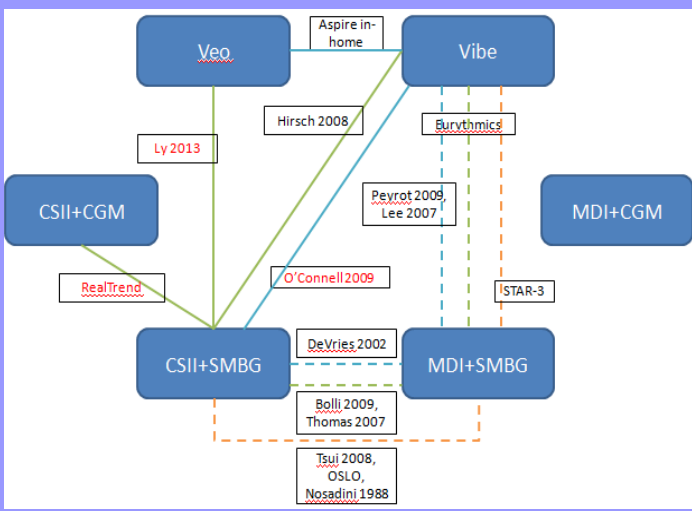
A systematic review was conducted searching databases and other sources up to September 2014. In the absence of RCTs directly comparing Veo or an integrated CSII+CGM system such as Vibe with the comparators, indirect treatment comparisons were performed, where possible.

RESULTS

Fifty-four publications of 19 studies were identified in the review, 15 studies included data for adults. The full network is presented in the Figure, allowing comparisons between all interventions, except MDI+CGM. However, in the UK, insulin pumps are recommended for people with T1DM for whom MDI is not suitable.

Therefore, there is a problem with the comparability of populations in studies evaluating insulin pumps and MDI. This means the comparability of trials comparing pumps with MDI is problematic. A better comparison would be to compare Veo and Vibe only with interventions that include pumps i.e. CSII+SMBG or CSII+CGM (not integrated). That would result in a network where the dashed lines are omitted, producing a more homogeneous network with more reliable results. As can be seen in the Figure reliable comparisons can be made for 3 months and 6 months follow-up, if one accepts that mixed data for different age groups are sufficiently comparable.

Figure: Network of studies



Legend: Follow-up: Blue lines are 3, green: 6, orange: 9 months or more. Age: Study names in red include children and adults; black: adults only.

CONCLUSION

Conclusion: Interventions that include a pump cannot be compared to interventions based on MDI because these interventions are meant for different populations. Comparability of populations can be a major problem in network meta-analyses.

FUNDING

This project was funded by the NIHR Health Technology Assessment programme (Project Number 14/69/01) and will be published in full in Health Technology Assessment. The views and opinions expressed herein are those of the authors and do not necessarily reflect those of the HTA programme, NIHR, NHS or the Department of Health.