A cluster randomised trial, cost-effectiveness analysis and psychosocial evaluation of insulin pump therapy compared with multiple injections during flexible intensive insulin therapy for type 1 diabetes: the REPOSE Trial

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Declared competing interests of authors: The insulin pumps were provided free of charge and unconditionally by Medtronic, which had no involvement in the design of the protocol; the collection, analysis and interpretation of the data; the writing of this report; or the decision to submit the report for publication. Simon Heller is a Health Technology Assessment Clinical Evaluation and Trials Board Member, who reports personal fees from Sanofi-Aventis, and personal fees and other from Novo Nordisk and Eli Lilly, outside the submitted work. Katharine Barnard reports personal fees from Roche Diabetes Care, outside the submitted work. Michael Campbell was a National Institute for Health Research Health Services and Delivery Research Board Member from 2010 to 2014. Jackie Elliott reports personal fees from AstraZeneca, Merck Sharpe & Dohme and Takeda, and personal fees and non-financial support from Eli Lilly, Novo Nordisk and Sanofi-Aventis, outside the submitted work. Mark Evans reports personal fees and other from Abbott Diabetes Care, Medtronic, Roche, Eli Lilly, Novo Nordisk and Cellnovo, and grants from Senseonics and Oxford Medical Diagnostics, outside the submitted work. Peter Hammond reports personal fees from Medtronic, Johnson & Johnson, Roche, Novo Nordisk and Eli Lilly, outside the submitted work. Alan Jaap reports personal fees and non-financial support from Novo Nordisk, and personal fees from Eli Lilly, Takeda, Merck Sharpe & Dohme and AstraZeneca, outside the submitted work.
Plain English summary

People with type 1 diabetes (T1DM) need insulin therapy to sustain life. The most common treatment is injecting insulin several times a day. Another approach uses insulin pumps, the size of mobile phones, which are attached under the skin through fine tubing and which provide small amounts of insulin. In the UK, pumps are recommended for people struggling to control their diabetes with injections, and are used far less often than in other countries. The research conducted so far on pumps has weaknesses. We wanted to conduct a fair test to see if pumps would benefit adults with T1DM.

We conducted a large study (a randomised controlled trial) in which 267 people attended a structured education course: half were assigned to a pump for 2 years, whereas the other half used injections. We compared average blood sugar levels [by a test measuring glycated haemoglobin (HbA1c)] to compare diabetes control after 2 years.

Our results showed that both groups improved diabetes control after training. Participants using pumps had slightly better control, but differences were small (HbA1c was 0.24% lower than in the injections group). We found that pumps were not cost-effective, although people using pumps reported better satisfaction with their treatment and in some aspects of their quality of life.

Our study suggests that making insulin pumps more widely available before structured training is unlikely to improve diabetes control or be cost-effective. Providing structured education to more people could be highly beneficial, with pumps made available to those needing better ways of delivering insulin to reach glucose targets.
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This report
The research reported in this issue of the journal was funded by the HTA programme as project number 08/107/01. The contractual start date was in June 2011. The draft report began editorial review in March 2016 and was accepted for publication in July 2016. The authors have been wholly responsible for all data collection, analysis and interpretation, and for writing up their work. The HTA editors and publisher have tried to ensure the accuracy of the authors’ report and would like to thank the reviewers for their constructive comments on the draft document. However, they do not accept liability for damages or losses arising from material published in this report.

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