

# Integrated sensor-augmented pump therapy systems [the MiniMed® Paradigm™ Veo system and the Vibe™ and G4® PLATINUM CGM (continuous glucose monitoring) system] for managing blood glucose levels in type 1 diabetes: a systematic review and economic evaluation

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## Plain English summary

### Pump therapy for managing blood glucose levels in type 1 diabetes

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## Plain English summary

People who have type 1 diabetes need treatment with insulin every day. They usually inject themselves multiple times each day using a needle and syringe. Some people use a device called an insulin pump which can give them a continuous dose of insulin through a needle in the skin. Getting the dose of insulin treatment right is essential in order to avoid people having too much sugar (hyperglycaemia) or too little sugar (hypoglycaemia) in their blood. In this project, we studied the clinical effectiveness and cost-effectiveness of two insulin delivery systems for the management of type 1 diabetes in adults and children.

The MiniMed® Paradigm™ Veo system (Medtronic Inc., Northridge, CA, USA) is an insulin pump with an in-built glucose monitor and an insulin suspend function that stops (suspends) insulin entering the pump for up to 2 hours. The Vibe™ (Animas® Corporation, West Chester, PA, USA) and G4® PLATINUM CGM (continuous glucose monitoring) (Dexcom Inc., San Diego, CA, USA) system is similar to the MiniMed Veo system, but without the suspend function.

These two insulin delivery systems were compared in patients who inject themselves with insulin multiple times per day and in patients who use insulin pumps, along with either a separate continuous glucose monitor or with self-monitoring of blood glucose (SMBG) by finger prick tests.

We found that the MiniMed Paradigm Veo system reduces hypoglycaemic events in comparison with other treatments, without any differences in other health outcomes; however, the evidence we looked at was limited. We also found that self-injection of insulin multiple times a day along with SMBG by finger prick tests was the combination most likely to be cost-effective.

In summary, our review shows that the Veo system reduces hypoglycaemic events in comparison with other treatments, without any differences in other outcomes. However, the evidence base was poor. Cost-effectiveness analyses indicated that multiple daily insulin injections along with SMBG is the option most likely to be cost-effective, whereas integrated pump + CGM systems and the Veo system are more expensive and less clinically effective than the use of pumps along with separate CGM. No cost-effectiveness modelling was possible for children or pregnant women because of a lack of data.

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