

Putting NICE guidance into practice

**Resource impact report:
Integrated sensor-augmented pump
therapy systems for managing blood
glucose levels in type 1 diabetes (the
MiniMed Paradigm Veo system and the
Vibe and G4 PLATINUM CGM system)
(DG21)**

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During the development of this guidance, NICE became aware that a new integrated sensor-augmented pump therapy system, the MiniMed 640G system (Medtronic), has become available. The evidence for the MiniMed 640G system has not been assessed in the guidance, and the recommendations, therefore, do not relate to its routine use in the NHS. For further information on the MiniMed 640G system please see the related NICE Medtech Innovation Briefing.

Summary

The MiniMed Paradigm Veo system and the Vibe and G4 PLATINUM CGM system are integrated sensor-augmented insulin pump therapy systems that are intended to be used for managing blood glucose levels in people with type 1 diabetes.

The MiniMed Paradigm Veo system is recommended subject to certain criteria in NICE's guidance on [integrated sensor-augmented pump therapy systems for managing blood glucose levels in type 1 diabetes](#).

The Vibe and G4 PLATINUM CGM system is not recommended for routine use in the NHS.

Adopting the MiniMed Paradigm Veo system may result in additional costs or savings depending on local circumstances. Three scenarios have been assessed for resource impact. These highlight the following:

Potential savings

- £300–£1,600 for each avoided hospital admission for diabetes with hypoglycaemia-related disorders
- £80–£240 for each avoided Accident and Emergency Department attendance
- £180 or £230 per ambulance call avoided
- up to £1,500 per person per year from reduced average ongoing costs compared with using a stand-alone continuous glucose monitor with stand-alone continuous subcutaneous insulin infusion (scenario 3).

Potential costs

- additional cost of £3,000 for each new system bought

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- an additional £300 for initial equipment costs to complete the system if a MiniMed Paradigm Veo insulin pump is already being used (scenario 1)
- an additional £1,700–£3,000 per person per year in ongoing costs compared with using a stand-alone insulin pump (scenario 1)
- an increase in on-going costs of £1,700–£1,900 per person per year compared with using stand-alone continuous glucose monitoring without stand-alone continuous subcutaneous insulin infusion (scenario 2).

The MiniMed Paradigm Veo system is commissioned by clinical commissioning groups (CCGs) for adult patients, and by NHS England regional teams for paediatric patients treated in Paediatric Diabetes Centres. Providers are generally NHS Trusts in secondary or tertiary care.

1 Introduction

- 1.1 The MiniMed Paradigm Veo system and the Vibe and G4 PLATINUM CGM system are integrated sensor-augmented pump therapy systems, which combine continuous glucose monitoring (CGM) with continuous subcutaneous insulin infusion (CSII). They are intended to help people with type 1 diabetes manage their blood glucose levels.
- 1.2 The guidance recommends the MiniMed Paradigm Veo system as an option for managing blood glucose levels in people with type 1 diabetes who have episodes of disabling hypoglycaemia despite optimal management with CSII.
- 1.3 ‘Disabling hypoglycaemia’ is when hypoglycaemic episodes occur frequently or without warning so that the person is constantly anxious about having more episodes. This can have a negative effect on quality of life. The recommendation is subject to the criteria in the full guidance recommendations.
- 1.4 The Vibe and G4 PLATINUM CGM system shows promise but there is currently insufficient evidence to support its routine adoption in the NHS for managing blood glucose levels in people with type 1 diabetes.
- 1.5 The full guidance recommendations are available in NICE’s guidance on [integrated sensor-augmented pump therapy systems for managing blood glucose levels in type 1 diabetes \(the MiniMed Paradigm Veo system and the Vibe and G4 PLATINUM CGM system\)](#).

2 Background and epidemiology

2.1 The guidance estimates that about 370,000 adults and 24,000 children and young people in the UK have type 1 diabetes. The 2013 Insulin Pump Audit estimated that about 6% (22,200) of adults with type 1 diabetes and about 19% (1,400) of children and young people with type 1 diabetes are treated with CSII. The number of people likely to use the MiniMed Paradigm Veo system is unknown.

3 Resource impact

3.1 The guidance might have resource implications at a local level as a result of variation in clinical practice across the country. Therefore, we encourage organisations to evaluate their own practice against the recommendations in the NICE guidance and assess costs locally.

3.2 Potential costs or savings from adopting the MiniMed Paradigm Veo system will depend on local circumstances. There are 3 possible scenarios, depending on whether or not organisations already use:

- the MiniMed Paradigm Veo or other insulin pumps without continuous glucose monitoring (CGM)
- stand-alone CGM without stand-alone continuous subcutaneous insulin infusion (CSII)
- stand-alone CGM with stand-alone CSII.

3.3 Tables 1–3 show the potential costs or savings followed by detailed discussions within the relevant sections.

Table 1 Scenario 1: the MiniMed Paradigm Veo or other insulin pumps without CGM

Diagnostic technology	Appendix	Device cost (£)	Annual ongoing costs (£)
MiniMed Paradigm Veo system	1	3,000	4,900
MiniMed Paradigm Veo	1	2,700	4,900
Other insulin pumps	2	400—2,900	1,900—3,200
Resource impact			3,000—1,700
Abbreviations: CGM, continuous glucose monitoring.			

3.4 If an organisation already uses the MiniMed Paradigm insulin pump, they do not need to buy the MiniMed Paradigm Veo system. They only need the sensor and transmitter to complete the system, at an additional cost of £300 per person.

3.5 For other insulin pumps, organisations will need to buy the MiniMed Paradigm Veo system costing £3,000.

3.6 This scenario would incur additional on-going costs of £1,700–£3,000 per person per year compared with using other stand-alone insulin pumps.

Table 2 Scenario 2: stand-alone CGM without stand-alone CSII

Diagnostic technology	Appendix	Device cost (£)	Annual ongoing costs (£)
MiniMed Paradigm Veo system	1	3,000	4,900
Stand-alone CGM without stand-alone CSII	3	1,000—1,300	3,000—3,200
Resource impact			1,900—1,700
Abbreviations: CGM, continuous glucose monitoring; CSII, continuous subcutaneous insulin infusion.			

3.7 For this scenario, organisations would need to buy the MiniMed Paradigm Veo system at a cost of £3,000. There would be increased on-going costs of £1,700–£1,900 per person per year compared with using a stand-alone CGM without stand-alone CSII.

Table 3 Scenario 3: stand-alone CGM with stand-alone CSII

Diagnostic technology	Appendix	Device cost (£)	Annual ongoing costs (£)
MiniMed Paradigm Veo system	1	3,000	4,900
Stand-alone CGM with stand-alone CSII	4	1,400–4,200	4,900–6,400
Resource impact			0–(-1,500)

Abbreviations: CGM, continuous glucose monitoring; CSII, continuous subcutaneous insulin infusion.

3.8 In this scenario, organisations would need to buy the MiniMed Paradigm Veo system at a cost of £3,000.

3.9 The scenario would reduce on-going costs by up to £1,500 per person per year compared with using stand-alone CGM with a stand-alone insulin pump.

4 Savings and benefits

4.1 Using the MiniMed Paradigm Veo system may improve glucose control and so may result in the following savings and benefits:

- Reduce diabetes-related complications and improve the quality of life for people with type 1 diabetes. For example, each avoided hospital admission for hypoglycaemia-related disorders could save £300–£1,600 ([Enhanced tariff option for 2015–16](#)).
- Reduce attendances at Accident and Emergency Departments. This would save around £80–£240 for each avoided attendance,

depending on the category of treatment ([Enhanced tariff option for 2015–16](#)).

- Reduce ambulance costs. This would save £180 or £230 depending on the category of treatment (NHS reference costs 2014/5).
- Make it easier for people to follow to treatment because the MiniMed Paradigm Veo system can automatically suspend insulin delivery, which may help to reduce the incidence of severe and nocturnal hypoglycaemia, and its associated anxiety.
- Provide greater independence for children and young people with type 1 diabetes; for example, helping them to take part in sports activities and giving reassurance when they stay away from home.
- Reduce anxiety, particularly in carers of children and young adults who may have disrupted sleep for many years because of anxiety about the risk of nocturnal hypoglycaemia.

5 References

1. [The United Kingdom Insulin Pump Audit - Service Level Data](#) (2013)
[accessed December 2015]
2. [Guide to Enhanced Tariff Option for 2015/16](#) [accessed December 2015]
3. [NHS Reference costs 2014/15](#). National schedule of reference costs:
The main schedule (NHS trusts and NHS foundation trusts - Ambulance)
[accessed December 2015]

6 Appendices

Appendix 1 Cost analysis (the MiniMed Paradigm Veo system)

Details	Units needed per year	Cost
Device cost		
Insulin pump		£2,679.00
Cannula		£8.70
Reservoir		£2.68
Batteries		£0.49
Continuous glucose monitoring transmitter		£228.70
Sensor		£42.05
Total device cost		£2,961.62
Ongoing costs		
Years of use – insulin pump	4	£669.75
Cannula (useful life 3 days)	121.67	£1,058.53
Reservoir (useful life 3 days)	121.67	£326.08
Batteries (useful life 8.5 days)	42.94	£21.04
Transmitter	1	£228.70
Sensor (useful life 6 days)	60.83	£2,557.90
Ongoing cost per year		£4,862.00

Appendix 2 Cost analysis (stand-alone CSII)

Details	Accu-Chek Spirit	Dana	Animas Vibe	Medtronic Paradigm	mylife Omnipod
Equipment cost					
Insulin pump	£2,523	£1,972	£2,831	£2,882	£425
Ongoing costs					
Insulin pump – annual cost based on 4-year life cycle	£631	£493	£708	£720	£106
Annual consumables	£1,324	£1,400	£1,663	£1,282	£3,052
Ongoing cost per year	£1,955	£1,893	£2,371	£2,002	£3,158
Abbreviation: CSII, continuous subcutaneous insulin infusion.					

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Appendix 3 Cost analysis (stand-alone continuous glucose monitoring)

Cost component	Units per year	Dexcom G4	Units per year	Freestyle Navigator	Units per year	Medtronic Guardian
Equipment costs						
CGM receiver		£745.00		£950.00		£1,059.00
CGM transmitter		£335.00		£0.00		£228.70
Sensor		£46.50		£48.00		£42.05
Total equipment cost		£1,126.50		£998.00		£1,329.75
Ongoing costs						
Years of use – CGM receiver	5	£149.00	5	£190.00	5	£211.80
Years of use – CGM transmitter	0.5	£670.00	0	£0.00	1	£228.70
Units per year – sensor (days of use)	52.14 (7)	£2,424.64	60.83 (6)	£2,920.00	60.83 (6)	£2,558.04
Ongoing cost per year		£3,243.64		£3,110.00		£2,998.54
Abbreviation: CGM, continuous glucose monitoring.						

Appendix 4 Cost analysis (stand-alone continuous glucose monitoring with stand-alone CSII)

Diagnostic technology	Device cost	Annual ongoing costs
Stand-alone CSII	£400–£2,900	£1,900–£3,200
Stand-alone CGM without stand-alone CSII	£1,000–£1,300	£3,000–£3,200
Total cost	£1,400–£4,200	£4,900–£6,400^a
Abbreviations: CGM, continuous glucose monitoring; CSII, continuous subcutaneous insulin infusion.		
a For the population included in the recommendations of this guidance, the annual ongoing cost of using a stand-alone CGM (£3,000–£3,200) would be in addition to the annual cost of a stand-alone insulin pump (£1,900–£3,200).		

About this costing statement

This costing statement accompanies the NICE diagnostics guidance on [integrated sensor-augmented pump therapy systems for managing blood glucose levels \(the MiniMed Paradigm Veo System and the Vibe and G4 PLATINUM CGM system\)](#) and should be read in conjunction with it. See [terms and conditions](#) on the NICE website.

This statement is written in the following context

This statement represents the view of NICE, which was arrived at after careful consideration of the available data and through consulting healthcare professionals. The statement is an implementation tool and focuses on the recommendations that were considered to have a significant impact on national resource use.

Assumptions used in the statement are based on assessment of the national average. Local practice may be different from this, and the impact should be estimated locally.

Implementation of the guidance is the responsibility of local commissioners and providers. Commissioners and providers are reminded that it is their responsibility to implement the guidance, in their local context, in light of their duties to have due regard to the need to eliminate unlawful discrimination, advance equality of opportunity and foster good relations. Nothing in this costing tool should be interpreted in a way that would be inconsistent with compliance with those duties.

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