NICE National Institute for Health and Care Excellence

Putting NICE guidance into practice

Resource impact report for continuous glucose monitoring recommendations in:

Type 1 diabetes in adults: diagnosis and management (NG17)

Type 2 diabetes in adults: management (NG28)

Diabetes (type 1 and type 2) in children and young people: diagnosis and management (NG18)

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Summary

This report focuses on the continuous glucose monitoring (CGM) recommendations from the updates to the NICE guidelines on type 1 diabetes in adults: diagnosis and management, type 2 diabetes in adults: management and diabetes (type 1 and type 2) in children and young people: diagnosis and management that we think will have the greatest resource impact (cost or saving) nationally (for England), and will need the most additional resources to implement or potentially generate the biggest saving. These are:

Recommendation 1.6.10 (NG17 Type 1 diabetes in adults: diagnosis and management)

- Offer adults with type 1 diabetes a choice of real-time continuous glucose monitoring (rtCGM) or intermittently scanned continuous glucose monitoring (isCGM) based on their individual preferences, needs, characteristics, and the functionality of the devices available. See box 1 in the guideline for examples of factors to consider as part of this discussion.

Recommendation 1.6.17 (NG28 type 2 diabetes in adults: management)

- Offer intermittently scanned continuous glucose monitoring (isCGM) to adults with type 2 diabetes on multiple daily insulin injections if any of the following apply:

  - they have recurrent or severe hypoglycaemia
  - they have impaired hypoglycaemia awareness
  - they have a condition or disability (including a learning disability or cognitive impairment) that means they cannot self-monitor their blood glucose by capillary blood glucose monitoring but could use an isCGM device (or have it scanned for them)
  - they would otherwise be advised to self-test at least 8 times a day.

Recommendation 1.2.60 (NG18 diabetes type 1 and type 2 in children and young people: diagnosis and management)

- Offer real-time continuous glucose monitoring (rtCGM) to all children and young people with type 1 diabetes, as long as it is provided alongside education to support children and young people and their families and carers to use it (see recommendation 1.2.67).

Recommendation 1.2.61 (NG18 diabetes type 1 and type 2 in children and young people: diagnosis and management)

- Offer intermittently scanned CGM (isCGM) to children and young people with type 1 diabetes aged 4 years and over who are unable to use rtCGM or who express a clear preference for isCGM. In the UK, isCGM is licensed for adults and children over the age of 4 years old.

These new recommendations are based on evidence reviewed on CGM for the populations covered by guidelines NG17, NG28 and NG18.

Financial impact

We encourage organisations to evaluate their own practices against the recommendations in the NICE guideline and assess costs and savings locally. Organisations can input estimates into the local resource impact template to reflect local practice and estimate the impact of implementing the guideline.

These recommendations are likely to result in broader access to rtCGM and isCGM devices. This will increase costs but should reduce inequalities and enable more people to access the technology.

There are potential downstream savings relating to a reduction in hypoglycaemia events which could result in significant improvements to quality of life. CGM technologies can help prevent long term complications that may arise from poor control of blood glucose levels. The data are not available for potential savings to be estimated.

Any potential discounts to the price of continuous glucose monitoring devices may have a significant impact on the costs of implementing these recommendations.

This report is supported by a resource impact template which may be used to calculate the resource impact of implementing the guidance by amending the variables.

1 Introduction

1.1 The following guidelines have been updated to incorporate new recommendations on continuous glucose monitoring: type 1 diabetes in adults: diagnosis and management, type 2 diabetes in adults: management and diabetes (type 1 and type 2) in children and young people: diagnosis and management.

1.2 This report discusses the resource impact of implementing the recommendations in England. It aims to help organisations plan for the financial implications of implementing the NICE guideline.

1.3 We encourage organisations to evaluate their own practices against the recommendations in the NICE guideline and assess costs and savings locally. Organisations can input estimates into the local resource impact template to reflect local practice and estimate the impact of implementing the guideline.

1.4 Diabetes services are commissioned by NHS England and integrated care systems/clinical commissioning groups. Providers are NHS hospital trusts, community providers and primary care providers.

2 Significant resource impact recommendation

There are 4 guideline recommendations that are likely to lead to a significant resource impact when implemented. All of these are considered together in section 2.1.

2.1 **Recommendation 1.6.10 (NG17):**

Offer adults with type 1 diabetes a choice of real-time continuous glucose monitoring (rtCGM) or intermittently scanned continuous glucose monitoring (isCGM) based on their individual preferences, needs, characteristics, and the functionality of the devices available. See box 1 (in the guideline) for examples of factors to consider as part of this discussion.

Recommendation 1.6.17 (NG28):

Offer intermittently scanned continuous glucose monitoring (isCGM) to adults with type 2 diabetes on multiple daily insulin injections if any of the following apply:

- **they have recurrent or severe hypoglycaemia**
- **they have impaired hypoglycaemia awareness**
- **they have a condition or disability (including a learning disability or cognitive impairment) that means they cannot self-monitor their blood glucose by capillary blood glucose monitoring but could use an isCGM device (or have it scanned for them)**
- **they would otherwise be advised to self-test at least 8 times a day.**

Recommendation 1.2.60 (NG18):

Offer real-time continuous glucose monitoring (rtCGM) to all children and young people with type 1 diabetes, as long as it

is provided alongside education to support children and young people and their families and carers to use it (see recommendation 1.2.67).

Recommendation 1.2.61 (NG18):

Offer intermittently scanned CGM (isCGM) to children and young people with type 1 diabetes aged 4 years and over who are unable to use rtCGM or who express a clear preference for isCGM. In the UK, isCGM is licensed for adults and children over the age of 4 years old.

Background

2.1.1 Evidence demonstrates that CGM can provide clinical benefits over standard self-monitoring of blood glucose in the diabetes populations.

2.1.2 Real-time continuous glucose monitoring consists of a subcutaneous sensor which continuously measures the glucose levels in the interstitial fluid. Data on glucose level and direction/rate of change is automatically sent to a display device (a handheld monitor, smart phones or pump) and the user can obtain real-time data as well as trends. The user can then analyse data and respond to changes in real-time or can make changes to insulin delivery, dose or timing based on retrospective data or trends. CGM models allow users to set alerts for high and low glucose levels, and rapid rate of change of glucose levels.

2.1.3 Intermittently scanned glucose monitoring consists of a subcutaneous sensor which continuously measures the glucose levels in the interstitial fluid. The user can obtain real-time data as well as trends by scanning the sensor with a reader device (including smart phones). The information provided gives a glucose level and information regarding the rate of change of glucose levels.

2.1.4 Self-monitoring of blood glucose (SMBG) is done through 'finger prick' testing. Alternate sites may also be used for testing such as the palm, the upper forearm, the abdomen, the calf or the thigh.

2.1.5 These recommendations are likely to result in broader access to intermittently scanned and real-time CGM devices, as opposed to a binary decision on access based on stringent criteria. This should reduce inequalities and enable more people to use CGM.

Assumptions made

2.1.6 There are around 3.2 million adults in England with diabetes based on the Quality Outcomes Framework (QOF) - NHS Digital 2020/21 of which 90% have type 2 diabetes and 8% have type 1 diabetes (Diabetes.org.uk). This equates to approximately 2.8m people with type 2 diabetes and 252,000 people eligible for CGM in the type 1 diabetes population. Applying the increase in the prevalence of diabetes over the last 5 years gives an estimate of around 3.4 million people with diabetes in England in 2026/27.

2.1.7 Of those with type 2 diabetes clinical experts estimate that 3.55% will be on multiple daily insulin injections. Of those on multiple daily insulin injections the High prevalence of impaired awareness of hypoglycemia and severe hypoglycemia among people with insulin-treated type 2 diabetes report estimates 41.3% will have impaired awareness or recurrent / severe hypoglycaemia and clinical experts estimate a further 5% will be advised to self-test at least 8 times a day. This equates to approximately 50,500 people eligible for CGM in the type 2 diabetes population in 2026/27.

2.1.8 The Diabetes – RCPCH – State of Child Health report estimates there are approximately 30,200 children and young people with diabetes in England of which 90% have type 1 diabetes.

2.1.9 Currently for adults, continuous monitoring of interstitial fluid glucose levels using a continuous glucose monitor is not

recommended for routine use but can be considered for some people. People with type 1 diabetes can be offered intermittently scanned glucose monitoring based on the NHSE national arrangements for funding of relevant diabetes patients. Clinical experts estimated this to currently be 53% of the type 1 diabetes population in England.

2.1.10 Of the eligible adults with type 1 diabetes from year 5 clinical experts estimate 55% will receive intermittently scanned continuous glucose monitoring whilst 20% will receive real-time continuous glucose monitoring and 25% will be self-monitoring blood glucose levels.

2.1.11 Of the eligible adults with type 2 diabetes clinical experts estimate current uptake to be low at 5% rising to 70% by year 5 with 30% self-monitoring blood glucose levels.

2.1.12 The NPDA 202021 Annual Report estimates there are approximately 28% of children and young people on real-time continuous monitoring and clinical experts estimate it will rise to 55% by year 5 and 5% receiving intermittently scanned continuous glucose monitoring.

2.1.13 The cost for intermittently scanned CGM is from NHS England's national arrangements, which outline the cost to the NHS of intermittently scanned CGM glucose monitoring. The cost of each sensor is £35 and each lasts two weeks. The annual cost is therefore 26 x £35 = £910.

2.1.14 For real-time CGM, as there are new devices being released the price can be input by users.

2.1.15 There is the ability to input different prices for each year in the resource impact over time tab within the template. Prices have been left blank for users to input.

2.1.16 Any potential discounts to the price of continuous glucose monitoring devices may have a significant impact on the costs of implementing these recommendations.

Costs/Savings

The changes in activity of all recommendations are summarised for England in table 2 and per 100,000 population in table 3.

Table 2 Estimated annual activity of implementing the guideline for the population of England

	2022/23 Current activity	2023/24 Current activity	2024/25 Current activity	2025/26 Current activity	2026/27 Current activity	2022/23 Future activity	2023/24 Future activity	2024/25 Future activity	2025/26 Future activity	2026/27 Future activity	Change in activity Year 1	Change in activity Year 2	Change in activity Year 3	Change in activity Year 4	Change in activity Year 5
Recommendation 1.6.10 (NG17)															
Intermittently scanned continuous glucose monitoring	136,569	138,519	140,540	142,588	144,692	137,857	141,132	144,517	147,968	150,152	1,288	2,614	3,978	5,381	5,460
Real time continuous glucose monitoring	28,344	28,749	29,169	29,594	30,030	33,498	39,203	45,079	51,116	54,601	5,154	10,454	15,910	21,523	24,570
Self-monitoring blood glucose	92,764	94,088	95,461	96,852	98,282	86,322	81,021	75,573	69,949	68,251	-6,442	-13,068	-19,888	-26,903	-30,030
Total recommendation 1.6.10	**257,677**	**261,356**	**265,169**	**269,033**	**273,004**	**257,677**	**261,356**	**265,169**	**269,033**	**273,004**	**0**	**0**	**0**	**0**	**0**
Recommendation 1.6.17 (NG28)															
Intermittently scanned continuous glucose monitoring	2,382	2,416	2,452	2,487	2,524	9,529	16,915	24,516	29,848	35,337	7,147	14,498	22,065	27,361	32,813
Real time continuous glucose monitoring	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Self-monitoring blood glucose	45,265	45,911	46,581	47,260	47,957	38,118	31,413	24,516	19,899	15,144	-7,147	-14,498	-22,065	-27,361	-32,813
Total recommendation 1.6.17	**47,647**	**48,328**	**49,033**	**49,747**	**50,481**	**47,647**	**48,328**	**49,033**	**49,747**	**50,481**	**0**	**0**	**0**	**0**	**0**
Recommendation 1.2.60 & 1.2.61 (NG18)															
Intermittently scanned continuous glucose monitoring	0	0	0	0	0	277	553	826	1,096	1,359	277	553	826	1,096	1,359
Real time continuous glucose monitoring	7,730	7,717	7,686	7,645	7,585	9,281	10,926	12,673	13,974	14,952	1,551	3,209	4,987	6,329	7,367
Self-monitoring blood glucose	19,975	19,943	19,863	19,756	19,601	18,147	16,181	14,050	12,331	10,875	-1,828	-3,762	-5,813	-7,425	-8,726
Total recommendation 1.2.60 & 1.2.61	**27,705**	**27,660**	**27,549**	**27,401**	**27,186**	**27,705**	**27,660**	**27,549**	**27,401**	**27,186**	**0**	**0**	**0**	**0**	**0**
Total all											**0**	**0**	**0**	**0**	**0**

Table 3 Estimated annual activity of implementing the guideline per 100,000 population

	2022/23 Current activity	2023/24 Current activity	2024/25 Current activity	2025/26 Current activity	2026/27 Current activity	2022/23 Future activity	2023/24 Future activity	2024/25 Future activity	2025/26 Future activity	2026/27 Future activity	Change in activity Year 1	Change in activity Year 2	Change in activity Year 3	Change in activity Year 4	Change in activity Year 5
Recommendation 1.6.10 (NG17)															
Intermittently scanned continuous glucose monitoring	243	246	250	253	257	245	251	257	263	267	2	5	7	10	10
Real time continuous glucose monitoring	50	51	52	53	53	60	70	80	91	97	9	19	28	38	44
Self-monitoring blood glucose	165	167	170	172	175	153	144	134	124	121	-11	-23	-35	-48	-53
Total recommendation 1.6.10	**458**	**464**	**471**	**478**	**485**	**458**	**464**	**471**	**478**	**485**	**0**	**0**	**0**	**0**	**0**
Recommendation 1.6.17 (NG28)															
Intermittently scanned continuous glucose monitoring	4	4	4	4	4	17	30	44	53	63	13	26	39	49	58
Real time continuous glucose monitoring	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Self-monitoring blood glucose	80	82	83	84	85	68	56	44	35	27	-13	-26	-39	-49	-58
Total recommendation 1.6.17	**85**	**86**	**87**	**88**	**90**	**85**	**86**	**87**	**88**	**90**	**0**	**0**	**0**	**0**	**0**
Recommendation 1.2.60 & 1.2.61 (NG18)															
Intermittently scanned continuous glucose monitoring	0	0	0	0	0	0	1	1	2	2	0	1	1	2	2
Real time continuous glucose monitoring	14	14	14	14	13	13	16	20	23	27	-1	2	6	9	14
Self-monitoring blood glucose	35	35	35	35	35	36	32	28	24	19	1	-3	-7	-11	-16
Total recommendation 1.2.60 & 1.2.61	**49**	**49**	**49**	**49**	**48**	**49**	**49**	**49**	**49**	**48**	**0**	**0**	**0**	**0**	**0**
Total all											**0**	**0**	**0**	**0**	**0**

2.1.17 Real-time and intermittently scanned CGM can reduce hypoglycaemia events which can results in significant improvements to quality of life. CGM technologies can help prevent long term complications that may arise from poor control of blood glucose levels.

3 Implications for commissioners and providers

3.1 Diabetes falls under programme budgeting category 04A ‘diabetes’.

3.2 The recommendations are likely to result in broader access to intermittently scanned and real-time CGM devices. There will be an increase in the cost for primary care commissioners’ budgets. However, there may be a progressive increase in cost savings associated with reduced hypoglycaemia events in secondary care.

4 Other considerations

4.1 For type 1 diabetes the committee acknowledged that CGM technologies are advancing rapidly, with increasing overlap between real-time CGM and intermittently scanned CGM as features such as predictive alerts are being added to newer intermittently scanned devices. Therefore, there is no advantage to recommending a specific device over another, and that the specific choice of intermittently scanned CGM vs real-time CGM devices should be decided by the healthcare professional and healthcare service user based on user preferences and needs.

5 Sensitivity analysis

5.1 The resource impact is sensitive to a change in the future proportion of people receiving real time continuous glucose monitoring or intermittently scanned continuous glucose monitoring. The resource impact template includes a tab with a sensitivity analysis for the total resource impact when implementing a 5% increase in intermittently scanned and real time continious glucose monitoring across the eligible population for each guideline.

About this resource impact report

This resource impact report accompanies the NICE guidelines on type 1 diabetes in adults: diagnosis and management, type 2 diabetes in adults: management and diabetes (type 1 and type 2) in children and young people: diagnosis and management and should be read in conjunction with them. Please visit the NICE website to view the terms and conditions.