

## Putting NICE guidance into practice

### **Resource impact report: Cochlear implants for children and adults with severe to profound deafness (part review of TA166) (TA566)**

Published: March 2019

## Summary

NICE has reviewed its guidance on cochlear implants for children and adults with severe to profound deafness. This guidance has been updated after a review of the criteria for defining severe to profound deafness and for assessing adequate benefit from acoustic hearing aids set out in [recommendation 1.5](#). As a result, more people will be eligible for cochlear implants. We estimate:

- Currently around 1,260 people per annum in England have cochlear implants.
- The total number of people treated is estimated to increase to 2,790 by 2023/24. This includes people who are eligible under the current recommendations (1,260 people per year) plus people who are eligible under the updated recommendations (890 people per year, not all of these people are treated in year before 2024/25).
- Thereafter, all the newly eligible 890 people per year are expected to be treated in year. This gives a total of 2,150 people treated per year from 2024/25.

The estimated annual cost of implementing this guidance for the population of England is shown in table 1.

**Table 1 Estimated annual cost of implementing the guidance**

	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25
<b>People</b>							
People receiving cochlear implants under new recommendation		1,440	1,780	2,120	2,450	2,790	2,150
People receiving cochlear implants under current recommendation	1,260	1,260	1,260	1,260	1,260	1,260	1,260
<b>Additional people having cochlear implants each year</b>		<b>180</b>	<b>520</b>	<b>860</b>	<b>1,190</b>	<b>1,530</b>	<b>890</b>
<b>Costs of additional cochlear implants £000s</b>							
Cochlear implants (unit cost including device costs & surgery £22,919 - £37,904)		4,624	13,402	22,188	30,943	39,647	22,795
Assessment		211	612	1,012	1,412	1,809	1,047
Maintenance and programming		492	2,725	4,512	6,293	8,063	5,819
Rehabilitation		192	753	1,247	1,739	2,228	1,619
<b>Total resource impact</b>		<b>5,519</b>	<b>17,492</b>	<b>28,959</b>	<b>40,387</b>	<b>51,746</b>	<b>31,280</b>
Savings from reduced use of hearing aids		(62)	(185)	(369)	(616)	(923)	(1,231)
<b>Net resource impact</b>		<b>5,457</b>	<b>17,307</b>	<b>28,590</b>	<b>39,771</b>	<b>50,823</b>	<b>30,049</b>

This technology is commissioned by NHS England. Providers are NHS hospital trusts.

# 1 Cochlear implants

1.1 NICE has reviewed its [guidance on cochlear implants](#) for children and adults with severe to profound deafness (part review of TA166). This guidance has been updated after a review of the criteria for defining severe to profound deafness and for assessing adequate benefit from acoustic hearing aids set out in recommendation 1.5.

1.2 Recommendation 1.5 states

For the purposes of this guidance, severe to profound deafness is defined as hearing only sounds that are louder than 80 dB HL (pure-tone audiometric threshold equal to or greater than 80 dB HL) at 2 or more frequencies (500 Hz, 1,000 Hz, 2,000 Hz, 3000 Hz and 4,000 Hz) bilaterally without acoustic hearing aids. Adequate benefit from acoustic hearing aids is defined for this guidance as:

- for adults, a phoneme score of 50% or greater on the Arthur Boothroyd word test presented at 70 dBA.
- for children, speech, language and listening skills appropriate to age, developmental stage and cognitive ability [amended 2018].

1.3 This technology is commissioned by NHS England. Providers are NHS hospital trusts.

## 2 Resource impact of the guidance

2.1 We estimate:

- Currently around 1,260 people per annum in England have cochlear implants.

- The total number of people treated is estimated to increase to 2,790 by 2023/24. This includes people who are eligible under the current recommendations (1,260 people per year) plus people who are eligible under the updated recommendations (890 people per year, not all of these people are treated in year before 2024/25).
- Thereafter, all the newly eligible 890 people are expected to be treated in year. This gives a total of 2,150 people treated per year from 2024/25.

2.2 The current treatment uptake figures are based on [British Cochlear implant Group \(BCIG\) UK data](#) (the BCIG is a group of healthcare professionals with a clinical role in the field of cochlear implants). This has been adjusted to include the England only population.

2.3 The estimated number of people who may receive cochlear implants over the next 5 years is challenging to predict because there are many variables which could affect the estimates. These include service capacity, embedding new referral procedures into practice and when people take up treatment.

2.4 Future uptake estimates are from a manufacturer of cochlear implants - Cochlear UK (based on published UK data including Hospital Episode Statistics). These are shown in the resource impact template.

2.5 The estimated annual cost of implementing this guidance for the population of England based on the uptake in the resource impact assumptions is shown in table 2.

**Table 2 Resource impact of implementing the guidance using NICE assumptions**

<b>People</b>	<b>2018/19</b>	<b>2019/20</b>	<b>2020/21</b>	<b>2021/22</b>	<b>2022/23</b>	<b>2023/24</b>	<b>2024/25</b>
People receiving cochlear implants under new recommendation		1,440	1,780	2,120	2,450	2,790	2,150
People receiving cochlear implants under current recommendation	1,260	1,260	1,260	1,260	1,260	1,260	1,260
<b>Additional people having cochlear implants each year (See table 3 row h)</b>		<b>180</b>	<b>520</b>	<b>860</b>	<b>1,190</b>	<b>1,530</b>	<b>890</b>
<b>Costs of additional cochlear implants £000s</b>							
Cochlear implants (unit cost including device costs & surgery £22,919 - £37,904)		4,624	13,402	22,188	30,943	39,647	22,795
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### **3 Activity over time**

3.1 Some people that become eligible in a given year may be treated in the following years. This has been reflected in the resource impact estimates above. The table below shows how the population who meet the new criteria could be treated over 5 years.

**Table 3 Number of people treated over time**

		Current year	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25
<b>People treated with cochlear implants under current recommendations</b>	a	<b>1,260</b>	<b>1,260</b>	<b>1,260</b>	<b>1,260</b>	<b>1,260</b>	<b>1,260</b>	<b>1,260</b>
People treated with cochlear implants under updated recommendations	b		180	360	540	710	890	890
People treated that were diagnosed in 2019/20	c			180	180	180	180	
People treated that were diagnosed in 2020/21	d				180	180	180	
People treated that were diagnosed in 2021/22	e					180	180	
People treated that were diagnosed in 2022/23	f						180	
People choosing not to have treatment	g			(20)	(40)	(60)	(80)	
Additional people treated	h = (b+c+d+e+f-g)		180	520	860	1,190	1,530	
<b>Total</b>	<b>(a+h)</b>	<b>1,260</b>	<b>1,440</b>	<b>1,780</b>	<b>2,120</b>	<b>2,450</b>	<b>2,790</b>	<b>2,150</b>

3.2 Table 3 shows how the population treated in each year has been calculated.

3.3 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.

## **4 Savings and benefits**

- 4.1 There are some savings anticipated from reduced use of hearing aids. These are ongoing savings and are estimated to be around £1.2 million each year by year 2024/25 (see table 1 and table 2).
- 4.2 The annual cost of fitting one hearing aid device including assessment and one follow up is £321, the cost of fitting 2 hearing aid devices including assessment and first follow up is £421 (National Tariff 2018/19 – non mandatory prices). The resource impact over time sheet in the resource impact template shows how these ongoing (cumulative) savings are calculated.

## **5 Implications for commissioners**

- 5.1 This technology is commissioned by NHS England. Providers are NHS hospital trusts.

## **6 How we estimated the resource impact**

### ***The population***

- 6.1 The BCIG provides data on the annual number of people receiving cochlear implants. The most recent annual [UK data collection](#) for 2017-18 shows 964 unilateral cochlear implants and 13 bilateral simultaneous cochlear implants were received by adults. The data for children shows 84 unilateral cochlear implants and 382 bilateral simultaneous cochlear implants were received. This is equivalent to around 1,200 recipients in England.
- 6.2 There is no data available on the number of people who would become eligible for cochlear implants within the revised criteria in the guidance. Therefore estimates have been made based on information from Cochlear UK.

**Table 4 Number of people eligible for treatment in England**

Population	Proportion of previous row (%)	Number of people
Total population		55,268,067
People aged 0 to 17		11,785,277
People aged 18 years and over <sup>1</sup>		43,482,790
<b>Current number of people receiving cochlear implants (hearing only sounds louder than 90 dB HL<sup>2</sup>):</b>		
People aged 0 to 17	0.003	410
People aged 18 and over	0.002	850
Current number of people receiving cochlear implants		<b>1,260</b>
<b>Estimated number of people eligible under new recommendation (people hearing only sounds louder than 80 dB HL)<sup>3</sup>:</b>		
People aged 0 to 17	0.005	580
People aged 18 and over	0.004	1,570
Total number of people estimated to have cochlear implants each year from 2023/24 (eligible population)		<b>2,150</b>
Increase in people having cochlear implants from 2023/24		<b>890</b>
<sup>1</sup> Source: <a href="#">Clinical Commissioning Group Mid-Year Population Estimates - Office for National Statistics</a> <sup>2</sup> BCIG Annual Data Collection 2017-18 – Adjusted for England only population <sup>3</sup> Estimate based on modelling undertaken by Cochlear UK. The model assumptions are based on data from Turton L, Smith P: Prevalence and characteristics of severe and profound hearing loss in adults in a UK National Health Service clinic, <i>Audiology</i> 52:2, 92-97; Joseph J, Pockett R, Meredith R ' Estimating the prevalence of cochlear implantation and the unmet need (South Wales); HES data 2014-15		

## **Assumptions**

6.3 The resource impact template assumes that:

- The number of people treated each year is based on modelling undertaken by Cochlear UK which is consistent with estimates from the BCIG. The estimates assume patient numbers will increase by around 890 people (70%) per annum.
- The national tariff (2018/19) includes device costs and surgery for cochlear implants. This is £37,904 for bilateral cochlear



implants (HRG code CA41Z) and £22,919 for unilateral cochlear implants (HRG code CA42Z).

- The national tariff (2018/19) for audiometry or hearing assessment has been applied for pre-surgery assessment. Costs are between £61 and £62 per visit depending on age group (codes CA37A, CA37B and CA37C).
- Reference costs (2017/18) are used for maintenance and programming of cochlear implants. This is £351 (including inflation uplift of 3.5%) per visit (code AS13).
- Reference costs (2017/18) are used for rehabilitative audiology. This is £106 (including inflation uplift of 3.5%) per visit (code AS14).
- The number of visits per year for assessment, maintenance and programming and rehabilitative audiology are based on service reviews from providers of cochlear implants. These are shown in the 'unit costs' page of the resource impact template.

### ***Other factors***

- 6.4 Estimates provided by NHS provider services are more conservative than estimates from Cochlear UK and the BCIG. Providers suggest that the number of people receiving cochlear implants may increase by 30% by 2023/24. This is explored in the sensitivity analysis below.
- 6.5 Consultation feedback from NHS England suggests a 70% increase is a maximum likely cost. Comments received from clinical experts indicate that predicting how many people take up cochlear implants as a result of the new criteria is very challenging to predict. The change in cost in table 5 demonstrates the sensitivity of different assumptions for people receiving cochlear implants.

## **Sensitivity analysis**

6.6 The table below shows the estimated resource impact for 2024/25 starting with the increase in cochlear implantations estimated by providers of 30%, and the resource impact of increases of 40%, 50% and 60% and 70%.

**Table 5 Resource impact of change in number of people receiving cochlear implants**

Percentage increase in cochlear implantations					
	30%	40%	50%	60%	70%
Resource impact £000	13,541	17,577	21,612	25,659	30,049

6.7 The resource impact in table 5 shows that additional costs could be between £13.5m and £30m for 2024/25.

## ***About this resource impact report***

This resource impact report accompanies the NICE guidance on [Cochlear implants for children and adults with severe to profound deafness \(part review of TA166\) TA566](#) and should be read with it.

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