

## Putting NICE guidance into practice

### **Resource impact report: Autologous chondrocyte implantation for treating symptomatic articular cartilage defects of the knee (TA477)**

Published: October 2017

## Summary

NICE has recommended [autologous chondrocyte implantation](#) (ACI) as an option for treating symptomatic articular cartilage defects of the knee. (See section 1.1).

We estimate that:

- 500 people with symptomatic articular cartilage defects of the knee are eligible for ACI each year.
- 425 people will have ACI from year 2021/22 onwards once uptake has reached 85%.

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 1.

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

	2017/18	2018/19	2019/20	2020/21	2021/22
<b>Current practice</b>					
<b>Cost of Microfracture £000s</b>	<b>701</b>	<b>701</b>	<b>701</b>	<b>701</b>	<b>701</b>
<b>Future practice</b>					
Cost of Microfracture £000s	582	463	343	224	105
Cost of ACI £000s	1,761	3,522	5,283	7,044	8,805
<b>Total cost £000s</b>	<b>2,343</b>	<b>3,985</b>	<b>5,626</b>	<b>7,268</b>	<b>8,910</b>
<b>Net resource impact £000s</b>	<b>1,642</b>	<b>3,284</b>	<b>4,925</b>	<b>6,567</b>	<b>8,209</b>

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.

This technology is commissioned by NHS England. Providers are NHS tertiary centres.

# 1 Autologous chondrocyte implantation

1.1 NICE has recommended [autologous chondrocyte implantation](#) (ACI) as an option for treating symptomatic articular cartilage defects of the knee, only if:

- the person has not had previous surgery to repair articular cartilage defects
- there is minimal osteoarthritic damage to the knee (as assessed by clinicians experienced in investigating knee cartilage damage using a validated measure for knee osteoarthritis)
- the defect is over 2 cm<sup>2</sup> and
- the procedure is done at a tertiary referral centre.

1.2 Articular cartilage refers to hyaline cartilage on the articular surfaces of the bone. Articular cartilage damage in the knee can be caused directly by acute injury, often as a result of sporting activity, for example repetitive trauma such as high-impact sports.

1.3 Damage of the articular cartilage does not heal on its own and can be associated with symptoms such as knee pain, knee swelling, knee locking and giving way of the knee joint.

## 2 Resource impact of the guidance

2.1 We estimate that:

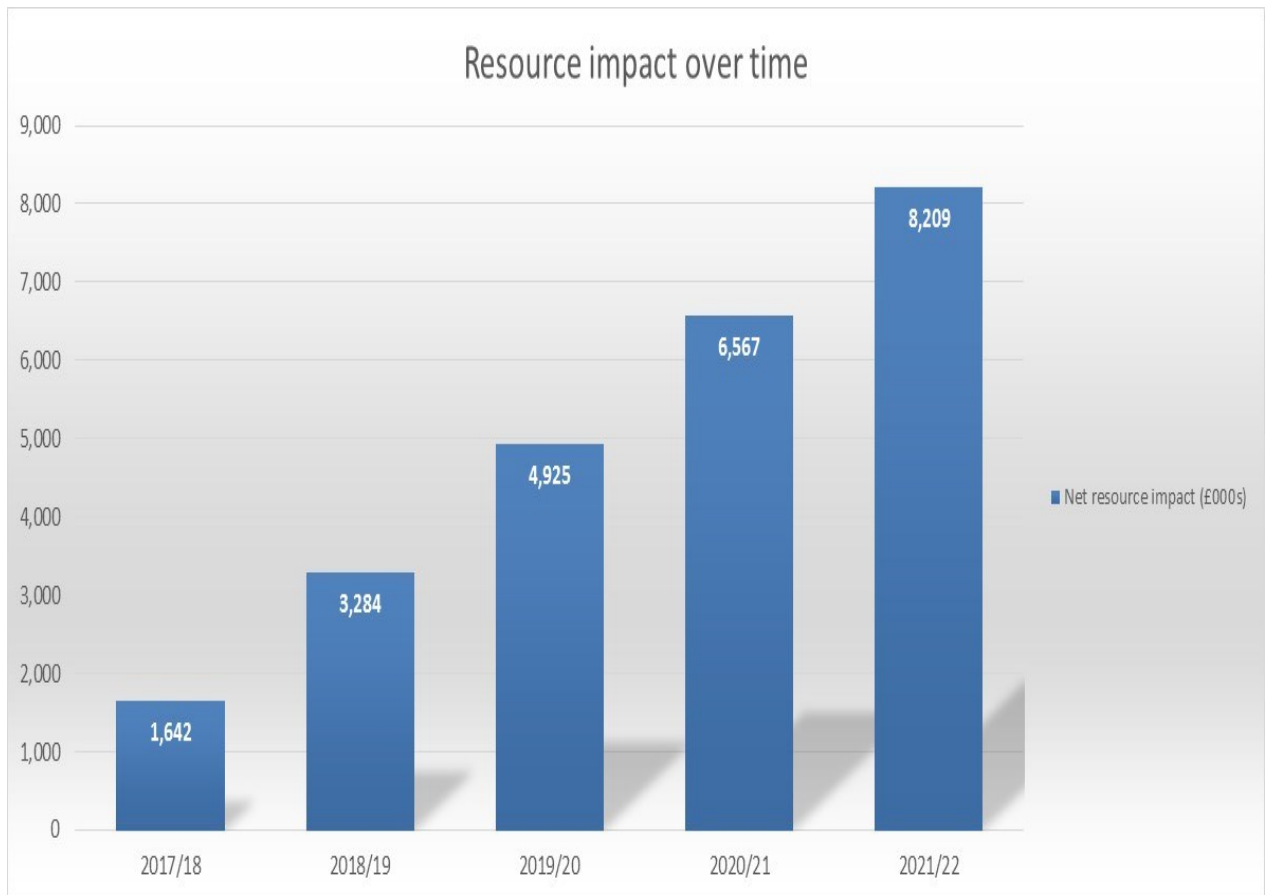
- 500 people with symptomatic articular cartilage defects of the knee are eligible for ACI each year.
- 425 people will have ACI from year 2021/22 onwards once uptake has reached 85%.

2.2 The current treatment and future uptake figure assumptions are based on clinical expert opinion and are shown in the resource impact template.

2.3 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**

	2017/18	2018/19	2019/20	2020/21	2021/22
<b>Current practice</b>					
People eligible for ACI receiving Microfracture	500	500	500	500	500
Unit cost £	1,402	1,402	1,402	1,402	1,402
<b>Total cost of current practice £000s</b>	<b>701</b>	<b>701</b>	<b>701</b>	<b>701</b>	<b>701</b>
<b>Future practice</b>					
People eligible for ACI receiving Microfracture	415	330	245	160	75
Unit cost £	1,402	1,402	1,402	1,402	1,402
Cost: Microfracture £000s	582	463	343	224	105
People receiving ACI	85	170	255	340	425
Unit cost £	20,717	20,717	20,717	20,717	20,717
Cost: ACI £000s	1,761	3,522	5,283	7,044	8,805
<b>Total cost of future practice £000s</b>	<b>2,343</b>	<b>3,985</b>	<b>5,626</b>	<b>7,268</b>	<b>8,910</b>
<b>Net resource impact £000s</b>	<b>1,642</b>	<b>3,284</b>	<b>4,925</b>	<b>6,567</b>	<b>8,209</b>



2.4 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.

### ***Savings and benefits***

2.5 Clinical trial evidence shows that ACI may improve the symptoms of articular cartilage defects of the knee. There is evidence that it is likely to be more successful in people who have not had any previous knee repair surgery, and in people who have very little osteoarthritic damage in the knee. But it is unclear how well ACI works compared with microfracture, the most commonly used alternative treatment.

## **3 Implications for commissioners**

3.1 This technology is commissioned by NHS England. Providers are NHS tertiary referral centres.

Resource impact report: Autologous chondrocyte implantation for treating symptomatic articular cartilage defects of the knee, October 2017.

3.2 ACI falls within the programme budgeting category PBC 15X: Problems of the musculo skeletal system.

## 4 How we estimated the resource impact

### *The population*

4.1 There are no reliable estimates of the prevalence of symptomatic articular cartilage defects of the knee. See Table 3 uses the best available data.

**Table 3 Number of people eligible for ACI in England**

Population	Proportion of previous row (%)	Number of people
Total adult population		43,108,471
People with cartilage damage serious enough to need treatment each year <sup>1</sup>	0.02	10,000
People with symptomatic cartilage defects suitable for ACI <sup>1</sup>	5	500
People eligible for ACI <sup>1</sup>	100	500
Total number of people estimated to have ACI each year from year 2021/22 <sup>2</sup>	85	425
<sup>1</sup> ACI for repairing symptomatic articular cartilage defects of the knee (including a review of TA89): <a href="#">Final scope</a> <sup>2</sup> Clinical experts opinion. ACI: autologous chondrocyte implantation		

### *Assumptions*

4.2 The resource impact template assumes that:

- Microfracture procedure is the comparator used for resource impact estimates. This is because the committee concluded that microfracture is the most frequently used alternative to ACI in the NHS, and was the most relevant comparator for ACI in the appraisal.

- Mosaicplasty, osteotomy and best supportive care (non-surgical management) were not considered comparators. See more details in the [committee discussion](#).
- The cost of microfracture is estimated at £1,402. (See [resource impact template](#) and table 4 for procedure (OPCS4) and health resource group codes (HRG)).
- The cost of ACI is estimated at £20,717. It includes the cost of autologous chondrocytes cell harvesting, implantation of cells and the chondrocytes (See [resource impact template](#) and table 4 for OPCS4 and HRG codes).

**Table 4: Procedure and HRG codes for ACI**

OPCS4 code	Description	HRG code <sup>1</sup>
<b>Microfracture</b>		
W845	Endoscopic drilling of epiphysis for repair of articular cartilage + knee:	HN24A—F
W354	Therapeutic drilling of bone NEC of knee	HN25A—B
<b>ACI harvesting</b>		
W892	Endoscopic harvest of autologous chondrocytes of knee	HN24A—F
<b>ACI implantation</b>		
W714	Open autologous chondrocyte implantation into articular structure	HN23A—E
W853	Arthroscopic autologous implantation of knee joint	HN24A—F
<sup>1</sup> The HRG codes are for adults and children and young people 18 years and younger. The indication for use of traditional ACI in the knee is for the repair of single or multiple symptomatic, full-thickness cartilage defects of the joint with or without bone involvement in adults. The HRG currency codes used to determine unit costs relate to adults only in line with the licensed indication.		

- There are no additional tests or investigations needed for selection of people, or monitoring requirements for ACI.
- There are no other therapies that are likely to be administered as part of the course of treatment with the exception of regular analgesics and appropriate surgical antibiotic prophylaxis as per local hospital policy.

- No additional infrastructure is needed as treatment can be managed within the current NHS framework.

### ***Other factors***

- 4.3 There is currently one supplier of the cell services necessary for ACI. If demand increases additional laboratory capacity specialising in harvesting and culturing chondrocytes for ACI may be needed.

### ***Sensitivity analysis***

- 4.4 The proportion of people with symptomatic cartilage defects eligible for ACI is the most sensitive variable. Varying the proportion from a minimum of 2% to a maximum of 5% increases the resource impact by £4.9 million from a minimum of £3.3 million to maximum of £8.2 million.
- 4.5 Varying the number of people with cartilage damage serious enough having autologous chondrocyte implantation from a minimum of 70% to a maximum of 100% increases the resource impact by £3.1 million from a minimum of £6.7 million to maximum of £9.8 million.



## About this resource impact report

This resource impact report accompanies the NICE guidance on [autologous chondrocyte implantation for treating symptomatic articular cartilage defects of the knee](#) and should be read with it. See [terms and conditions](#) on the NICE website.

© NICE 2017. All rights reserved. See [Notice of rights](#).