

## NATIONAL INSTITUTE FOR HEALTH AND CARE EXCELLENCE

### Interventional procedures consultation document

# Single-step scaffold insertion for repairing symptomatic chondral knee defects

A chondral knee defect is damage to the cartilage that protects the ends of the bones in the knee joint. It can cause symptoms such as knee pain and stiffness, and reduced mobility. In this procedure, in a single step, a scaffold is introduced into the damaged area and in some cases the person's own cells from bone marrow or other sites may be added. The scaffold encourages cells to grow into new cartilage. The aim of the procedure is to repair the damaged cartilage, reduce symptoms and keep the joint working.

This is a review of NICE's interventional procedures guidance on scaffold insertion without cultured cell implantation for repairing symptomatic chondral knee defects.

NICE's interventional procedures advisory committee met to consider the evidence and the opinions of professional experts with knowledge of the procedure.

This document contains the [draft guidance for consultation](#). Your views are welcome, particularly:

- comments on the draft recommendations
- information about factual inaccuracies
- additional relevant evidence, with references if possible.

NICE is committed to promoting equality of opportunity, eliminating unlawful discrimination and fostering good relations between people with particular protected characteristics and others.

**This is not NICE's final guidance on this procedure. The draft guidance may change after this consultation.**

After consultation ends, the committee will:

- meet again to consider the consultation comments, review the evidence and make appropriate changes to the draft guidance

- prepare a second draft, which will go through a [resolution process](#) before the final guidance is agreed.

Please note that we reserve the right to summarise and edit comments received during consultation or not to publish them at all if, in the reasonable opinion of NICE, there are a lot of comments or if publishing the comments would be unlawful or otherwise inappropriate.

Closing date for comments: 23 May 2024

Target date for publication of guidance: September 2024

## 1 Draft recommendations

- 1.1 Use single-step scaffold insertion as an option for repairing symptomatic chondral knee defects with standard arrangements in place for clinical governance, consent and audit.
- 1.2 Healthcare professionals should enter details about everyone having single-step scaffold insertion for repairing symptomatic chondral knee defects onto the [International Cartilage Repair Society Registry](#).

### Why the committee made these recommendations

There is good clinical evidence for the efficacy and safety of this procedure. The evidence shows that it reduces symptoms, stimulates cartilage regeneration, and is safe in the short and medium term. It is an established procedure and more long-term data is being collected. So, it can be used with standard arrangements.

## 2 The condition, current treatments and procedure

### The condition

- 2.1 Chondral cartilage is the material that covers the end of the bones in the knee, to protect them from friction when moving. Damage to this cartilage (chondral knee defect) can cause symptoms such as knee pain and stiffness, and reduced mobility. Untreated full-thickness cartilage lesions may be associated with significant pain and, eventually, arthritis. This is a major cause of disability.

### Current treatments

- 2.2 There are several approaches to managing chondral knee defects. Surgical options depend on the characteristics of the person and the defect. There are 2 main categories of procedure:

- Procedures that mainly aim for symptom relief include:
  - debridement
  - osteotomy
  - knee replacement.
- Procedures that aim for symptom relief and also to re-establish the cartilage surface include:
  - marrow stimulation techniques (such as Pridie drilling and microfracture)
  - mosaicplasty
  - osteochondral allograft transplantation
  - focal articular resurfacing implants
  - autologous chondrocyte implantation (in which chondrocytes harvested from the knee are cultured and implanted into the damaged cartilage).

Sometimes matrix-induced autologous chondrocyte implantation is done. This is a two--step procedure because cells have to be cultured outside the body. The cells are harvested for culturing in the first operation, then the cultured cells and scaffold are introduced in the second.

## The procedure

2.3 In this procedure, a scaffold is put into the area of damaged cartilage to encourage cells to grow into new cartilage. This is a single-step procedure because the cells are not cultured outside the body. A range of techniques can be used to introduce the cells that grow into new cartilage, supported by the scaffold. For example, tiny holes can be drilled into the bone (microfracture) to release the cells, or substances like bone marrow aspirate can be put into the area of damage. Whichever method is done, it is always done in the same operation as the scaffold insertion.

- 2.4 There are different types of scaffold and ways of doing the procedure. For example, some scaffolds are solid and some are injectable gels. Some of the solid scaffolds must be cut to size and applied over the defect. Other scaffolds are a standard size and shape, and are implanted into the subchondral bone in the damaged area.
- 2.5 The procedure aims to repair the damaged cartilage, reduce symptoms and keep the joint working.

### **3 Committee considerations**

#### **The evidence**

- 3.1 NICE did a rapid review of the published literature on the efficacy and safety of this procedure. This comprised a comprehensive literature search and detailed review of the evidence from 12 sources, which was discussed by the committee. The evidence included 5 systematic review and meta-analyses, a systematic review and network meta-analysis, 4 randomised control trials, a 5-year follow-up analysis of a randomised control trial and a registry study. It is presented in the [summary of key evidence section in the interventional procedures overview](#). Other relevant literature is in the appendix of the overview.
- 3.2 The professional experts and the committee considered the key efficacy outcomes to be: improved quality of life and mobility, and reduced pain.
- 3.3 The professional experts and the committee considered the key safety outcomes to be: pain, bleeding, infection and failure to improve symptoms.
- 3.4 Patient commentary was sought but none was received.

## Committee comments

3.5 The committee was informed that:

- This procedure can be done by a trained orthopaedic knee surgeon in a general hospital, but more complex defects may need to be referred to a regional specialist centre.
- Like other procedures for chondral knee defects, after the surgery, a rehabilitation programme needs to be followed.

3.6 The committee noted that:

- A variety of scaffolds can be used in this procedure. Some, but not all, contain animal products.
- Techniques introducing the cells that grow into new cartilage are evolving.

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Chair, interventional procedures advisory committee

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