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Information
and Quality
Authority**

An tÚdarás Um Fhaisnéis
agus Cáilíocht Sláinte

Health Technology Assessment of Scheduled Procedures

Knee Arthroscopy

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Safer Better Care

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1 Knee arthroscopy

1.1 Scope of HTA

This health technology assessment (HTA) evaluates the appropriateness and potential impact of introducing clinical referral or treatment thresholds for knee arthroscopy for adults within the publicly-funded healthcare system in Ireland. The effectiveness of this surgery may be limited unless undertaken within strict clinical criteria. This report is one of a series of HTAs of scheduled procedures. Details of the background to the request and general methodology are provided in the separate 'Background and Methods' document.⁽¹⁾

The scope of this HTA is to investigate clinical referral and treatment thresholds that can be used in the assessment, referral and surgical management of adults who are potential candidates for knee arthroscopy in Ireland. A review of the clinical and cost-effectiveness literature was performed, and inputs from an expert advisory group were used to inform the final criteria. Additionally, the budget impact and resource implications were assessed, as appropriate.

1.2 Surgical indication

Knee arthroscopy is an operative technique which facilitates visualisation of structures within the knee joint using a variety of fibre optic telescopes, with images relayed to a screen. It is generally performed in the day case setting, and may be employed for diagnostic and, or treatment purposes. It is one of the most common orthopaedic procedure performed worldwide today.

The knee joint is a hinge joint, composed of two separate areas of articulation: between the medial and lateral condyles of the femur and those of the tibia, and between the patellar surface of the femur and the posterior surface of the patella. The capsule of the joint is stabilised by the medial and lateral collateral ligaments, the ligamentum patellae anteriorly, and the medial and lateral patellar retinacula on each side of the patella. Within the joint, the anterior and posterior cruciate ligament provide strong connection between the tibia and femur, and act to prevent excessive anteroposterior movement of one bone on the other. The medial and lateral menisci are two C-shaped areas of cartilage which lie on the tibial plateau, and appear to act as shock absorbers.

It has been suggested that musculoskeletal (MSK) problems account for approximately 17.5% of the workload in Irish general practice.⁽²⁾ Separately, a study of 600 Irish farmers reported that 56% had experienced some form of MSK disorder in the previous year, with knee pain accounting for 9% of symptoms.⁽³⁾ Knee symptoms are linked to their underlying pathology. A tear of the anterior or posterior

cruciate ligament is indicated by instability secondary to excessive forward or backward mobility, respectively, of the tibia relative to the femur. Meniscal injury results in the knee 'locking' because the torn and displaced segment of cartilage lodges between the condyles and prevents full extension of the knee.⁽⁴⁾ Injury to the anterior frequently occurs in conjunction with injury to the menisci and the collateral ligaments. Osteoarthritis of the knee, meanwhile, typically presents with three symptoms: persistent knee pain, limited knee stiffness less than (<) 30 minutes, and reduced function.⁽⁵⁾ Postulated risk factors have been divided into systemic (increasing age, female gender, genetics, diet) and local (previous injury to a joint, occupation, involvement in sports, joint laxity or malalignment).⁽⁶⁾ Obesity has been strongly linked with onset and progression of knee osteoarthritis.⁽⁷⁾ Potential indications for elective knee arthroscopy include ligamentous, meniscal or articular (chondral) cartilage pathology, osteoarthritis, a loose body (a detached fragment lying within the joint), a tight lateral retinaculum and synovitis.

Utilisation of, and temporal trends for knee arthroscopy vary internationally. In the United States, 984,607 knee arthroscopies were performed in 2006; this represented an increase of 49% since 1996.⁽⁸⁾ In England meanwhile, an increase of 111% was noted between 1993 and 2004, although rates remained stable in Ontario, Canada, over the same time period.⁽⁹⁾ In the United States cohort, the knee arthroscopy rate was 404 per 100,000 population for those aged 20 and over.⁽⁸⁾ The five most frequent diagnoses for patients, who underwent knee arthroscopy, were a tear of the medial cartilage or meniscus (37%), chondromalacia of the patella (13%), a tear of the lateral cartilage or meniscus (11%), a sprain or strain of a cruciate ligament (8%), and osteoarthritis of the knee (6%).⁽⁸⁾ There were 301,701 planned therapeutic knee arthroscopies performed between 2005 and 2010 across the English National Health Service (NHS) – an annual incidence of 99 per 100,000 population.⁽¹⁰⁾ The most common interventions were meniscal surgery (repair or meniscectomy) (35.4%), ligament reconstruction (5.5%), and removal of loose body (4.5%); 53% of procedures were classified as 'other therapeutic procedure including shaving cartilage'. Finally, data from the Scottish NHS in 2011 suggested an annual incidence of 128 arthroscopic knee procedures per 100,000 population.⁽¹¹⁾ An audit of Scottish units in 2012 suggested that diagnostic arthroscopy accounts for approximately 10% of all procedures undertaken.

1.3 Surgical procedure, potential complications and alternative treatments

Knee arthroscopy may be undertaken for either diagnostic or treatment purposes. In the case of the latter, the arthroscopy will often function as the first stage in a more extensive procedure. These procedures can include anterior or posterior cruciate ligament reconstruction using either an autograft (using tissue from the patient, that

is, patellar tendon or hamstring) or an allograft (using donated tissue). A torn meniscus may be repaired, partially or entirely removed (meniscectomy), and a torn medial collateral ligament can be repaired (surgical repair of the lateral collateral is an open procedure). Synovectomy may be performed to remove part or all of an inflamed synovial membrane. Articular cartilage defects may be repaired or removed, as may other loose bodies lying within the joint. In the case of osteoarthritis, the joint may be washed out with saline and any loose tissue removed ('lavage and debridement'); this indication is controversial and will be discussed in more detail in Section 2.

Data from the National Surgical Quality Improvement Programme (NSQIP) programme in the United States suggests a complication rate following knee arthroscopy of 1.6%. Of 12,271 procedures analysed, there was one death, with major and minor complication rates of 0.8% and 0.9%, respectively. The most frequent major complication was the need to return to the operating room (0.6%), whilst the most frequent minor complication was a diagnosis of deep venous thrombosis (DVT) or thrombophlebitis (0.5%).⁽¹²⁾ In a separate cohort of 20,770 patients who underwent knee arthroscopy in California, rates of DVT and pulmonary embolism were 0.3% and 0.2%, respectively.⁽¹³⁾ A study of 180,717 elective knee arthroscopies performed between 2000 and 2009 in Victoria, Australia, reported 30-day incidences of DVT (0.3%), effusion and synovitis (0.1%), pulmonary embolism (0.1%), and hemarthrosis (0.1%); there were 55 deaths (0.03%).⁽¹⁴⁾ Analysis of data from the aforementioned study of 301,701 arthroscopies performed in the NHS, UK, meanwhile, revealed a 90-day incidence of pulmonary embolism of 0.08%.⁽¹⁰⁾ Differences in complication rate between diagnostic and therapeutic arthroscopies remain unclear.

Management options beyond that of arthroscopy are dependent on the presumptive clinical diagnosis as indicated from the patient's symptoms and clinical signs. From a diagnostic standpoint only, there has been debate in relation to the relative merits of magnetic resonance imaging (MRI) versus arthroscopy.⁽¹⁵⁾ In relation to therapeutic arthroscopy, meanwhile, the option of conservative management will again depend on the presumptive diagnosis, although in general terms this will consist of physiotherapy, occupational therapy, and analgesia (painkillers), with prophylactic measures emphasised in an effort to prevent recurrence. In-depth analysis of what constitutes conservative management for individual pathologies is outside the scope of this HTA.

1.4 Current practice in Ireland

Potential candidates for knee arthroscopy are generally referred by their general practitioner (GP) or by another hospital specialist to an orthopaedic surgeon. Referral

or treatment thresholds (similar to those discussed in Section 2 below) may be used by GPs and surgeons in Ireland to identify eligible candidates for referral or treatment. However, it is unclear if such thresholds are being used, or how consistently they are being applied.

Knee arthroscopy is a routine, scheduled surgical procedure within the publicly-funded healthcare system in Ireland. The Hospital In-Patient Enquiry (HIPE) system was employed to assess activity levels in relation to knee arthroscopy. Knee arthroscopy may be coded as the principal procedure or as a secondary procedure. For consistency and completeness, data is reported to include the principal and secondary procedures (that is 'all procedures') with all data presented on this basis. The International Classification of Diseases (ICD) intervention codes used to retrieve this data are listed in Appendix 1.1.

The Hospital In-Patient Enquiry (HIPE) system reports that there were approximately 4,498 patients who underwent arthroscopic examination of their knee in 2012. Of these, 4,229 (94.0%) patients were admitted for their procedure on an elective basis; 235 (5.2%) were admitted on an emergency basis, with the remaining 34 patients admitted as either elective or emergency readmissions.

This data captures procedures provided as hospital day case and inpatient procedures, as in the other HTA reports in this series. Of the 4,229 procedures carried out in the pure elective (planned surgery) setting, 3,439 (81.3%) were performed on a day case basis (Table 1). The National Clinical Programme in Surgery has identified a day case target of 95% for knee arthroscopy and arthroscopic meniscectomy, and 85% for arthroscopic debridement.⁽¹⁶⁾ Day case rates in 2012 for these procedures, where they were performed as the principal procedure, were 87.7% (knee arthroscopy; hospital range: 41.7%-100%), 90% (arthroscopic meniscectomy; hospital range: 66.7%-100%) and 86.2% (arthroscopic debridement; hospital range: 39.1%-100%).

A total of 1,134 procedures necessitated an inpatient admission; the average length of stay of 1.4 days. It is noted that the average length of stay for patients undergoing knee arthroscopy in public hospitals has decreased from 2.0 days in 2005 to 1.4 days in 2012 (Figure 1.1). The average age of patients undergoing elective knee arthroscopy in 2012 was 43.8 years.

In 2012, the most common procedures were 'arthroscopic debridement of the knee' (31.0%), 'arthroscopy of the knee' (21.8%), and 'arthroscopic meniscectomy of the knee joint' (16.8%). According to the data, a small number of patients were coded as having undergone more than one arthroscopic knee procedure during their admission. All patients who undergo a surgical procedure in Irish public hospitals

have an operative diagnosis coded as part of the HIPE coding process. This is recorded as the principal diagnosis at the time of operation, and may not be synonymous with the preoperative diagnosis. In 2012, the principal diagnosis – at the time of the knee arthroscopy - was coded as 'internal derangement of knee' (52.4%); the next most frequently coded diagnoses were 'gonarthrosis (arthrosis of the knee)' (20.3%), and 'other joint disorders, not elsewhere specified' (15.5%) (see Appendix 1.2).

The 4,229 elective knee arthroscopies recorded within the HIPE system were performed across 24 different hospital sites in 2012. The number of procedures per hospital ranged from 1 to 398; three hospitals performed fewer than 10 procedures each over the year. The institutions performing knee arthroscopy are categorised according to their hospital groups in Table 1.1. Any variation in activity rates or practice may be explained by differing catchment sizes or the availability of an orthopaedic surgery service, hospital size or specialisation. It should also be noted that patient comorbidity may occasionally mandate that knee arthroscopy is performed in a tertiary-level institution in which this procedure is not normally undertaken.

Table 1.1 HIPE data per proposed HSE hospital group* (2012)⁽¹⁷⁾

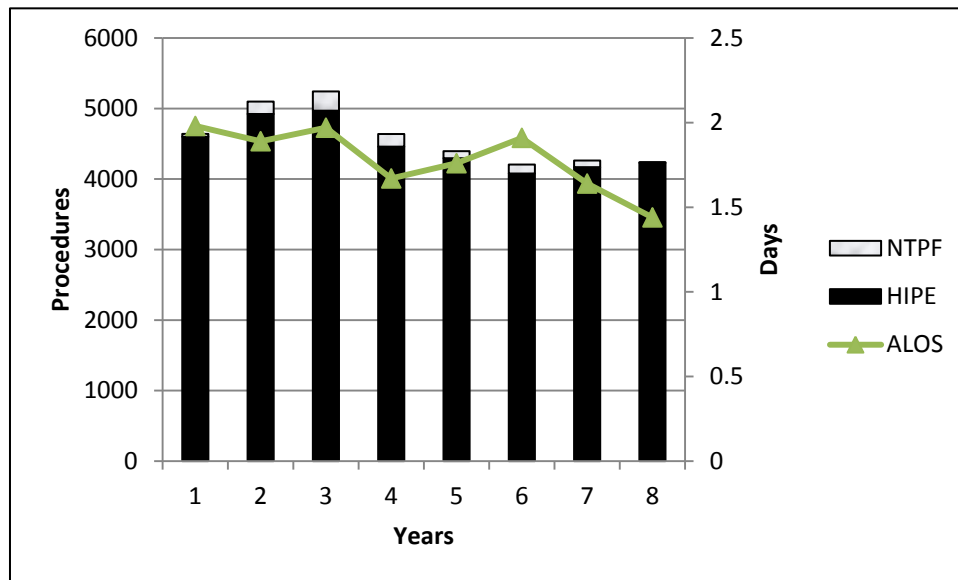
Hospital Group	Number (% Total) (Range)	ALOS (days)	% day cases	Inpatient bed days	Average age
					(years)
Dublin North East	281 (6.6%) (3-150)	2.1	92.9	41	43.7
Dublin Midlands	778 (18.4%) (89-382)	1.6	86.9	161	42.3
Dublin East	943 (22.3%) (5-398)	1.3	81.7	217	42.9
South/South West	1,089 (25.8%) (17-375)	1.2	83.8	206	44.7
West/North West	611 (14.5%) (74-217)	1.6	68.6	301	46.1
Midwest	489 (11.6%) (1-372)	1.6	76.1	184	45.8
Paediatric	NR	-	-	-	-
Total	4,229	1.4	81.3	1,134	43.8

*Key Range – the range in terms of number of procedures performed in individual institutions within the hospital group. ALOS – average length of stay for inpatients. NR – not relevant. *See Appendix 1 for HIPE codes. HIPE data includes all activity in publicly-funded hospitals, including procedures in patients that used private health insurance.*

In addition to the activity levels in public hospitals, additional procedures have been funded by the public healthcare system via the National Treatment Purchase Fund (NTPF). The majority of these were procured from the private hospitals between 2005 and 2011, with just nine procedures funded in 2012. Data on the total number of procedures undertaken in the publicly funded system, including the additional

procedures funded by the NTPF are shown in Figure 1.1. The number of elective knee arthroscopies undertaken in the publicly-funded healthcare system decreased 8.7% from 4,640 in 2005 to 4,238 in 2012, having peaked at 5,242 in 2009.

Figure 1.1 Number of procedures and average length of stay (days) for knee arthroscopies provided through the publicly-funded healthcare system in Ireland, 2005-2012⁽¹⁷⁾



Key: HIPE (Hospital In-Patient Enquiry Scheme) data; NTPF (National Treatment Purchase Fund) funded procedures. HIPE data includes all activity in publicly funded hospitals, including procedures in patients that used private health insurance. ALOS – average length of stay for inpatients.

The length of time a patient must wait to be reviewed varies according to the referral pathway and the individual hospital and consultant to which a patient is referred. At the end of April 2014, it was reported that there were 338,943 patients on the outpatient waiting list database collated by the NTPF, 34.2% of whom were waiting longer than six months, with 6.7% on the list for longer than 12 months. Orthopaedic referrals constituted 12.4% (n=41,975) of the total waiting list; 42.0% of these patients had been waiting greater than six months for an outpatient appointment in secondary care.⁽¹⁸⁾

Initiatives are underway by the Health Service Executive (HSE) to standardise the management of outpatient services and to ensure that there are consistent management processes across all publicly-funded healthcare facilities that provide outpatient services. This includes the publication of a protocol for the management of these services by the NTPF in January 2013 which provides the core guidance of the Outpatient Services Performance Improvement Programme.⁽¹⁹⁾ The protocol specifies that patients should be treated based on clinical urgency, with urgent referrals seen

and treated first. It is intended by the HSE that the definition of clinical urgency and associated maximum wait times is to be developed at speciality or condition level and agreed by the clinical programmes.

In January 2013, the NTPF published a national waiting list management policy that outlines the standardised approach to managing scheduled care treatment for inpatient, day case and planned procedures in all publicly-funded hospitals.⁽²⁰⁾ It outlines a consistent structured approach that must be adopted to the management of the waiting list. Monitoring of the implementation of the policy will be routinely undertaken by the NTPF in the form of annual quality assurance reviews.

In relation to orthopaedic procedures specifically, it should be noted that a joint initiative, aimed at reducing waiting lists for outpatient appointments, was launched by the National Orthopaedic and Rheumatology Clinical Programmes in 2010. Under this initiative, 24 clinical specialist musculoskeletal physiotherapists were employed across Ireland (six per region) to work alongside orthopaedic and rheumatology consultants, with these consultants performing the initial triage based on the referral letter. The process aimed to identify patients for whom conservative management may be a more appropriate treatment.

An audit of practice, between January and July 2012, at St Vincent's University Hospital (SVUH) in Dublin has reported that of 763 patients allocated an appointment under this system, 49 (6%) did not attend or cancelled their appointment. At the time of the audit, 140 (20%) patients were awaiting review with the MSK team as return patients (for example, for follow-up after medical investigations). Of the remaining 574 patients, whose outcome was known, 76% were independently managed by the MSK physiotherapists without need for orthopaedic consultation; 39% of whom were discharged to physiotherapy (63% within SVUH and 37% to a primary care service) and 37% back to their general practitioner. Twenty four percent of patients (n=137) were referred on to a surgical or medical specialty, 92% (n=126) of those for an orthopaedic surgical opinion, 4% to the department of pain medicine, 1% to rheumatology and 2% to another specialty (for example, neurology, vascular surgery).⁽²¹⁾

In primary care, meanwhile, there were 175,926 referrals to physiotherapy services in 2013; this was 2.1% above expected activity for the year.⁽²²⁾ Overall activity levels were also 1.9% higher than expected, with 733,613 physiotherapy treatment episodes provided in 2013. This included 145,213 patients who were referred for first-time assessments (an increase of 4.4% above expected activity).⁽²²⁾ Despite increased activity levels, demand continues to exceed available capacity. At the end of April 2014 there were 6,377 patients waiting over 12 weeks for a physiotherapy assessment in primary care.⁽²³⁾

2 Clinical referral/treatment threshold

2.1 Review of the literature

A comprehensive review of the literature was conducted during March 2014 to identify international clinical guidelines and health policy documents describing treatment thresholds that are in place in other healthcare systems. In addition, it considered systematic reviews and economic evaluations examining the effect of the introduction of those thresholds. The approach and general search terms are described in Appendix 1 in the 'Background and Methods' document; a summary of the results is included in Table 2.1. A summary of the clinical guidelines identified from the search and thresholds in use elsewhere are provided in Appendix 1.3 and 1.4.

Table 2.1. Summary of literature search results

Publication Type	Number	References
Clinical guideline	10	(11;24-33)
Systematic review	9	(34-42)
Randomised controlled trials	2	(43;44)
Cost-effectiveness studies	3	(45-47)

2.2 Clinical guidelines

As noted in Section 1.2, arthroscopy may be used for diagnostic or treatment purposes. In the case of the latter, there are a number of common indications for which arthroscopy may be undertaken. To facilitate review of this section, the evidence has been presented according to the procedure indication.

Arthroscopy for osteoarthritis

Two key randomised controlled trials (RCT) have influenced the current guidelines regarding the use of arthroscopy in the management of knee osteoarthritis. The first of these was published by Moseley et al. in 2002.⁽⁴⁴⁾ This RCT of 180 patients concluded that arthroscopic lavage, with or without debridement is no better than placebo in improving knee pain and self-reported function. This was followed in 2008 by an RCT by Kirkley et al. of 188 patients with moderate to severe knee osteoarthritis.⁽⁴³⁾ Comparing arthroscopic lavage and debridement versus

conservative management, this latter study confirmed the findings of the earlier trial, and the guidelines below largely centre around the conclusions of these two papers.

A 2013 report entitled 'Commissioning Guide – painful osteoarthritis of the knee'⁽²⁴⁾ was sponsored by the British Orthopaedic Association (BOA), the British Association of Knee Surgery (BASK) and the Royal College of Surgeons of England (RCSEng). NICE has accredited the process used to produce it. In relation to knee arthroscopy, lavage and debridement, the guideline suggests that these should **not** be offered for patients with non-mechanical symptoms of pain and stiffness, but may be considered in patients:

- with a clear history of mechanical symptoms (such as locking) which have not responded to at least three months of non-surgical treatment
- with a specific surgical target such as loose bodies
- where a detailed understanding of the degree of compartment damage within the knee is required, above that demonstrated by imaging, when considering patients for certain surgical interventions (e.g. high tibial osteotomy).⁽²⁴⁾

The American Association of Orthopaedic Surgeons published its updated guidelines on the management of knee osteoarthritis in 2013.⁽²⁵⁾ Based on a systematic review of the evidence and expert consensus, this guideline stated that the Association could not recommend performing arthroscopy with lavage and/or debridement in patients with a primary diagnosis of symptomatic knee osteoarthritis (strength of recommendation: strong), and it could recommend neither for nor against arthroscopic partial meniscectomy in patients with knee osteoarthritis with a torn meniscus (strength of recommendation: inconclusive).

In 2010, a meta-analysis of six RCTs examining joint lavage in osteoarthritis by Avouac et al. found that joint lavage alone does not provide significant improvement in pain or function and the combination of joint lavage and intra-articular steroid injection is no more efficacious than lavage alone.⁽³⁴⁾ Also in 2010, a Cochrane review was published in which knee joint lavage was compared to sham intervention, placebo or a non-intervention control in terms of effects on pain, function and safety outcomes.⁽⁴²⁾ Seven trials, three of which examined arthroscopic lavage, were included. The other four trials included two that had examined non-arthroscopic joint lavage and two that had focused on tidal irrigation. The review found minimal evidence suggesting benefit of joint lavage in terms of pain relief and improvement of function in patients three months and one year after the intervention, with the authors concluding that joint lavage does not produce a relevant benefit for patients, while any potential benefit is likely to be outweighed by safety concerns.⁽⁴²⁾

Separately, a Cochrane review, published prior to the Kirkley RCT⁽⁴³⁾ discussed above, examining arthroscopic debridement for knee osteoarthritis was published in 2008. This Cochrane review included three RCTs with 278 patients, only one of which was rated of moderate quality⁽⁴⁴⁾ (the other two being rated poor).⁽³⁵⁾ Based primarily on the one moderate quality trial, the authors concluded that “there is ‘gold’ level evidence that arthroscopic debridement has no benefit for undiscriminated osteoarthritis (mechanical or inflammatory causes)”.⁽³⁵⁾

A report by Bazian for Bupa UK entitled ‘Knee arthroscopy: An overview of guidelines to support clinical best practice’, was published for Bupa in 2011.⁽²⁶⁾ Based on a literature search up to April 2011, this report identified 656 guidelines and systematic reviews; of these, the full text of 25 were assessed. Of these, five were compliant with the Appraisal of Guidelines Research and Evaluation standards (AGREE);^(29;48-52) the report aimed to provide a synthesis of the recommendations within these documents. This process produced a number of recommendations and, in relation to osteoarthritis, suggested that a person over 40 to 50 years of age without trauma and clinical evidence of osteoarthritis should initially receive a full course of conservative management for osteoarthritis, with surgical referral only if this fails. It went on to state that indications for delayed arthroscopic lavage and debridement in osteoarthritis include:

- failure of conservative management, and
- clear evidence of mechanical locking or X-ray or magnetic resonance imaging (MRI) evidence of loose body.

The National Medical Policy on Knee Arthroscopy for Medicaid users in the United States was most recently updated in 2011.⁽²⁷⁾ In keeping with the conclusions noted above, this guidance stated that arthroscopic debridement with or without lavage should only be considered in patients with mild to moderate knee osteoarthritis with knee pain and with other symptoms such as mechanical symptoms (such as locking of the limb, giving way, or catching), loose bodies, instability, impingement, or disruption of the cartilage or meniscus. Lavage alone or lavage and debridement for those with osteoarthritis and knee pain only were considered not to be suitable indications for arthroscopy.

Guidance has also been published by the National Institute for Health and Care Excellence (NICE) in the UK (2007),⁽²⁹⁾ the Agency for Healthcare Research and Quality in the United States (2007),⁽³⁰⁾ and the Ministry for Health in Ontario (2005).⁽²⁸⁾ All three concluded that arthroscopic knee washout alone should not be used as a treatment for osteoarthritis, and that the indications for debridement were limited, with the Ontario report stating that arthroscopic debridement of the knee has only been found to be effective for medial compartmental osteoarthritis.

It should be noted that a 2013 meta-analysis by Spahn et al. concluded that approximately 60% of patients with knee osteoarthritis can benefit from an arthroscopic joint debridement for a middle-term period (three to five years).⁽³⁶⁾ This paper has since been criticised, however, for its inclusion of non-randomised studies and case series, the very high level of heterogeneity between studies, and its analysis of the baseline versus follow-up data for the arthroscopically treated patients only.⁽⁵³⁾

A number of primary care trusts (PCT) in the English NHS used this evolving evidence base to construct referral and treatment thresholds for patients with knee osteoarthritis. As part of the changes to the NHS brought about by the Health and Social Care Act 2012, PCTs and strategic health authorities (SHAs) ceased to exist on 31 March 2013. Their responsibilities were taken over by clinical commissioning groups and the NHS Trust Development Authority. However, the thresholds that were previously developed by these trusts are likely to represent ongoing practice at a local level while new commissioning guides are being established. A summary of specific thresholds for knee arthroscopy from a sample of three NHS PCT areas is provided in Appendix 1.3.

Finally, the 18 Weeks Referral to Treatment (RTT) Orthopaedic Services Task and Finish Group produced referral guidelines for knee pain for Scotland in 2011.⁽³³⁾ The key recommendations within this report are summarised in Appendix 1.4, but specifically in relation to knee osteoarthritis, the authors state that the evidence is clear that arthroscopy with washout or debridement is not an appropriate treatment for established osteoarthritis of the knee.

It thus appears that the guidelines and referral criteria published to date consistently recommend that current evidence is not sufficient to support the use of arthroscopic lavage for knee osteoarthritis, and that the evidence for debridement is, at best, limited.

Arthroscopic meniscectomy

In the interests of clarity, the management of meniscal tears is presented as a distinct category in this report. In reality, the majority of treated meniscal tears occur in association with degenerative knee disease, which can range from mild changes not visible on X-ray to established knee osteoarthritis.

Some controversy surrounds the use of arthroscopic partial meniscectomy, with two recent RCTs, published in 2013, suggesting that this procedure produces no better outcomes than those from physical therapy or sham surgery. This latter study was carried out in participants with no clinical or radiological evidence of

osteoarthritis.^(37;38;38) These findings have not yet been reflected in clinical guidelines or referral pathways.

In 2009, Beaufils et al. published clinical practice guidelines for the management of meniscal lesions and isolated lesions of the anterior cruciate ligament of the knee in adults.⁽³¹⁾ This was on behalf of the Haute Autorité de Santé (HAS), acting upon the request of the French Society of Arthroscopy (SFA), French Society of Orthopaedic and Trauma Surgery (SOFCOT), and the Directorate for Hospitals and Organisation of Care (DHOS). These guidelines were developed through a systematic review of the literature up to 2007, with contributions from 50 peer reviewers. Specifically in relation to arthroscopy and meniscal lesions, the guidelines suggested that:

- In cases of acute painful knee locking, diagnostic and therapeutic arthroscopy may be proposed if MRI cannot be performed promptly (professional agreement).
- For non-traumatic meniscal lesions, the most partial arthroscopic meniscectomy should be used after medical treatment has failed (professional agreement). The efficacy of related procedures (particularly involving the cartilage) is not proven.
- In the presence of any narrowing whatsoever of the femorotibial joint space on X-ray, the patient should receive treatment for osteoarthritis and its risk factors. Arthroscopic meniscectomy is not recommended (grade B).

The aforementioned Bazian report, in 2011, meanwhile, made a number of recommendations in relation to therapeutic arthroscopy, both for isolated meniscal lesions, and for those which occur in conjunction with a tear of the cruciate ligament.⁽²⁶⁾ These recommendations are contained in Appendix 1.4, but essentially concur with the findings of Beaufils et al., above. The Scottish 18 Weeks Referral to Treatment (RTT) guidelines for knee pain similarly state that arthroscopy is not appropriate for meniscal pathology in the presence of moderate to severe osteoarthritis.⁽³³⁾

The principal reason for the concern around meniscectomy is that removal of the meniscus may predispose the patient to more rapid progression of osteoarthritis in the longer term. Petty et al. performed a systematic review in 2011 to examine the effects of arthroscopic meniscectomy on rates of osteoarthritis at a minimum of eight years follow-up. Based on the results of five included studies, the authors concluded that radiographic signs of osteoarthritis are significant at 8 to 16 years follow-up after knee arthroscopic partial meniscectomy. However, clinical symptoms of knee arthritis are not significant.⁽³⁹⁾

As stated, there is some debate surrounding the relative merits of arthroscopic meniscectomy at present. Based on the evidence and guidelines outlined above, it seems reasonable to conclude that meniscectomy should not be performed unless there is definitive evidence to suggest that the meniscal lesion is the primary cause of functional symptoms, and where it is performed, patients should have already failed a trial of conservative management. It also appears reasonable to conclude that patients with moderate to severe osteoarthritis should not be referred for consideration for meniscectomy.

Diagnostic arthroscopy

A systematic review, published by Quatmann et al. in 2011, aimed to compare the clinical and diagnostic performance of MRI versus arthroscopy for knee osteoarthritis.⁽⁴¹⁾ This was done for both 1.5 and 3 Tesla (T) MRI. The authors reported that the data indicated that MRI is highly specific and moderately sensitive and accurate for identifying articular cartilage degeneration of any severity, with inter- and intra-observer agreement moderate to high for the majority of studies. Despite the aforementioned aim of comparing MRI with arthroscopy, this paper did not report accuracy, sensitivity or specificity for arthroscopy and no comparison between it and MRI was made. In addition, given the large discrepancies in diagnostic performance between studies, the authors concluded that there is a clear need for a large clinical trial with rigorous methodology to evaluate the diagnostic performance of MRI as an instrument to identify and clinically grade articular cartilage pathology, particularly early chondral degeneration.⁽⁴¹⁾

A systematic review by Crawford et al., meanwhile, was published in 2007 and focused on MRI versus arthroscopy in relation to the diagnosis of meniscal lesions and anterior cruciate ligament tears.⁽⁴⁰⁾ Fifty nine articles were retrieved reporting on 7,367 MRI scans and 5,416 arthroscopies, with a patient age range of 3–87 years; only one of the studies included was an RCT. The authors reported that, overall, MRI has a higher specificity (92.8%) than sensitivity (82.5%), and a higher negative predictive value (NPV) (92.2%) than positive predictive value (PPV) (83.9%) (see Table 2.2). The authors concluded that:

- MRI is able to detect most internal derangements of the knee efficiently. MRI has a higher specificity (that is, correctly identifies the absence of an internal derangement of the knee) than sensitivity (that is, accurately identifying an internal derangement of the knee). It has a higher NPV (reliability of a negative MRI result) than PPV (reliability of a positive MRI result). Thus, if a patient is given a result of a negative MRI scan, the high specificity and NPV of the scan mean that this is likely to be a true negative result.

- MRI has a high sensitivity in the medial meniscus, where it was accurate in detecting a tear in 91.4% of cases. MRI has a lower specificity in the medial meniscus than in the lateral meniscus: if MRI is used as the only form of pre-operative screening for this condition, then there may well be unnecessary arthroscopies performed.

Table 2.2 Diagnostic accuracy of MRI compared to arthroscopy in the diagnosis of meniscal lesions and anterior cruciate ligament tears

Results	Accuracy (%)	Sensitivity (%)	Specificity (%)	PPV (%)	NPV (%)
Medial meniscus	86.3	91.4	81.1	83.2	90.1
Lateral meniscus	88.8	76.0	93.3	80.4	91.6
anterior	93.4	86.5	95.2	82.9	96.4
Combined MM, LM, anterior	89.2	86.2	90.7	82.4	92.8
Other knee pathology	90.8	68.7	97.9	91.3	90.7
Total	89.6	82.5	92.8	83.9	92.2

Key: accuracy, sensitivity, specificity, NPV and PPV for groups 1 (meniscal and anterior injuries), 2 (other aspects of MRI and arthroscopic diagnosis of knee pathology) and 3 (all results combined) and separately for medial meniscus, lateral meniscus and anterior cruciate ligament tears. $PPV = TP/(TP + FP)$, $NPV = TN/(TN + FN)$, $sensitivity = TP/(TP + FN)$, $specificity = TN/(FP + TN)$ and $accuracy = (TP + TN)/(TP + TN + FP + FN)$.

The Bazian report, meanwhile, concluded that arthroscopy has largely been replaced by MRI as the diagnostic investigation of choice.⁽²⁶⁾ It also noted the relative value of MRI versus arthroscopy in terms of specificity and negative predictive value. In addition, the report noted that MRI is a quicker procedure and avoids the complications of surgery, although some patients cannot have an MRI scan, for example, due to metallic foreign bodies, cardiac pacemakers or pregnancy. The report made recommendations on when patients should be referred for MRI and

arthroscopy (Appendix 1.4), noting that the latter is rarely considered, but still has some specific uses:

- when MRI scan is negative or equivocal and there is continued pain, swelling and loss of function
- in an acutely locked knee, if MRI is not 'immediately' available, arthroscopy may be performed with a view to both diagnosis and treatment (though guidance indicates no timeframe to further clarify the term 'immediate').

The Scottish 18 Weeks Referral to Treatment (RTT) guidelines for knee pain similarly state that arthroscopy should not be routinely used for diagnostic purposes where non-invasive imaging may be more appropriate. However, arthroscopy may be appropriate where MRI findings are equivocal or diagnosis remains in doubt after scanning, for example, suspected lateral meniscus tears with persistent symptoms (see Appendix 1.4).⁽³³⁾

The Australian Safety and Efficacy Register of New Interventional Procedures – Surgical (ASERNIP-S) Group, of the Royal Australasian College of Surgeons, produced its report on diagnostic knee arthroscopy based on a review of the literature up to March 2008.⁽³²⁾ Its conclusions mirrored those of the other reports discussed above (see Appendix 1.4).

The consensus is thus that given the widespread availability of non-invasive imaging in the form of MRI, the indications for diagnostic arthroscopy have significantly lessened. One important caveat here is that lengthy waiting times for MRI in Ireland at the time of this HTA report may influence its suitability as a diagnostic tool.

2.3 Cost-effectiveness evidence

Lubowitz and Appleby published their analysis of costs per quality-adjusted life year (QALY) for knee arthroscopy in 2011. QALYs were calculated through analysis of completed pre- and post-operative Quality of Well-Being (QWB) scales; a non-operative control group was not used. Costs were defined as the sum of facility (hospital or surgery centre) costs plus the surgical professional fee, and all were reported in 2009 United States dollars (USD).⁽⁴⁵⁾ Knee arthroscopy patients were defined as those having any or all of the following arthroscopic procedures: chondroplasty (84%); lateral meniscectomy (41%); lateral meniscus repair (0%); lateral retinacular release (14%); loose body removal (22%); medial meniscectomy (54%); medial meniscus repair (1%); microfracture (5%); and synovectomy (38%). Patients having ligament reconstruction, chondrocyte or osteochondral transplantation, or concomitant open knee surgery were excluded. Ninety three

patients underwent knee arthroscopy; the authors calculated the cost per QALY at USD\$5,783; for comparison, the authors also examined cost-effectiveness in a cohort of 35 patients undergoing ligament reconstruction – their cost per QALY was calculated at USD\$10,326.

In 2008, the DAMASK (Direct Access to Magnetic Resonance Imaging: Assessment for Suspect Knees) Study was published in the UK, having been organised on the premise that direct access to MRI by GPs, for patients with suspected internal derangement of the knee, could result in the avoidance of unnecessary hospital referrals and arthroscopy.⁽⁴⁷⁾ A total of 553 patients were recruited from 163 general practices between November 2002 and October 2004, and randomised to one of the two trial interventions:

- referral by the GP for an MRI examination, the findings of which were used by the GP to inform their diagnosis and plan for subsequent management
- standard care involving referral to the local orthopaedic department for consultation with a specialist who may or may not subsequently request an MRI examination.

All unit costs were in 2005/6 British pounds (GBP), and health-related quality of life was measured using the generic EuroQol EQ-5D instrument. The authors reported that the early use of MRI by GPs resulted in a small, but statistically significant improvement in health-related quality of life; this came at a cost of approximately GBP£294 (95% CI £31-£573) extra per patient, with the incremental cost per QALY (ICER) calculated at GBP£5,840. The authors concluded that GP access to MRI for patients presenting in primary care with a continuing knee problem represents a cost-effective use of health service resources.

In 2001, Bryan et al. carried out a health technology assessment on the cost effectiveness of MRI versus arthroscopy in patients requiring investigation of the knee joint.⁽⁴⁶⁾ The authors concluded that the use of MRI was found to be associated with a positive diagnostic/therapeutic impact: a significantly smaller proportion of patients in the MRI group underwent surgery. Overall, similar mean NHS costs for both the MRI (GBP£897) and no-MRI (GBP£845) groups were found, indicating that the increased cost associated with the use of MRI in all patients was offset in full by the reduced requirement for surgery.

In conclusion, limited international literature on the cost-effectiveness of knee arthroscopy interventions was identified: two reports from the UK evaluated the use of MRI versus arthroscopy, with both suggesting that the provision of additional access to MRI was either cost-effective or cost neutral (as offset by reduced procedure numbers). The third report from the US examined improvements in

health-related quality of life following therapeutic arthroscopy and concluded that arthroscopy was cost-effective in that setting. The relevance of these reports to the current Irish healthcare setting is questionable.

2.4 Budget impact and resource implications

The number of knee arthroscopy procedures performed annually initially increased from 4,640 in 2005 to 5,242 in 2007; annual activity has subsequently decreased by 19%, with 4,238 procedures being performed in 2012. As noted in section 1.4, 81% of the procedures were undertaken as inpatient cases in 2012. The current estimated annual national cost of knee arthroscopy procedures is €10.3 million, with an average weighted cost per procedure of €2,457, based on the latest Casemix costs (Table 2.3 on the following page).

Target day case rates of 95% for arthroscopy of the knee and arthroscopic meniscectomy have been established by the National Clinical Programme for Surgery. If current performance (87.7% for arthroscopy of the knee and 90% for arthroscopic meniscectomy when undertaken as the primary procedure) could be improved to achieve this 95% target, there would be the potential to release resources of up to approximately €197,000 based on 2012 activity levels.

Table 2.3. HSE inpatient and day case acute hospital activity and costs summarised by diagnosis-related group (based on 2011 costs and 2012 activity)⁽¹⁷⁾

DRG code	Description	Number carried out	Cost/inpatient (€)	Cost/day case (€)
I18Z	Other knee procedures	2,872	3,685	2,280
I24Z	Arthroscopy	889	3,440	1,214
I29Z	Knee reconstruction or revision	329	5,396	2,778
I69B	Bone diseases and arthropathies W/O catastrophic or severe CC	31	2,782	487
I72B	Specific musculotendinous disorders W/O catastrophic or severe CC	20	2,079	459
I23Z	Local excision and removal of internal fixation devices excl hip and femur	14	4,285	1,071
I66B	Inflammatory musculoskeletal disorders W/O cat or sev CC	13	4,992	1,606
I71B	Other musculotendinous disorders W/O catastrophic or severe CC	11	2,056	442
I13B	Humerus, tibia, fibula and ankle procedures W/O CC	7	5,369	2,259
	Other procedures*	20		

*Key DRG – diagnostic-related group; W – with; W/O – without; CC – complication or comorbidity. Data summary from HSE National Casemix Programme Ready Reckoner, 2013 based on the 2011 inpatient and day case costs reported by 38 hospitals participating in the programme that year. Activity is based on the latest 2012 HIPE data. *Note the remaining diagnosis-related groups accounted for five or fewer procedures each.*

3 Advice on clinical referral/treatment threshold

Taking account of the available evidence that exists in relation to knee arthroscopy, the following threshold criteria are advised for referral and treatment within the publicly funded healthcare system in Ireland:

These criteria are designed to distinguish between patients who would derive additional benefit from elective knee arthroscopy over conservative management in the primary care setting. Patients who present with 'red flag' signs or symptoms, suggestive of, for example, septic arthritis or malignancy, should continue to be referred for emergency or urgent assessment in secondary care.

All patients should have timely access to necessary radiological investigations, including MRI, via primary care services. Where conservative management is indicated, this should be made available to patients at a time when they are most likely to derive benefit from this management.

For patients with meniscal pathology

- For a knee with acute locking or entrapment, early referral for arthroscopic surgery is indicated.

Referral should also be considered in patients with:

- mechanical symptoms (for example, clicking, catching or locking) suggesting the presence of a meniscal lesion AND
- following confirmation of pathology with MRI AND
- failure of at least two months of conservative management.

Those with meniscal pathology on a background of moderate to severe osteoarthritis should not be referred for consideration for arthroscopy.

Referral for diagnostic arthroscopy

Diagnostic arthroscopy is only indicated in symptomatic patients in whom there remains persistent diagnostic uncertainty following MRI and clinical examination.

For patients with osteoarthritis of the knee

- The majority of patients should be managed with at least three months of optimal conservative management in primary care in the first instance.
- Lavage is not recommended.
- Arthroscopy and debridement should only be considered, in limited circumstances, in those with
 - definite mechanical symptoms (for example, locking) AND
 - still symptomatic following optimal conservative management.
- Referral thresholds for those with osteoarthritis of the knee can be found in the related document *Arthroplasty for osteoarthritis of the knee*.

Patients who do not meet these criteria should remain under the care of the general practitioner who will manage conservative treatment of the patient in the community.

Whilst the exact nature of what constitutes optimal conservative management is beyond the scope of this assessment, options may include analgesia (painkillers), weight reduction and activity programmes, physiotherapy, shoe wear modification, and/or advice in relation to activities of daily living. Where joint injection forms part of the management strategy, it should only be offered to patients with an appropriate clinical diagnosis and performed by those with the necessary training to do so.

4 Discussion

Referral thresholds have been developed based on a comprehensive review of the literature and international referral guidelines. The aim of these thresholds is to ensure that the right patients receive referral and treatment at the right time, and to avoid unnecessary interventions, particularly in those who are unlikely to derive additional benefit from surgery over conservative management. While referral thresholds may currently be used on an informal basis within the Irish system, this has not been done consistently. The thresholds developed here aim to provide primary care practitioners, surgeons and other clinicians involved in the care of these patients with a template upon which decision-making can be standardised. This requirement for standardisation is increasingly relevant as changing demographics and the increasing prevalence of both obesity and chronic disease place additional strain on the publicly-funded healthcare system.

One caveat to the effective implementation of referral thresholds in Ireland is the limited access to conservative treatment in the primary care setting. The provision of specialist musculoskeletal (MSK) services through the Orthopaedic and Rheumatology Clinical Programmes has clearly impacted on waiting lists for outpatient appointments in secondary care. At present, however, access to these services remains via referral into the secondary care system, where patients are then triaged according to need. Implementation of an MSK programme to support general practitioners and community physiotherapists in the primary care setting may provide one solution to the need for increased access to timely and appropriate conservative management in this setting. In addition, implementation of this threshold will require additional resources to be directed towards physiotherapists working in the primary care setting, so that patients can be assured access to a holistic, multidisciplinary programme of conservative management where appropriate.

While beyond the immediate scope of this HTA, it has been noted that day case rates remain lower than the target of 95% for arthroscopy and arthroscopic meniscectomy, as set out by the National Clinical Programme for Surgery, with evidence of considerable variation across hospitals. As noted in Section 3, potential cost savings of up to approximately €197,000 per annum could be attained through achievement of this target. The reasons for the regional and local variation are currently unclear and therefore an analysis of the underlying causative factors would be useful in identifying how existing resources might be better utilised.

It is acknowledged, in addition, that while the thresholds identified in this report suggest the need for optimal conservative management in the first instance, what constitutes optimal care remains open to question. Unfortunately, analysis of the related evidence base is beyond the scope of this present report.

A further caveat to the implementation of these thresholds is the limited access to MRI services. However, it is noted that this should not preclude commencement of conservative management where it is indicated and that, in any case, diagnostic arthroscopy is indicated in limited circumstances only.

It is noted that while development of this threshold should aid in defining who should be referred for arthroscopy, the mechanisms around its practical implementation remain to be fully clarified. It is clear that the National Healthlink Project, which permits the secure transmission of clinical patient information between GPs and hospitals, has facilitated improved communication of referrals between primary and secondary care. It is thus suggested that one mechanism through which this referral threshold might be implemented would be through its integration in the form of a standardised referral form into this project. Of note, initiatives are underway by the orthopaedic and rheumatology clinical care programmes in the Health Service Executive (HSE) to develop interface clinics and consultations between primary and secondary care services in Ireland and to implement agreed national referral guidelines for all patients with musculoskeletal disease.

In conclusion, the thresholds outlined above are consistent with well established clinical guidelines and published evidence. Hence, they are unlikely to represent a major change from current practice, but rather a standardisation of referral and treatment criteria across all areas of the publicly-funded healthcare system. Consistent application of the criteria throughout the healthcare system through the use of stated thresholds that are integrated into agreed national referral guidelines should assist patient triage, bring greater transparency, ensure equity of access based on clinical need and allow maximum benefit to be gained from existing resources. Consistent with best practice, guidelines and thresholds should be updated as necessary to reflect changes in the evidence base. As with all thresholds, it is imperative that there are opportunities for appeal mechanisms to ensure good governance. In addition, whilst these thresholds represent best practice, their implementation will depend on timely access to the full range of conservative treatment options being available at the primary care level.

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Appendices

Appendix 1.1 – HIPE ICD-10AM/ACHI list of intervention codes for knee arthroscopy procedures

Intervention code	Description
49557-00	Arthroscopy of knee
49560-00	Arthroscopic removal of loose body of knee
49560-02	Arthroscopic lateral release of knee
49557-01	Arthroscopic biopsy of knee
49558-00	Arthroscopic debridement of knee
49560-01	Arthroscopic trimming of knee ligament
49566-00	Arthroscopic synovectomy of knee
49557-02	Arthroscopic excision of meniscal margin or plica of knee
49560-03	Arthroscopic meniscectomy of knee
49561-02	Arthroscopic removal loose body of knee with debridement, osteoplasty, or chondroplasty
49562-02	Arthroscopic removal of loose body of knee with chondroplasty and multiple drilling or implant
49561-00	Arthroscopic lateral release of knee with debridement or osteoplasty or chondroplasty
49562-00	Arthroscopic lateral release of knee with chondroplasty and multiple drilling or implant
49561-01	Arthroscopic meniscectomy of knee with debridement, osteoplasty or chondroplasty
49562-01	Arthroscopic meniscectomy of knee with chondroplasty and multiple drilling or implant
49563-00	Arthroscopic repair of meniscus of knee
49558-01	Arthroscopic chondroplasty of knee
49559-00	Arthroscopic chondroplasty of knee with multiple drilling or implant
49558-02	Arthroscopic osteoplasty of knee
49539-00	Arthroscopic reconstruction of knee
49542-00	Arthroscopic reconstruction of cruciate ligament of knee with repair of meniscus

Appendix 1.2 – Principal diagnoses for knee arthroscopy procedures (HIPE data 2012)

Principal diagnosis	Code	Number of procedures	% of total procedures	ALOS	% day cases	Total inpatient bed days	Average Age
Internal derangement of knee	M23	2,215	52.4	1.4	78.5	645	41.9
Gonarthrosis [arthrosis of knee]	M17	860	20.3	1.9	85.9	225	53.8
Other joint disorders, not elsewhere classified	M25	655	15.5	1.3	88.5	98	41.3
Dislocation, sprain and strain of joints and ligaments of knee	S83	103	2.4	1.2	41.7	72	31.9
Other soft tissue disorders, not elsewhere classified	M79	83	2.0	1.0	96.4	3	43.9
Synovitis and tenosynovitis	M65	55	1.3	1.0	89.1	6	43.8
Disorders of patella	M22	46	1.1	1.2	78.3	12	33.4
Other osteochondropathies	M93	45	1.1	1.2	86.7	7	29.0
Other arthritis	M13	30	0.7	1.5	93.3	3	46.6
Other disorders of synovium and tendon	M67	18	0.4	0	100.0	0	32.6
Other rheumatoid arthritis	M06	14	0.3	9.0	92.9	9	54.4
Other disorders of bone	M89	13	0.3	1.5	69.2	6	43.9

Other disorders of cartilage	M94	9	0.2	2.0	88.9	2	38.2
Psoriasis	L40	7	0.2	0	100.0	0	40.0
Coxarthrosis [arthrosis of hip]	M16	7	0.2	1.0	42.9	4	60.7
Other specific joint derangements	M24	7	0.2	1.0	42.9	4	33.0
Other crystal arthropathies	M11	6	0.1	1.0	83.3	1	56.8
Other orthopaedic follow-up care	Z47	6	0.1	1.7	50.0	5	27.3
Other		50	1.2	1.3	74.0	32	38.9
Total		4,229	100	1.4	100	1134	43.8

Key

HIPE: Hospital In-Patient Inquiry (HIPE) Scheme.

*Data includes all activity in publicly-funded hospitals, including procedures in patients that used private health insurance. For consistency and completeness, data is reported to include the principal and secondary procedures (that is, 'all procedures') with all data presented on this basis. *Note: the remaining principal diagnoses contain five or fewer cases per diagnosis code.*

Appendix 1.3 – International examples of referral thresholds for knee arthroscopy

UK primary care trust	Threshold
NHS Black Country Cluster, 2012	<p>Arthroscopy for Knee osteoarthritis: Referral for arthroscopic lavage and debridement should not be offered as part of treatment for osteoarthritis and will only be funded in accordance with the criteria specified below:</p> <p>The person has knee osteoarthritis with a clear history of mechanical locking (not gelling), 'giving way' or X-ray evidence of loose bodies.</p> <p>Arthroscopy solely for diagnosis of knee conditions should only be undertaken in patients for whom an MRI scan is contraindicated.</p>
Worcestershire, 2011	<p>Arthroscopic debridement and washout will not be carried out for chronic pain relief of osteoarthritis of the knee given the lack of clinical evidence on efficacy, except when a patient has mechanical features of locking which may be associated with severe pain. Please also refer to NICE Interventional Procedure Guidance 20 August 2007, which states arthroscopic washout with debridement may be considered as a treatment option for patients with a confirmed diagnosis of osteoarthritis. Arthroscopic washout alone will not, however, be supported as a treatment for osteoarthritis.</p>
Swindon, 2012	<p>Knee arthroscopy and irrigation</p> <p>The PCT funds knee arthroscopy in adults where:</p> <p>Clinical examination (or MRI scan) has demonstrated clear evidence of an internal joint derangement (meniscal tear, ligament rupture or loose body) AND</p> <p>Where six months of conservative treatment has failed or where it is clear that conservative treatment will not be effective, AND</p> <p>In rare cases, intractable knee pain considered likely to benefit from arthroscopic treatment according to assessment by a consultant surgeon, AND</p> <p>There is continuing diagnostic uncertainty following MRI, such that a consultant surgeon recommends diagnostic arthroscopy.</p>

	<p>Arthroscopy IS NOT COMMISSIONED:</p> <p>For diagnostic purposes only (noting the exception above)</p> <p>To provide arthroscopic washout alone as a treatment for chronic knee pain due to osteoarthritis. This procedure may be appropriate in conditions such as septic arthritis.</p> <p>This policy restriction does not apply where there is an urgent need for investigation/treatment.</p>
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Appendix 1.4 – Key points from Scottish referral guidelines and Bazian report on knee arthroscopy

18 Weeks Referral to Treatment (RTT) Orthopaedic Services Group referral guidelines, Scotland, 2011.⁽³³⁾	Key Points <p>Conservative treatments should be carried out prior to surgery (such as analgesia [painkillers]), physiotherapy, shoe wear modification, weight reduction, advice to stay active and continue normal activities).</p> <p>Knee arthroscopy is the operative technique of choice when dealing with:</p> <ul style="list-style-type: none">■ meniscal injury, particularly where there are mechanical symptoms or pain in keeping with symptomatic meniscus pathology (n.b. meniscal pathology can occur at any age, even in the presence of mild osteoarthritis)■ cruciate reconstruction■ other intra-articular pathologies (such as loose bodies, localised persistent joint line pain despite conservative management). <p>Arthroscopy should only be undertaken after some form of preoperative imaging of the knee, usually MRI. Arthroscopy may be appropriate where MRI findings are equivocal or diagnosis remains in doubt after scanning, such as suspected lateral meniscus tears with persistent symptoms.</p> <p>Arthroscopy is not appropriate for meniscal pathology in the presence of moderate to severe osteoarthritis.</p> <p>Arthroscopy for anterior knee pain is rarely indicated.</p> <p>Bilateral arthroscopy is rarely indicated and would always require pre-operative MRI scanning.</p> <p>Arthroscopy should not be routinely used for diagnostic purposes where non-invasive imaging may be more appropriate.</p> <p>Evidence is clear that arthroscopy with washout or debridement is not an appropriate treatment for established osteoarthritis of the knee.</p>
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<p>Bazian, 2011⁽²⁶⁾</p>	<p>Diagnostic Arthroscopy</p> <p>MRI as the investigation of choice is not routinely indicated for all clinical situations. Management can be commenced on the basis of history and examination.</p> <p>Compared to arthroscopy, physical examination has high specificity and good sensitivity for detecting meniscus, anterior cruciate ligament and posterior cruciate ligament lesions.</p> <p>Referral for diagnostic confirmation by MRI is indicated:</p> <ul style="list-style-type: none">■ for an acutely locked knee■ to show the extent of multi-ligament injury■ when there is diagnostic uncertainty. <p>There is divergence in opinion over whether diagnostic confirmation with MRI should be obtained in all cases of suspected internal derangement.</p> <ul style="list-style-type: none">■ Diagnostic arthroscopy is rarely considered, but still has some specific uses:<ul style="list-style-type: none">– When MRI scan is negative/equivocal and there is continued pain, swelling and loss of function– In an acutely locked knee, if MRI is not 'immediately' available, arthroscopy may be performed with a view to both diagnosis and treatment (though guidance indicates no time frame to further clarify the term 'immediate'). <p>Therapeutic arthroscopy</p> <p>Osteoarthritis and or non-traumatic suspected meniscus lesion or loose body</p> <p>A person over 40 or 50 years of age without trauma and clinical evidence of osteoarthritis should initially receive a full course of conservative management for osteoarthritis, with surgical referral only if this fails.</p> <p>Indications for delayed arthroscopic lavage and debridement in osteoarthritis:</p> <ul style="list-style-type: none">■ failure of conservative management, and■ clear evidence of mechanical locking or X-ray or MRI evidence of loose body.
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	<p>Indications for this procedure in osteoarthritis are rare. NICE recommends full audit and clinical governance if it is undertaken. Arthroscopic lavage alone is not recommended.</p> <p>Indications for delayed arthroscopic partial meniscectomy and or loose body removal:</p> <ul style="list-style-type: none">Failure of conservative management, and where the meniscus lesion and or loose body is considered to be the primary source of pain and functional symptoms. <p>Arthroscopic intervention is not recommended for people with a primary diagnosis of osteoarthritis of the knee:</p> <ul style="list-style-type: none">osteoarthritis with an undetermined cause of pain and functional symptoms without evidence of internal derangement or loose body. <p>Meniscus tears with no involvement of the cruciate ligaments</p> <ul style="list-style-type: none">For a knee with acute locking or entrapment early arthroscopic surgery is indicated.For other knees with suspected meniscus tears but without acute locking or entrapment six to eight weeks of simple physiotherapy and rehabilitation is recommended. Referral after this if functional goals are not met. <p>Delayed arthroscopic partial meniscectomy or repair is indicated:</p> <ul style="list-style-type: none">after a poor response to rehabilitation (two months' compliance with conservative treatment and physiotherapy)for 'younger' patients suitable for meniscus repair (no specified period of prior conservative treatment; see below). <p>Choice of procedure:</p> <ul style="list-style-type: none">partial/subtotal meniscectomy is performed in the majority of cases. <p>Meniscus repair is considered only for lesions in peripheral vascularised zones in 'younger' patients, particularly those of the lateral meniscus (professional opinion indicates that earlier intervention may be considered for these rare cases suitable for repair; guidance recommends age as a consideration, but gives no specific indication of any age cut-off, and it is assumed that professional judgment would be used for the individual, considering their activity levels, overall health and any associated knee conditions).</p> <ul style="list-style-type: none">Anterior cruciate ligament tear with or without meniscus tear: Specialist assessment within two to four weeks is
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	<p>recommended, alongside referral for rehabilitation or physiotherapy.</p> <p>Specific indications relating to the management of anterior and posterior cruciate ligament tears was also discussed in depth in the Bazian report, but this is outside the scope of this present assessment.</p>
<p>Australian Safety and Efficacy Register of New Interventional Procedures – Surgical (ASERNIP-S)⁽³²⁾</p>	<p>For meniscal lesions and anterior tears, MRI is an effective diagnostic tool when compared to diagnostic arthroscopy. In particular, MRI has a high specificity and negative predictive value, suggesting that screening MRI studies can effectively rule out the presence of meniscal lesions and anterior cruciate ligament tears and reduce the number of unnecessary diagnostic arthroscopies performed. MRI is useful in situations where the results of a clinical examination are uncertain, and it is the most appropriate diagnostic screening tool to use before therapeutic arthroscopy.</p> <p>Arthroscopy should be reserved for patients with a lesion that is treatable by arthroscopic methods.</p>

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