

The Management of Soft Tissue Knee Injuries: Internal Derangements

KEY MESSAGES

DIAGNOSIS

- A thorough and detailed history is important in establishing the diagnosis.
- Aspiration is beneficial for a severe haemarthrosis but is generally not indicated for diagnostic purposes.

USE OF X-RAY

- The Ottawa Knee Rules provide a guide to indicate if an X-ray is required.
- People with a haemarthrosis should be X-rayed to exclude fractures.

INITIAL MANAGEMENT/REFERRAL

- Urgent referral to an orthopaedic surgeon is required for people with red flags (symptoms of serious pathology), severe soft tissue disruption and a significant fracture.
- Early specialist referral is recommended for people with a suspected injury to the anterior cruciate ligament (ACL), posterior cruciate ligament (PCL) or posterolateral complex. Rehabilitation with a recognised provider is required for a person with these injuries until they are seen by a specialist. Early specialist referral is also required for a locked knee due to suspected meniscal entrapment, or where the diagnosis is in doubt.
- People with mild knee injury (no apparent ligament laxity or meniscal damage) should be treated with R.I.C.E. (rest, ice, compression, elevation) and avoid H.A.R.M. (eg, heat, alcohol, running, massage) in first 72 hours, and paracetamol if required. Activities should be gradually resumed as pain and swelling settle. Follow-up after 7 days if symptoms persist.
- People with suspected meniscal tear should be referred for a trial of rehabilitation for 6-8 weeks, and if symptoms persist, referred to a specialist.
- Bracing is generally not required, but is appropriate for an acute rupture of the medial collateral ligament tear (MCL) until knee stability has been achieved in 4-6 weeks.
- People should be provided with information about knee injuries and treatment options. Where possible this should be in the appropriate language.

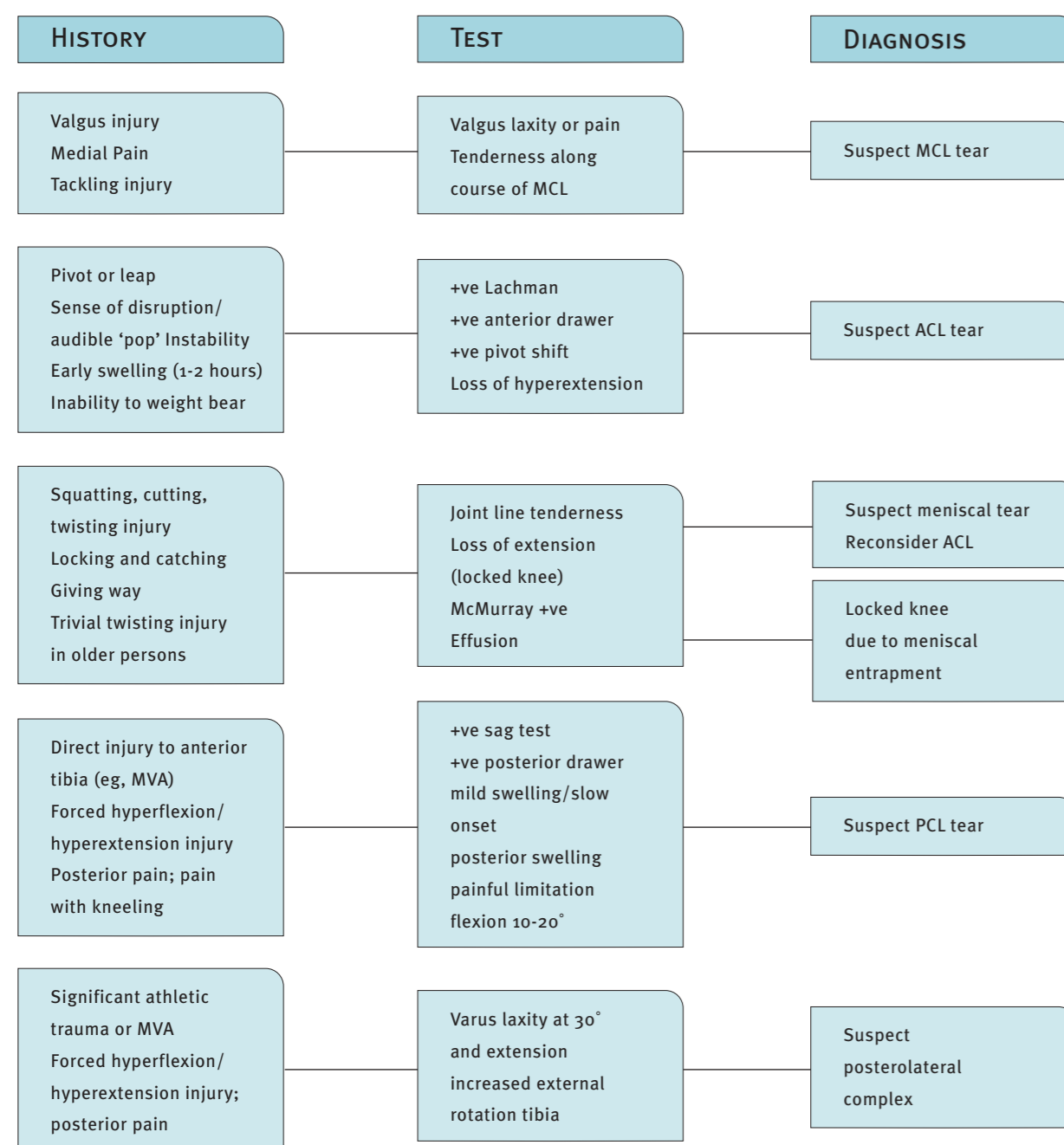
REHABILITATION

- Rehabilitation should focus on functional treatment rather than electrotherapy modalities.
- Referral to a specialist is appropriate at any stage if pain, swelling, recurrent locking or instability persist; if symptoms interfere with the ability to work; or if clinical milestones are not achieved.

POST-OPERATIVE MANAGEMENT

- There is evidence that bracing in the immediate post-operative period following ACL reconstruction is not effective.
- Rehabilitation is recommended following ligament reconstruction and repair, but is not advocated following meniscectomy unless functional limitations are identified.

DIFFERENTIAL DIAGNOSIS



ABOUT THE GUIDELINE

The purpose of this guideline is to provide the best evidence currently available to assist consumers, primary and secondary care providers in making informed decisions about the diagnosis and management of people with acute soft tissue injuries of the knee.

The guideline was developed for ACC by a multidisciplinary team of practitioners and consumers under the auspices of the New Zealand Guidelines Group (NZGG) and project managed by Effective Practice, Informatics and Quality Improvement (EPIQ).

The team includes:

Bruce Arroll (Chair), Gillian Robb, Emma Sutich, Sumia Foliaki, Peter Gendall, Chris Milne, Graeme Moginie, Jolene Phillips, Rocco Pitto, Rachel Thomson, Russell Tregonning, James Watt, Russell Blakelock, John Matheson, Neil Matson, Peter McNair, Ian Murphy, Peter Pfitzinger, Paul Quin, Keri Ratima, Duncan Reid, Barry Tietjens.

For more details visit: www.nzgg.org.nz and www.acc.co.nz

Diagnostic and Management Algorithm

NOTE 1: HISTORY AND PHYSICAL EXAMINATION

Significant History

- Mechanism of injury
- Inability to weight bear at time of injury
- Onset of swelling (extent and time frame)
- Sense of disruption / audible pop
- Locking, catching, instability
- Previous episodes, management and results
- General health / other illnesses

Significant Clinical Examination

- Swelling, bruising, abrasions, scars
- Inability to extend knee or flex knee >90°
- Appropriate clinical tests
- Multidirectional instability

NOTE 2: RED FLAGS

- Neurovascular damage, (high velocity injury, absent pulses, foot drop, multiple plane laxity)
- Extensor mechanism rupture (unable to actively SLR; palpable gap; change in height of patella)
- Infection (fever, severe pain, Hx drug abuse)
- Bleeding disorders (Haemophilia)
- Possibility of cancer (previous Hx of tumour, persistent severe pain, night pain)

NOTE 3: OTTAWA KNEE RULES

X-ray if any of:

- Age 55+
- Tender head fibula
- Isolated tenderness patella
- Inability to flex > 90°
- Inability to bear weight (4 steps) at time of injury and in the examination

NOTE 4: X-RAY

- Standard AP with slightly flexed knee
- Horizontal across table lateral with slightly flexed knee
- AP oblique if strong suspicion of fracture not confirmed on previous views
- Skyline patellar views when patellar instability or impact injury to patella clinically suspected

NOTE 5: INITIAL TREATMENT (FIRST 72 HOURS)

- R.I.C.E.
- Paracetamol
- Aspiration if necessary
- Bracing (MCL only)

NOTE 6: REHABILITATION (ACL)

Non-operative Management Goals

- Regain joint motion and muscle strength, educate and motivate, return to work and sport, advise on activity modification if appropriate

Pre-operative Rehabilitation Goals

- Initiate rehabilitation process prior to surgery, familiarise the patient with post-operative treatment methods to gain joint motion and muscle strength, Aim for full knee extension and at least 120° flexion

Post-operative Rehabilitation Goals

- As for non-operative management, achieve clinical milestones within appropriate timeframes:

Suggested Clinical Milestones:

Acute Phase (1-3 weeks) - Full passive knee extension, 90-100° flexion, SLR, FWB /normal gait
Intermediate Phase (weeks 4-12) - Full flexion within 8 weeks, 75-80% isometric quads strength, open kinetic chain limited to between 45-90° (refer to text)
Functional Training (4-6 months) - Return to sport 6-9 months (85-90% isometric or isokinetic quads strength)

NB:

1. Rehabilitation is not usually indicated following arthroscopic meniscectomy. Follow surgeon's rehabilitation protocol for meniscal repairs and other ligament reconstructions or repairs
2. Review progress each 10-14 days. If not achieving goals within relevant timeframe refer to specialist

NOTE 7: INDICATIONS IMAGING MRI

- MRI should generally be used ahead of diagnostic arthroscopy
- MRI is useful when the clinical diagnosis of meniscal tear or ACL tear is difficult or in doubt
- MRI is useful for showing the true extent of a multiligament injury complex
- Atypical pain or unusual circumstances

NOTE 8: INDICATIONS FOR SURGERY FOR PEOPLE >30

ACL reconstruction

- Consider age, occupation, level of instability, level of disability
- Where modifying activity is not a viable option
- Disability and functional instability following appropriate rehabilitation

Meniscal Tears

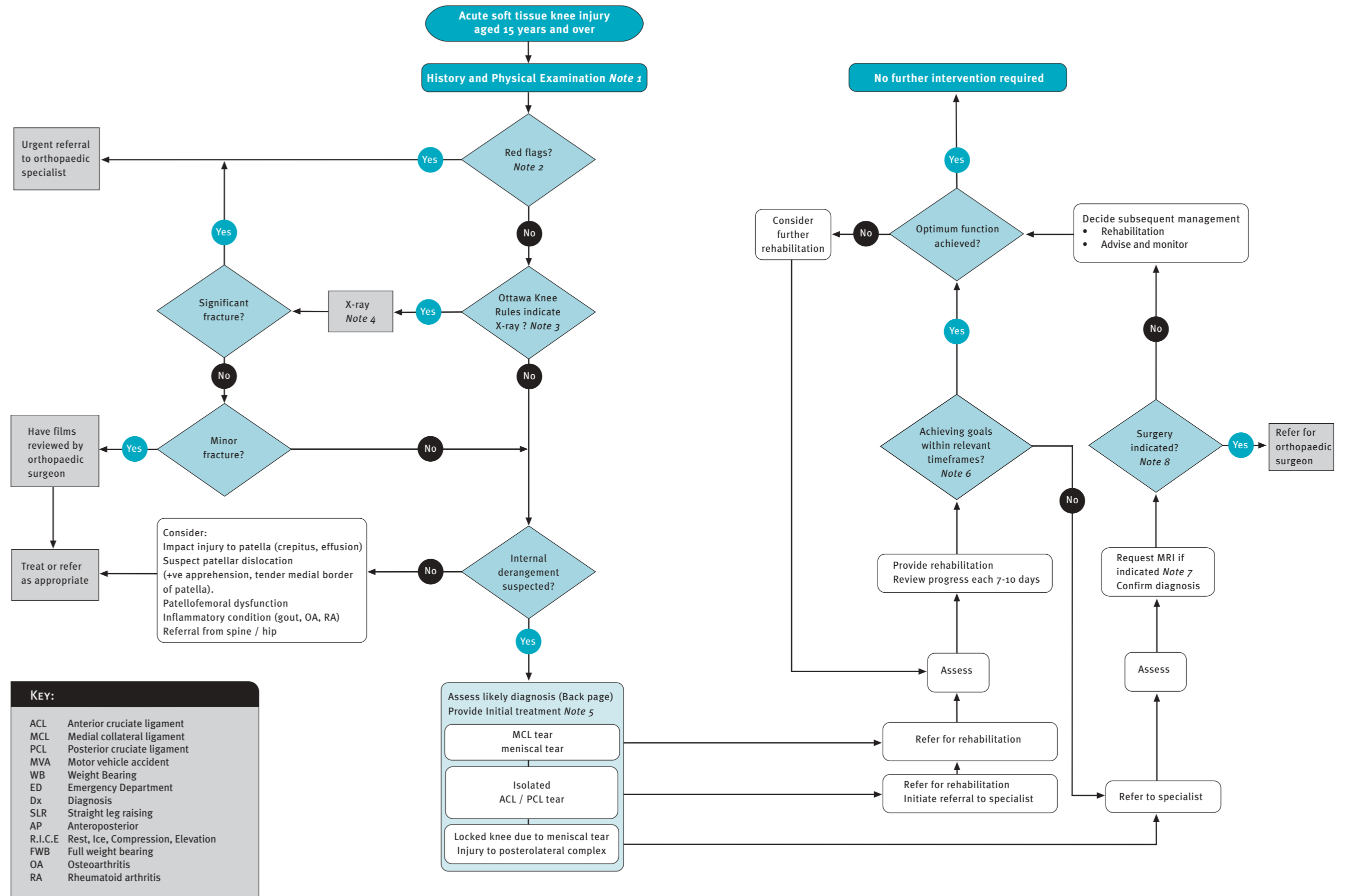
- Disabling pain, catching and locking
- Meniscal re-attachment in younger patients

Loose body / other

- History of mechanical symptoms
- Not all radio-opacities are loose bodies: repeat X-rays are useful to see if they have moved

Diagnostic Arthroscopy

- Equivocal MRI scan
- Otherwise undiagnosed but disabling symptoms



KEY:	
ACL	Anterior cruciate ligament
MCL	Medial collateral ligament
PCL	Posterior cruciate ligament
MVA	Motor vehicle accident
WB	Weight Bearing
ED	Emergency Department
Dx	Diagnosis
SLR	Straight leg raising
AP	Anteroposterior
R.I.C.E	Rest, Ice, Compression, Elevation
FWB	Full weight bearing
OA	Osteoarthritis
RA	Rheumatoid arthritis