### Monash Children’s Hospital

**Referral Guidelines**

**PAEDIATRIC ORTHOPAEDICS**

<table>
<thead>
<tr>
<th>EXCLUSIONS</th>
<th>Services not offered by Monash Children’s Hospital</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Patients over 18 years of age: Click here for adult Monash Health Orthopaedics guidelines</td>
</tr>
</tbody>
</table>

## CONDITIONS

### ANKLE AND FEET

- Flat feet
- In-toeing
- Out-toeing
- Toe walking

### HIP

- Developmental dysplasia of the hip
- Perthes disease
- Slipped under femoral epiphysis

### KNEE

- Bow legs
- Knock knees
- Osgood-Schlatter disease

### OTHER

- Infection – bone
- Infection – joint
- Limping child
- Tumour – bone and soft tissue

## PRIORITY

All referrals received are triaged by Monash Children’s Hospital clinicians to determine urgency of referral.

### EMERGENCY

For emergency cases please do any of the following:
- send the patient to the Emergency department OR
- Contact the on call registrar OR
- Phone 000 to arrange immediate transfer to ED

### URGENT

The patient has a condition that has the potential to deteriorate quickly with significant consequences for health and quality of life if not managed promptly.

### ROUTINE

The patient’s condition is unlikely to deteriorate quickly or have significant consequences for the person’s health and quality of life if the specialist assessment is delayed beyond one month.

---

**Head of unit:**
Mr Rabi Solaiman

**Program Director:**
Prof. Alan Sauder

**Last updated:**
8/12/2020
### Referral

Find up-to-date information about how to send a referral to Monash Health on the eReferrals page on our website.

### Contact Us

**Medical Practitioners**

To discuss complex & urgent referrals contact orthopaedic case manager:

(03) 8572 3832

**General Enquiries**

Phone: 8572 3004

---

**Head of Unit:**
Mr Rabi Solaiman

**Program Director:**
Prof. Alan Saunders

**Last Updated:**
8/12/2020
ANKLE AND FEET

FLAT FEET

Initial GP Work Up
Clinical History
• Most children under age three have flat feet
• Ask if the child has pain in their feet
Physical Examination
• Ask the child to stand on tip toes.
• If the arch corrects, the foot is flexible
• (requires no treatment)
• Alternatively, if an arch can be seen in a non-weight-bearing position (e.g. sitting), the foot is flexible (requires no treatment)
Investigations
• For rigid flatfoot only: weight-bearing X-ray (AP, lateral and oblique)

Management Options for GP
• Reassure parents. Most children develop an arch by age six
• The vast majority of patients with flexible flatfoot do not require orthopaedic referral
• Painless flexible flat feet require no treatment. Orthotics do not help form an arch and are not recommended

WHEN TO REFER?

Routine
• Rigid flatfoot (arch does not reform on tip toe test or in non-weight-bearing)
• Painful flatfoot
• Asymmetry
• Localised tenderness
• Difficulty in functional activities e.g. running, jumping

IN-TOEING

Initial GP Work Up
Clinical History
• Common causes:
  • Infant – Metatarsus adductus
  • Toddler – Internal tibial torsion
  • School-age child – Increased femoral anteversion (excessive range of internal rotation and small range of external rotation)
Physical Examination
• Observe child’s gait
• Place in prone and check range for internal and external rotation of the hip, thigh-foot angle and foot posture

Management Options for GP
• Reassure the parents. In-toeing in most children will improve as they grow and no treatment is required.
• In-toeing can persist into adult life but rarely does this seem to cause major problems

WHEN TO REFER?

Routine
• In-toeing exceeds normal limits for age
• Asymmetrical deformity
• Tripping in a school-age child that affects participation in activities
• Progressive in-toeing
• Associated patella pain
• Hypertonicity
TOE WALKING

Initial GP Work Up

Clinical History
• Usually idiopathic; family history of toe walking
• Although rare, need to rule out significant conditions such as spinal dysraphism, muscular dystrophy and cerebral palsy

Physical Examination
• Gait assessment
• Inspect spine
• Functional tests: check if able to stand with heels down with trunk straight and able to walk on heels
• Calf length
• Calf size
• Neurological assessment

Investigations:
If suspicious order:
• spinal X-ray
• CPK

Management Options for GP
Consider referral to paediatric physiotherapist for assessment and management

WHEN TO REFER?

Routine
• Inability to dorsiflex foot beyond neutral, stand with heels down or walk on heels
• Signs of cerebral palsy with hypertonia, hyperreflexia or ataxia
• Calf hypertrophy
• Asymmetry
• Abnormal spine examination

TOE WALKING (cont’d)

Initial GP Work Up

Clinical History
• Commonly seen in early walkers due to restricted internal rotation of the hip
• May be associated with knock knees (genu valgum) and flatfoot
• Be aware of serious causes e.g. slipped upper femoral epiphysis

Physical Examination
• Observe child’s gait
• Place in prone and check for internal and external hip range of motion, thigh-foot angle and foot posture

Management Options for GP
• Reassure the parents. The majority of out-toeing will resolve as the child grows and no treatment is required
• Exclude other causes such as slipped upper femoral epiphysis

WHEN TO REFER?

Routine
• If progressive out-toeing
• Functional difficulties
• Asymmetrical deformity
• Thigh-foot angle > 30–40 degrees
BOW LEGS (GENU VARUM)

Initial GP Work Up

Clinical history
- Physiologic bowing is the most common cause of bow legs and is seen from birth until two or three years of age
- Be aware of pathological causes e.g. rickets, Blount's disease

Physical examination
- Determine the patient’s height and weight percentiles
- Assess in-toeing
- Measure intercondylar distance in standing with feet together

Investigations
- X-ray of knees if:
  - unilateral deformity
  - progressive deformity
  - lack of spontaneous resolution
  - aged over three years old

Management Options for GP
- Reassure the parents. Physiological bow legs will resolve by age three with normal development. No specific treatment is required
- If concerned, serial measurement of intercondylar distance every six months to document progression or resolution may be useful

WHEN TO REFER?

Routine
- Persistence of bow legs after three years of age
- Intercondylar separation >6 cm
- Asymmetrical deformity
- Excessive deformity
- Progressive deformity or lack of resolution
- Pain
- After a traumatic event
- Other associated skeletal deformity such as height below 5th centile for age
**KNOCK KNEES (GENU VALGUM)**

Initial GP Work Up

**Clinical history**
- Physiological knock knees is seen from three to five years of age; it resolves with growth by age eight
- May be familial

**Physical examination**
- Determine the patient’s height and weight percentiles
- Measure intermalleolar distance in standing with knees together

**Investigations**
- X-ray of knees if:
  - unilateral deformity
  - progressive deformity
  - lack of spontaneous resolution

**Management Options for GP**
- Reassure. The majority of physiological knock knees will resolve with normal development by age eight; no specific treatment is required
- If concerned, serial measurement of intermalleolar distance every six months to document progression or resolution may be useful

**WHEN TO REFER?**

**Routine**
- Persistence of significant knock knees beyond age eight
- Intermalleolar separation > 8 cm
- Asymmetrical deformity
- Progressive deformity or lack of spontaneous resolution
- Pain
- After a traumatic event
- Other associated skeletal deformity such as height below 5th centile for age

---

**OSGOOD-SCHLATTER DISEASE**

Initial GP Work Up

**Clinical History**
- Most frequent cause of knee pain in children aged 10–15 years

**Physical Examination**
- Pain and swelling over the tibial tubercle
- Prominent and tender tibial tubercle

**Investigations:**
Plain radiographs are used to rule out serious pathology e.g. neoplasm, acute tibial apophyseal fracture and infection

**Management Options for GP**
- Reassurance. This is a self-limiting condition and symptoms will resolve with skeletal maturity (i.e. when the bones finish growing)
- Modify activities to manage the pain. Jumping or kicking activities should be avoided
- Local measure such as ice, anti-inflammatorys and quadriceps stretching are recommended

**WHEN TO REFER?**

**Routine**
- Symptoms not resolving with conservative treatment
- Symptoms persisting >18 months
PERTHES DISEASE

Initial GP Work Up

Clinical History
• Typically presents between the ages of four and 10 years
• Variable pain with activity – thigh, groin or knee pain
• Sometimes seen in hyperactive boys

Physical Examination
• Variable limp
• Hip irritability
• Loss of hip motion, especially internal rotation and abduction in flexion

Investigations:
• Plain X-ray (AP and frog leg views)

Management Options for GP
• Pain management:
  • Paracetamol
  • NSAIDS

WHEN TO REFER?

Urgent
• All patients with confirmed Perthes or possible Perthes

DEVELOPMENTAL DYSPLASIA OF THE HIP (DDH)

Initial GP Work Up

Clinical History
• Risk factors:
  • Female sex
  • Breech delivery
  • Intrauterine packaging deformities e.g. plagiocephaly, foot deformities or torticollis
  • Family history of DDH

Physical Examination
• Conduct hip examination to check for instability with Barlow’s or Ortolani’s test
• Review limitation of hip abduction
• Deep uneven gluteal crease
• Leg length discrepancy
• Waddling gait after walking age

Investigations
• Hip ultrasound if aged under six months (paediatric ultrasound service if possible)
• Plain X-ray if aged over six months (paediatric radiology service if possible)

Management Options for GP
• Reassure the parents. The majority of out-toeing will resolve as the child grows and no treatment is required
• Exclude other causes such as slipped upper femoral epiphysis

WHEN TO REFER?

Urgent
• Abnormal clinical examination
  • Positive Ortolani’s or Barlow’s test
  • Limited hip abduction
  • Leg length discrepancy
  • Abnormal ultrasound or X-ray
  • If risk factors and any clinical concerns
HIP (cont’d)

SLIPPED UPPER FEMORAL EPIPHYSIS (SUFE)

Initial GP Work Up

Clinical History
• Hip, thigh or referred knee pain in age group 10–16 years
• Pain worse with activity and stressing hip joint
• Obesity
• Family history of SUFE

Physical Examination
• Obligatory hip external rotation during hip flexion in supine
• Acute loss of hip internal rotation
• Short leg
• Externally rotated leg
• Trendelenburg gait

Investigations
• Plain X-ray (AP pelvis and frog leg lateral of both hips)
• In early slips, X-rays may be normal. If clinical suspicion is high, an MRI may be needed and this will be part of the paediatric orthopaedic work-up.

Management Options for GP
• Send to ED immediately - non-weight-bearing with crutches until arrival at hospital

Emergency
• All patients with confirmed SUFE should be sent to the ED immediately
• Contact orthopaedic registrar on call through switchboard
INFECTION – BONE E.G. OSTEOMYELITIS

Initial GP Work Up

Clinical History
- Any bone can be affected but cancellous bone is more common such as the metaphyseal region of long bones
- Child is unwell with a fever, anorexia, localised tenderness or spasm around the joint if the infection is close to the joint
- Beware of subacute osteomyelitis, where there may be few constitutional signs

Investigations
- FBE, ESR, CRP
- X-ray (change may lag 10 days behind clinical presentation)

Management Options for GP
- Send to ED immediately if unwell
- Do not give antibiotics as will negate cultures
- May be reasonable to arrange some investigations if child not clearly unwell

WHEN TO REFER?

Emergency
If clinically suspected, send referral to ED

INFECTION – JOINT E.G. SEPTIC ARTHRITIS

Initial GP Work Up

Clinical History
- Infection more common in infants and toddlers
- Hip joint more common than knee or ankle joint
- Child unwell, listless, flushed and fever
- Child cannot be coaxed to move the joint

Management Options for GP
- Send to ED immediately
- Do not give antibiotics as will negate cultures
- No need for investigations if clinically suspected

WHEN TO REFER?

Emergency
Immediate referral to ED due to high risk to joint cartilage and growth plates

BACK
INFECTION – BONE E.G. OSTEOMYELITIS

Initial GP Work Up

Clinical History

Common causes not to be missed:

All ages
- Trauma
- Infection – septic arthritis, osteomyelitis
- Tumour
- Referred pain

1 to 4 years
- Developmental dysplasia of the hip
- Irritable hip (transient synovitis)

4 to 10 years
- Perthes disease
- Irritable hip (transient synovitis)
- Juvenile idiopathic arthritis

10 to 16 years
- Slipped upper femoral epiphysis

Investigations
- Depending on clinical presentation, consider:
  - FBE, ESR, CRP
  - hip X-rays (AP and lateral)
  - hip ultrasound

Management Options for GP
N/A

TUMOUR – BONE AND SOFT TISSUE

Initial GP Work Up

Clinical History
- Standard history
- Physical examination
- Standard examination

Investigations
- X-ray
- FBE and U&E
- ESR/CRP/LFT

Do not administer needle biopsy/injection

Management Options for GP
N/A