



University of
BRISTOL

MB ChB Programme

Joint and back pain block
GP teacher guide,
Effective Consulting, Year 2

Academic Year 2018-2019



Introduction and link to course and teaching information
Clinical Contact, Primary Care in Teaching Block Two, Year 2 2018-19

Dear GP tutor,

Thank you for teaching Year 2 students in 2018-19 and welcome to this session guide for the joint (including back) pain block.

All the main information on the course is available in the year 2 18-19 GP handbook so please refer to this for information on how key dates, how the course is structured including assessment, your role, expectations of your students and teaching tips such as giving feedback. This is available here:

<https://www.bristol.ac.uk/media-library/sites/primaryhealthcare/documents/teaching/handbooks/Year%202%20Effective%20Consulting%20Primary%20Care%20Teacher%20Guide%202018-19.pdf>

This also contains information on the support that is available for students, however I am always happy to discuss any student you have concerns about.

This session guide outlines the learning outcomes for the students' time with you, key information about teaching history and examination, and a menu of options for other activities you can do with your students. Students will come to you during the *second* week of their Case Based Learning cycles. Students alternate between clinical contact in Primary Care with sessions in Secondary care for each Case Based block, so if they are with you for the joint (including back) pain block, they will be in the hospital setting for Urinary symptoms and Thirst (their next case). A table of dates with the topic for the session is on page 4.

Please bring in 2 patients with conditions relevant to the symptoms the students are learning about to help students learn how to talk with and examine patients to find out what is wrong with them, apply their understanding of anatomy and physiology, and practice making diagnoses. It is important that students can undertake a joint e.g. knee examination. Communication, history and examination skills will be assessed by an OSCE examination in May 2019.

If you have 6 students, you may find it easier to divide the group with 3 students talking to a patient and the others running through examination with their GP, then swapping over. The groups can share their learning when they come back together.

I am always happy to be contacted if you wish to discuss any aspect of the course and welcome your comments, feedback and suggestions. With all best wishes for teaching in the year ahead.

Dr Jessica Buchan

GMC Outcomes for Graduates

The GMC have updated guidance on what they expect newly qualified doctors to be able to know and do. The outcomes have been aligned to Good medical practice and are categorised as professional values and behaviours, including professional and ethical responsibilities and patient safety; professional skills including communication and interpersonal skills and diagnosis; and professional knowledge. Please be familiar with this document:

https://www.gmc-uk.org/-/media/documents/dc11326-outcomes-for-graduates-2018_pdf-75040796.pdf

The outcomes of particular relevance to teaching in Clinical Contact in Year 2 are; 2d, e, j & u. 5a, b & d. 6a. 7b & h. 10a. 11a, b, c & d. 12. 13. 14a, b, c & d. 20. 22b & c. 23a, c, d, & e. 24d & e. 25a

Structure of the Effective Consulting Day and Key Dates

The ILOs for each EC day covered in this session plan cover the whole EC day, which is delivered to varying degrees by lecture, EC lab and clinical contact. If the students are with you for the morning, they will have a lecture and practice specific consulting skills in a tutorial group with actors in the afternoon, if you have students in the afternoon, they will have already had a lecture and practised consultation skills. This means that if you have afternoon students you may notice that they are better prepared, but if you have morning students, they benefit from having their learning “primed” by meeting real patients prior to their small group tutorial in the afternoon.

Clinical contact alternates for each student in each CBL “case” between primary and secondary care. We try and align the teaching across settings much as possible.

In both primary and secondary care students should:

- Have a brief tutorial (to orientate the students to the task)
- Meet patients to practise focused gathering of information from history and consider clinical reasoning.
- Present back the patients they’ve met
- Be helped to consider the patient perspective, impact of the illness or problem on patient lives, and to consider what support and future needs patients have.
- Be starting to consider variations in presentation, differential diagnosis and what they might do next.
- Get feedback on any observed history and examination, and on their clinical reasoning and presentation skills
- Debrief in the group (usually without the patient present) to ask questions and consolidate learning.

Dates	Case Based learning symptom	Key learning goals in clinical contact	Types of patients
Thursday 28 th March 2019	Joint pain including back pain	Clinical presentation and assessment of joint pain (including back pain)	Patients with arthritis, or joint pathology or replacement, chronic back pain. Patient suitable for examination.
Thursday 9 th May 2019	Urinary symptoms and thirst	Clinical presentation and assessment of diabetes and renal pathology	Patients with diabetes, chronic renal disease, dialysis.
Thursday 23 rd May 2019	Headache	Clinical presentation and assessment of patients with headaches. Cranial nerve examination.	Patients with recurrent headaches e.g. migraines or previous significant headache e.g. Temporal arteritis, Subarachnoid haemorrhage, stroke/raised ICP. Any patient for examination or patient with abnormality of cranial nerves.
May 29 th /30 th	OSCE EXAM		
Thursday 13 th June 2019	Collapse	Assessment of patient with history of collapse. Neurological examination	Ideally patient with previous collapse (fit or faint) from any cause including seizure.

Framing teaching the medical history and examination in the “Clerking Consultation” & COGConnect

Medical students do not yet “consult” with patients as such, as they are still learning how to. Instead, on the Effective Consulting course we talk about the “*clerking consultation*” they “*clerk*” patients for training purposes in part to learn about medicine from the patient's narrative—what happened, what symptoms the patient experienced and what the outcome was. In this way student doctors build up a bank of illness scripts. We know the more exposure student doctors get to patients, the more experience they build up, so we are very grateful you help provide this experience. They also practice speaking to patients to learn *how* to talk to patients and assess problems—in other words they are learning *how* to consult. Therefore, here in Bristol we call the process the *clerking consultation*, as we want to emphasise the active hands on practice students get in consulting. You can help this process by spending some time directly observing the students speaking to patients, and by listening to them presenting summaries back to you. Where you have observed, please give feedback not only on the content of the clerking, but on the process. It's also particularly helpful to students learning if you get them to commit to what they think is going on and what they might want to do next—to start student “*thinking like a doctor*”.

In MB21 in Bristol we have taught the medical students to think about all aspects of consulting with patients, we call this systematic approach COGConnect. This describes the different stages of consulting with patients that we want students to consider whenever they meet patients. We would be grateful if you could highlight these stages in your feedback.

Preparation: It has been emphasised to students that any clinical encounter begins with preparation. A doctor will prepare to see their next patient by reading the notes, a referral letter, perhaps looking at the medication screen. Doctors also prepare themselves to see the next patient perhaps they have just had a difficult consultation or need to finish a task before calling in the next person.

You can help students think about this stage when they prepare to see the patient you are bringing in.

Example questions to discuss with students to consider preparation:

As a GP, when you find out the next person on the telephone or waiting to see you has got knee pain...how do you prepare? What do you need to do or know before you phone the patient or call them in? What information is particularly useful and why?

Preparing the students for meeting the patients today: Discuss any brief information you want the students to know before they see the patient. Briefly recap assessment of joint pathology, what information will they want to find out from the patient? Do they have any questions?

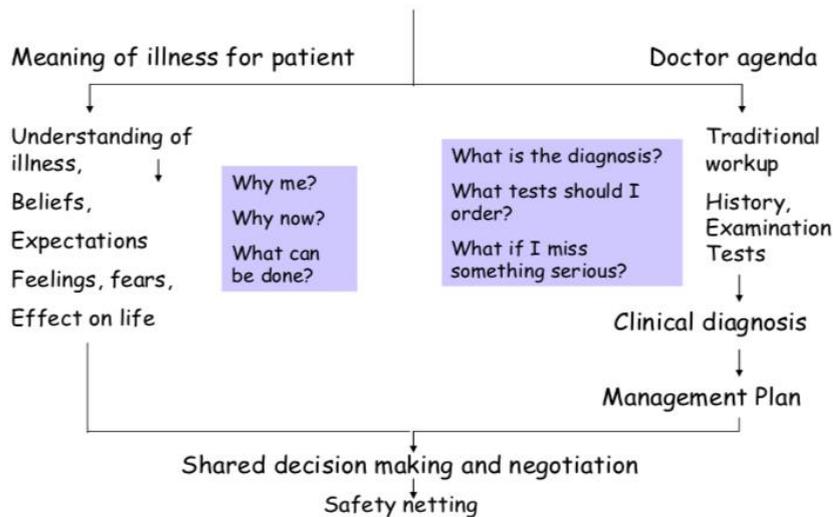
Preparing the patient: Please prime the patient as to where to start their story and what to focus on. For example, if the patients have multiple problems you may need to tell the patient that the students are particularly interested in their joint problems. You may also want to say how much information to give, for example "Please don't tell them straight away that you were diagnosed with Rheumatoid Arthritis, just start by saying what symptoms you had and how you felt. They will ask you some questions and try and work out what might have happened to you."

Opening: All the students should be familiar with introducing themselves to the patient, checking the patients details and asking permission to talk to/examine the patient. Remind them to do so if they do not do this automatically. They should make sure the patient is comfortable, knows what is going to happen e.g. how long it should take, and start with open questions and attentive listening.

Gathering: We teach students to "*gather information*" around a presenting problem. The medical history is an essential, structured *part* of gathering information that students need to learn and learn how to adapt for different situations. We emphasise that the medical history is one part of broader assessment of patients' problems including information from the notes, observation of the patient's presentation and non-verbal communication, examination findings, and results from investigations, and where appropriate, from third parties. We also want to emphasise that gathering is partly about *how* to find out information (the *process* which includes listening skills and how to phrase questions) as well *what* they find out (the *content*—which is forms the medical history).

Patients often come with a problem or problem list (which is not necessarily a symptom) and we want students to be able to form a holistic assessment of the situation. The GMC's outcomes for graduates does require that newly qualified doctors can "elicit and accurately record a patient's medical history, including family and social history (Outcome 11a)" but of note is that graduates should be able to "work collaboratively with patients, their relatives, carers or other advocates to make clinical judgements and decisions *based on a holistic assessment of the patient and their needs, priorities and concerns, and appreciating the importance of the links between pathophysiological, psychological, spiritual, religious, social and cultural factors for each individual (Outcome 14)*"

Bringing together the patient and doctor agenda



When students learn to gather a comprehensive assessment of the patient through systematic history and examination, they need to continue to consider the patients understanding, beliefs, fears, expectation and impact of the problem on their lives. Sometimes as they learn a “list” of questions to ask they can start to be so focused on remembering *what* to ask, they forget to respond to patient cues, for example a patient might respond to a question about smoking with the information that their Dad died from smoking related disease and the student ignores that to move on to asking about alcohol intake. Remind them to acknowledge what they are hearing and seeing. This is where you can help by spending some of the time observing the students talking to patients and giving feedback and helping the other students observe and give effective feedback to their peers.

Key consultation skills to practice

- Attentive listening, picking up cues
- Open and closed questions
 - Open questions tend to begin with ‘What, where, when and how?’
 - Closed questions tend to start with ‘Have you, did you, could you?…’
 - Questions starting with ‘Why’ are difficult for patients, better to say; ‘What made you think that?’ rather than ‘Why did you think that?’
- Jargon free language
- ICEIE – ideas, concerns, expectations, impact of the problem, and emotions. It is very important to understand where the patient is coming from, what they are worried about, what they need, and how the problem is affecting them.
- Clarification - what did the patient mean by saying ‘couldn’t breathe’?
- Summarising – This helps you to review the information you have already gathered, and the patient can tell you whether you understood correctly and what information is still missing.
- Acknowledgement: *‘I am sorry to hear that’, ‘That must have been difficult for you’*

Formulating: What do I think so far, and what next?

Students may find it helpful to keep these questions in mind while talking to patients, and systematically consider them when they feel they have come to the end of the information gathering stage. You can ask your students:

- Can you summarise what you have been told so far?
- Does it tell a story from beginning to end?
- Is the story unique to the individual and their situation?
- Can you tell what the probable diagnosis is (main problem)?
- And what is less likely (differential diagnosis)?
- What you must not miss, red flags? --In mood disorders this is a risk assessment of the possibility of harm to themselves or others
- Do you know what the patient thinks is wrong? And what they worry about?

Explaining

Are there any elements that the students could practise explaining to a patient or each other e.g. common side effects of SSRIs?

Activating

The students have been introduced to activating patients. By activation we mean empowering and motivating people to manage their own health. Different people need different interventions to feel more able to manage their health & wellbeing. You can read more here:

<https://www.kingsfund.org.uk/publications/supporting-people-manage-their-health>

When students meet patients with you, you can help them think about this by discussing areas of the patient's lifestyle or how they manage their condition that are ripe for intervention e.g. reducing alcohol intake.

Planning

Try asking the students "If you had met this patient when they had first presented with this symptom (e.g. a swollen knee) what would you do next?" Help them consider a wide range of options e.g. self-help advice and monitoring, medication, referral...

Doing

Some consultations have a procedure as part of them. In Primary care this might be a minor surgical procedure, or doing a joint injection, also taking a smear, doing an ECG, giving a flu jab. Over their training students will learn an increasing number of practical procedures.

Closing

Closing a clinical encounter needs specific skills. Students should be encouraged to help the patient summarise, ask any further questions, and make sure the patient is clear on what will happen next including follow up, getting results, hearing about a referral. They can practise safety netting for example in a patient with stable angina.

Integrating

This is the stage after the patient has left the room. Both doctors and patients "integrate". For the doctor this is where they write up the notes, make a call to a colleague or write a referral letter, or look something up. Students can be helped to assess their learning needs at the end of the session.

Joint (including back) pain session guide for Thursday 28th March 2019
Primary Care Clinical Contact, Year Two 2018-19

Intended Learning Outcomes:

- Discuss, in basic terms, how to assess a patient presenting with joint pain or swelling, and someone with back pain including the impact on function
- Describe common red flag symptoms in back pain
- Compare and contrast common causes of joint pain and swelling, and back pain
- Discuss the physical, psychological and social factors in musculoskeletal conditions that can affect a patient's mobility and function, and how these interact.
- Describe the basic steps in the routine examination of a joint
- Be aware of the basic components of the GALS screen
- Discuss how to form a shared understanding of a problem with a patient

Resources:

Hippocrates, the Bristol Medical School website, has a section on musculoskeletal medicine, it is aimed at students in later years on their Musculoskeletal Diseases, Emergency Medicine and Ophthalmology (MDEMO) course but there is useful e-learning material about the hip and knee anatomy, the GALS screen, back pain and the acute swollen joint under optional learning material; <http://www.bristol.ac.uk/medical-school/hippocrates/mdemo/optional/> accessed 15.12.18.

Suitable patients for the joint (including back) pain block:

- Patients with inflammatory or degenerative arthritis
- Patients with chronic or recurrent back pain
- Patients who have had a joint replacement
- Any patient who is happy to have their joints examined!

Joint (and back pain) session activities:

Introductory tutorial (30 minutes)

1. Assess learning needs; discuss the students' learning during their joint and back pain CBL case and what they feel confident in and what they want to practise.
2. Prepare for the session; discuss how joint problems present in practice, and how to assess.
3. Recap an overview of a history in joint and back pain, what is important to find out? Remind them of the medical history with focus on what is important information to gather e.g. red flags in back pain, and impact on function.
4. Brief students on the first patient.

Patient one (30 minutes)

5. Patient One Arrives. Brief information on the patient you are going to see together. Allocate one student to practice gathering information (you might want to allocate one student to take over 1/2 way so that 2 students get a turn). The other students should be given observation tasks. One could look at content of the history (anything missed?), one could look at body language and non-verbal communication, and one could look at process e.g. active listening, building rapport with the patient. When the student/s have finished talking to the patient help them summarise what they have heard—can they tell the patients story?

BREAK—offer students a snack and drink and toilet break. (10 minutes)

Patient two (30 minutes)

6. Patient Two Arrives. Briefly gather information from the history but then demonstrate the approach to a joint examination. Let the students take turns to examine the patient's joint. You might like to focus on a knee but then run through how a similar process applies to the shoulder.
7. Debrief, questions and identify further learning needs and resources.

Optional extras:

- Discuss how to assess function and what helps patients manage at home or work when they have joint conditions or back pain
- Discuss how different patients cope differently with musculoskeletal conditions that limit their function or mobility. Discuss “yellow” flags in back pain.
- Look at the GALS screen in the arthritis.uk medical student handbook with them. How useful is this in clinical practice?

Tutorial notes (available to students via OneNote) Please note these are designed to be quick reference notes so are brief and **do not** replace core textbooks.

Gathering information about joint pain

With joint pain it is important to think about the pattern of joints involved. One joint may be injury, gout (typically the base of the big toe), infection, bone tumour, or polyarthritis that initially presents in one joint. Large weight bearing joints of the lower limb and facet joints of the spine are often OA, OA of the hand tends to affect the DIP & PIP joints but spares the MCP joints, RA spares the DIP joints. Reactive arthritis tends to cause asymmetrical joint involvement, but inflammatory arthritis such as RA is symmetrical.

- Find out the speed of onset and if getting better or worse?
- Is this a first episode or has it occurred before?
- Are there any symptoms of infection such as fever or rigors? Or systemic illness - eg, rash, myalgia, headache and visual disturbance.
- Ask about extra-articular manifestations of rheumatological disease e.g., dry eyes, conjunctivitis, scleritis or uveitis, urethritis, diarrhoea, nodules, dyspnoea, rash on the shins (erythema nodosum).
- Is there any history of psoriasis, other arthropathy, inflammatory bowel disease, and sexually transmitted infections?
- Has there been any recent trauma?
- Establish whether symptoms are getting better or worse.

- Establish whether there has been any previous joint/prosthesis surgery.

Remember SOCRATES to remember what to ask about for pain...

SITE: Try and work out which structure is causing pain e.g. the joint, muscles or ligaments?

ONSET: Injury usually causes immediate pain +/- swelling (if swelling is within 30 mins think haemarthrosis), arthritis is often more insidious; gout and sepsis can come on over 12-24 hours.

CHARACTER: Bone pain is often deep/boring pain and worse at night

RADIATION: Pressure on a nerve radiates to the distribution of the nerve

ASSOCIATED SYMPTOMS: Swelling and redness indicate inflammation

TIMING: (Frequency, duration, periodicity)

EXACERBATING/RELIEVING FACTORS: Osteoarthritis is exacerbated by movement, inflammatory arthritis is worse with rest

SEVERITY: Gout and septic arthritis are often very painful

With joint pains (especially arthritis) you should find out about the impact on function.

- It can be useful to ask the patient to describe a typical day from getting out of bed in the morning to preparing a meal.
- It is also helpful to find out what someone would like to be able to do that they currently find difficult or can't do? The patients' needs and goals influence their ability to adapt to their condition or situation.

Consider symptoms in the context of function, activity and participation. The GALS screen (see [Arthritis U.K. medical student handbook](#)) recommends the following questions to screen for musculoskeletal conditions:

- *"Do you have any pain or stiffness in your muscles, joints or back?"*
- *"Can you dress yourself completely without any difficulty?"*
- *"Can you walk up and down stairs without any difficulty?"*

Some causes of joint pain and inflammation:

Trauma	An injury can damage bone, cartilage, ligaments or the muscles causing joint swelling. It is acute with a history of injury.
Bursitis	Soft tissue swelling can look like an inflamed joint and may be caused by skin infection (cellulitis) or Bursitis. A bursa is a small sac with a thin synovial lining that is filled with fluid, they are found around joints to reduce friction. Bursitis is inflammation within a bursa. The inflammation leads to an increase in synovial fluid production and causes the bursa to swell.
Infection	Joint infection is rare but making the diagnosis is extremely important as left untreated it can rapidly destroy a joint. Clues to the presence of joint infection are the severity of inflammations, systemic symptoms such as night sweats and pyrexia, and a raised white blood cell count.
Inflammatory arthritis e.g Rheumatoid arthritis	The synovium becomes inflamed (synovitis) causing cartilage loss (resulting in joint space narrowing) Synovial cells themselves become overgrown and invasive, and eat into the corners of the bones, forming 'erosions' which can be seen on x-ray The joint and the joint capsule will become deformed by these changes.

	RA occurs more frequently in women than men, and most commonly starts in the 30-50-year age range, although it can begin at any age
Degenerative arthritis e.g. osteoarthritis	In osteoarthritis the cartilage dies in patches resulting in narrowed joint space and the bone under the cartilage becoming thickened and sclerotic. The joint capsule also becomes thickened and there can be increased synovial fluid, so the joint looks enlarged. Commoner in women than men and over the age of 50.
Inflammation and new bone formation e.g. Ankylosing Spondylitis (AS)	There is inflammation and new bone formation at entheses (connective tissue between tendon or ligament and bone), commonest in the spine but can happen at any entheses causing pain and stiffness with reduced mobility. AS is much more common in men than women, and usually starts between the ages of 15 and 30 years
Crystals in synovial fluid (Gout)	If urate levels rise too high or the systems that keep them under control fail they crystallise in the synovial fluid. Leucocytes migrate into the fluid and cause acute inflammation. Commoner in men, though rates equalise as women get older.
Reactive arthritis	Reactive arthritis usually develops 2-4 weeks after a genitourinary or gastrointestinal infection (although not all patients have a preceding symptomatic infection). The onset is most often acute, with malaise, fatigue, and fever. Reiter's syndrome is urethritis, conjunctivitis, and arthritis
Tumour	Primary e.g. sarcoma. Secondary; metastatic—breast, lung, prostate

Back pain

Non-specific low back pain (LBP) is tension, soreness and/or stiffness in the lower back region for which it isn't possible to identify a specific cause of the pain. Several structures in the back, including the joints, discs and connective tissues, may contribute to the pain. Non-specific LBP accounts for 90% of cases of low back pain seen in primary care.

- 60-70% of population have had back pain by age 70
- Most commonly affects ages 35-55
- Largest single cause of time off work (52 million days/year)
- 4-8 % of the population consult their GP with back pain/year with approximately 80-160 consultations for back pain/GP/year
- Most episodes resolve within 6 weeks
- Up to 7% develop chronic pain

Diagnostic triage

It is important to differentiate between

1. Non-specific low back pain
2. Nerve root pain/sciatica – low back and buttock pain radiating down one leg +/- pins and needles or tingling. (Usually due to a disc problem)
3. Possible serious spinal pathology

History and examination

Assess for red flags and specific causes, to guide management and referral

- Duration, nature and severity of pain
- Associated symptoms (numbness, weakness, bowel or bladder disturbances)
- Past illnesses (malignancy), trauma, occupational history and red flags

- Exclude pain from elsewhere (GI, GU, Aneurysm)
- Exclusion of “red flags”

Examination

- Palpate for tenderness
- Flexion, extension, lateral extension and rotation whilst standing
- Straight leg raise (SLR) is the single best prognostic factor (poor SLR means probable disc prolapse and poorer prognosis)
- Lower limb neurological examination (power, numbness, reflexes, saddle numbness?)
- Palpate abdomen (Peptic Ulcer? Aneurysm?)
- Red flag signs

Red Flags – consider urgent referral, <1% cases

- Presentation under age 20 or onset over age 50
- Non-mechanical pain including night pain
- Thoracic pain
- PMH – Cancer, steroids, HIV, immune suppression, TB
- Unwell, weight loss, night sweats, fever
- Trauma
- Structural deformity
- Severe progressive neurological signs
- Symptoms of cauda equine (e.g.: urinary/bladder symptoms, saddle anaesthesia/paraesthesia, reduced anal sphincter tone)

For comprehensive list see <https://cks.nice.org.uk/back-pain-low-without-radiculopathy>

Yellow flags – predict poor outcomes

- A belief that back pain is harmful or potentially severely disabling
- Fear-avoidance behaviour and reduced activity levels
- Tendency to low mood and social withdrawal
- Expectation of passive treatment(s) rather than a belief that active participation will help

Examining Joints

When someone presents with a joint problem and especially when you examine the joint it is important to think about the structures involved. We are not going to go through all the joints here but to give you an idea, let's think about the knee joint:

The knee is the largest synovial hinge joint in the body. As it is weight bearing joint & involved in so many activities of daily living, if it is damaged or painful it can have a major impact on quality of life. Can you name the muscles and bones that make up the knee joint?

- The femur, patella and tibia are the bones that make up the articular surface of the knee (the fibula is for muscle attachment and is not weight bearing). The underside of the patella and the tibial and femoral condyles are covered with cartilage that reduces friction and acts a shock absorber.

- The menisci disperse the weight of the knee and reduce friction during movement. They are crescent shaped between the femoral and tibial condyles.
- The joint is stabilised by the collateral, cruciate and patella ligaments. The anterior cruciate ligament (ACL) runs from lateral to medial, anterior to posterior and prevents the femur moving backwards on the tibia (posterior displacement). The posterior cruciate ligament (PCL) runs from medial to lateral, posterior to anterior and prevents the femur moving forwards on the tibia (anterior displacement). The medial collateral and lateral collateral run down the sides of the knee joint and resist forces that would push the knee medially or laterally.



Joint examination

This table is to remind you about the terminology of joint position

Flexion	Bend the joint, decrease the angle between the bones of the limb at that joint
Extension	Straight the joint
Abduction	Move a limb away from the midline of the body
Adduction	Move a limb towards the midline of the body
Internal rotation	Turn a limb along its axis, towards the midline
External rotation	Turn a limb along its axis, away from the midline
Pronation	Turn the (hand foot or forearm) along its axis towards the midline
Supination	Turn the (hand foot or forearm) along its axis away from the midline (A way to remember this is turning the hand to carry a bowl of soup in the upturned palm)
Palmar/plantar flexion	Bending the fingers or toes towards the plantar surface (palm or sole)
Dorsiflexion	Bending the toes away from the plantar surface (palm or sole)
Inversion	Tilting the foot towards the midline
Eversion	Tilting the foot away from the midline

<p>Setting up for examination</p>	<p>WIPPE Wash hands Introduce yourself and identify patient Permission – explain procedure and gain consent Exposure –adequately expose area to examine and Ensure patient is comfortable (is there any pain or soreness anywhere?)</p>
<p>Knee examination: Gait</p>	<p>Get the patient to stand up Inspect gait—is there a normal heel strike/toe off? Is each step normal height and not broad based? Is the gait of normal speed and symmetrical?</p>
<p>Look</p>	<p><i>Anterior:</i></p> <ul style="list-style-type: none"> • Symmetry/alignment • Valgus or varus deformity • Muscle wasting/ scars • Obvious swelling may be effusions / inflammatory arthropathy /septic arthritis <p><i>Side:</i></p> <ul style="list-style-type: none"> • Deformity • Erythema <p><i>Posterior:</i></p> <ul style="list-style-type: none"> • Popliteal swellings – Baker’s cyst / Popliteal aneurysm
<p>Feel</p>	<p>Sit patient with legs out in front of them. Feel for any heat with back of your hands lightly over both knees and compare them.</p> <p>Ask patient to flex knee to 90°. With fingers in popliteal fossa use thumb to progressively feel:</p> <ul style="list-style-type: none"> • The quadriceps tendon • Along the borders of the patella • The patella tendon • The tibial tuberosity • The head of the fibula and the joint lines.
<p>Assess for joint effusion</p>	<p>Patellar tap (<i>for large joint effusions</i>)</p> <ol style="list-style-type: none"> 1. Empty the suprapatellar pouch by sliding your left hand down the thigh to the patella. 2. Keep your left hand in position and use your right hand to press downwards on the patella with your fingertips. 3. If there is fluid present, you will feel a tap of the patella against the femur. <p>Sweep test (to detect smaller effusions)</p> <ol style="list-style-type: none"> 1. Swipe fluid from the medial part of the knee into the suprapatellar pouch. 2. Hold the fluid in the suprapatellar pouch with one hand on the medial side.

	<ol style="list-style-type: none"> 3. Swipe down from the suprapatellar pouch on the lateral side with the other hand. 4. The appearance of a bulge or ripple on the medial side of the joint suggests the presence of an effusion
Move	<p>Active This involves the patient performing the movement. Ensure you observe for restricted range of movement and signs of discomfort. Knee flexion – normal ROM 0-140°– <i>“Move your heel as close to your bottom as you can manage”</i> Knee extension – <i>“Straighten your leg out as best as you are able to.”</i></p>
Move	<p>Passive <i>This involves the patient relaxing and allowing you to move the joint freely. It’s important to feel for crepitus as you move the joint and observe any restriction of movement.</i> Knee flexion and extension Hyperextension – elevate both legs by the heels – <i>note any hyperextension (<10° is normal)</i></p>
Special tests	
Anterior & posterior draw test (feeling for any damage of the ACL or PCL)	<p>Flex the patient’s knee to 90° The healthy ACL and PCL should not allow much movement</p> <ol style="list-style-type: none"> 1. Wrap your hands around the proximal tibia with your fingers around the back of the knee 2. Rest your forearm down the patient’s lower leg to fix its position 3. Position your thumbs over the tibial tuberosity 4. Ask the patient to keep their legs as relaxed as possible (<i>tense hamstrings can mask pathology</i>). 5. Pull the tibia anteriorly and feel for any anterior movement of the tibia on the femur – <i>significant movement may suggest anterior cruciate laxity/rupture</i> 6. Push the tibia posteriorly – <i>significant movement may suggest posterior cruciate laxity/rupture</i>
Assess medial and lateral collateral ligaments	<p><u>Lateral collateral ligament (LCL)</u></p> <ol style="list-style-type: none"> 1. Extend the patient’s leg. 2. Put the patient’s ankle between your inner upper arm and side. 3. Place one hand along the medial aspect of the knee & your other hand on the calf. 4. Push hands steadily in opposing directions to stress the joint laterally, there should be little movement <p><u>Medial collateral ligament (MCL)</u></p>

	<ol style="list-style-type: none"> 1. Repeat but move the hands so that one hand is on the lateral aspect of the knee, and your other hand is on the calf 2. Push hands steadily in opposing directions to stress the joint medially, there should be little movement
Closing	Cover patient/help them dress or get off couch if required, thank patient. Explain any findings to patient. Wash hands.
Complete Examination	Always say you would examine the contralateral knee and offer to examine the hip and ankle joints.

Case-Based Learning Cases in Joint (including back) Pain

A 24-year-old man presented to his G.P. with acute lower back pain. It had started earlier in the day when he had bent over to lift some heavy boxes. He described the pain as aching, worse on movement and eased by rest. He denied any radiation of the pain into his legs, urinary dysfunction or faecal incontinence.

On examination he appeared systemically well with normal vital signs. Examination of his lumbar spine showed a normal lumbar lordosis and no tenderness of the vertebral column. There was mild tenderness of his paraspinal muscles. He could flex, extend and lateral flex his lumbar spine with increased pain on flexion. The sciatic and femoral nerve stretch tests did not elicit any radicular pain. Neurological examination of his lower limbs revealed normal tone, power, reflexes and sensation. Anal sphincter tone and perianal sensation were intact.

A diagnosis was made of non-specific/mechanical back pain. He was advised to use ibuprofen and paracetamol for analgesia, to stay as active as possible (avoiding bedrest and heavy lifting) and referred for physiotherapy. He was concerned about loss of earnings due to being self-employed and the potential for developing long term (chronic) back pain. His symptoms resolved over the following month and he returned to work as a bricklayer.

Four years later he developed a further episode of lower back pain on lifting so he self-medicated with ibuprofen and paracetamol. Two days later he awoke with sharp shooting pains radiating to his buttocks and weakness of the left leg such that he was unable to walk without assistance. After opening his bowels (defaecation) he could hardly feel the sensation of the tissue paper when he wiped his bottom. He was concerned that he might be having a stroke, so he called 999 ambulance and presented to the emergency department (ED). On further questioning he reported some hesitancy when starting to void his bladder.

On examination of his left lower limb power was decreased to 3 out of 5 (MRC scale) in flexion of the hip, extension of the knee, dorsiflexion of the foot and extension of the great toe. Tests of the deep tendon (stretch) reflexes showed absent left knee-jerk and ankle-jerk responses even when the patient performed a reinforcement (Jendrassik) manoeuvre. There was reduced sensation off the scrotum, perianal area and left foot. His anal sphincter tone was reduced. He was sent for an emergency MRI of his lumbosacral spine one hour after arriving in the ED.

A radiologist reviewed the MRI images and reported herniated disc material along the left lateral aspect of the vertebral canal extending from the body of L3 to the body of L4 resulting in stenosis of the central canal and compression of the cauda equina.

A neurosurgeon gained informed consent and performed a L3 laminectomy on the same day. She removed the herniated disc material to relieve the compression. One week later he was transferred to a rehabilitation unit.

One year after surgery the patient was able to walk but not able to run. He had regained sensation in the left foot and perianal region. He had an active sex life and had normal bowel and bladder continence.

It's important to put this case in context. Acute lower back pain is one of the commonest causes for patients to consult their GP. Non-specific/mechanical back pain usually resolves in 6 -12 weeks.

However, it is important to take a careful history as the pain may arise due to pathology in the abdomen, metastases from carcinoma (breast, lung, prostate or kidney), infection (discitis, osteomyelitis, TB) and a wide range of other conditions. It is estimated that there are approximately 100 cases of cauda equina syndrome per year in England therefore most GPs will never see a case during their working life. Missing (or delaying) the diagnosis is likely to cause significant disability for the patient including bowel, bladder and sexual dysfunction and litigation against the National Health service.

Questions for facilitators

What are the components and functions of the lumbar spine?

What is lordosis?

What causes spasm of the paraspinal muscles?

What are the functions of the femoral and sciatic nerves?

What is a sciatic nerve stretch? What does a positive result imply?

What is a femoral nerve stretch? What does a positive result imply?

How do you test tone, power, reflexes and sensation of the lower limbs as part of the neurological examination?

What is meant by radicular pain?

How are urinary (bladder) and faecal (bowel) continence maintained? Which parts of the nervous system are involved?

What is the evidence base for the advice given to the patient regarding the management of mechanical back pain?

What are the socioeconomic implications of back pain?

Which dermatome(s) innervates the perianal region?

What is meant by hesitancy? What does it imply?

What is the MRC scale?

How do you test anal sphincter tone?

What are the components of a deep tendon stretch reflex?

What is the Jendrassik manoeuvre? How is it utilised?

Which dermatomes innervate the (i) scrotum and (ii) foot?

Which myotomes are involved in (i) flexion of the hip, (ii) extension of the knee, (iii) dorsiflexion of the foot and (iv) extension of the great toe?

Does the pattern suggest an upper or lower motor neuron lesion?

Where is the lesion most likely to be located?

Why is there such urgency to confirm the diagnosis and arrange definitive treatment?

Questions for facilitator session 3

What are the components of a vertebral disc?

What are the contents of the vertebral canal?

What is the cauda equina?

What is a laminectomy?

Lectures and practicals:

- The synovial joint
- Rational imaging of the painful knee
- Back pain
- Rational imaging of lower back pain
- Fragile bones and crush fractures in older people

- The painful joint
- Joint pain with systemic illness
- Pain pathways and analgesia
- Guest lecture: Preserving bone mass in ageing people

Applied anatomy and joint imaging practical

Cross-disciplinary clinical reasoning session; Approaches to joint pain