Infectious arthritis
Infectious arthritis can be caused by bacteria, fungi or viruses and should be considered in any patient with one or more inflamed joint.

Infection can arise from hematogenous seeding (most cases), direct inoculation (surgery or steroid injection) or contiguous spread from neighbouring osteomyelitis or cellulitis.
Diagnosis

Infection should be considered in the differential of any acutely or chronically inflamed joint. Joint infection should be suspected based on clinical hx, presence of risk factors and initial lab studies.
Clinical hx

The hallmarks of joint infection are warmth, erythema, pain and swelling. The typical bacterial infectious arthritis develops over days while onset is more indolent in fungal or mycobacterial infections.

Mostly limited to one single joint with the knee being the most common site but the hip, wrist and ankle are also commonly affected.
In approximately 20% of cases of fungal and bacterial infectious, the involvement is polyarticular. Fever and rigors may occur but aren’t universally present.
Risk factors

General:
Age > 80 or very young children.
Alcoholism, DM, immunosuppression
Malignancy
End stage kidney disease
Hx of intrarticular steroid injection or injection drug use
Prosthetic joint or recent joint surgery
Cutaneous ulcers or skin infection
Sickle cell disease
Initial lab assessment

In infectious arthritis, leukocyte count, CRP & ESR are elevated. However, they can’t confirm the DX or exclude another inflammatory causes.
Synovial fluid aspiration will confirm the dx. It is assessed for leukocyte count, gram stain, culture and crystal analysis. It should be performed before initiating antibiotics whenever possible to maximize the likelihood of positive cultures.

Synovial Leukocyte count is markedly elevated (>50000/microL) in bacterial infection.

Radiographs are nonspecific in early disease but if left untreated may reveal swelling or destruction.

Cultures of genitourinary tract should be obtained in suspected gonococcal infection.

Dx of lyme disease or viral infections relies on serologic testing.
Causes

G(+) are the most common causes of infectious arthritis in adults. S.aureus is the most common regardless the age or risk factors.

G(-):
1) Non-gonococcal: include E.coli, salmonella, pseudomonas, Haemophilus influenza and others. More common in patients who are immunocompromised, elderly, hx of injection drug use, recent trauma, or GI infection.
2) Disseminated gonococcal infection. High risk in young sexual adults.
Dissemination occurs in 3% of N.Gonorrhea infections and causes two distinct clinical presentations.

1) Vesiculopustular or hemorrhagic macular skin lesions, fevers, chills and migratory polyarthalgia. Knees, elbows and distal joints are typical sites of involvement. Tenosynovitis of dorsa of hands and feet may be present and is characteristic.
2) Purulent arthritis without skin rash and other features of bacterimia. One or two joint are typically involved, most commonly the knee followed by the wrist ankle or elbow.
Lyme arthritis:
Lyme disease, also known as Lyme borreliosis, is an infectious disease caused by a bacterium named *Borrelia* spread by ticks. If untreated, symptoms may include loss of the ability to move one or both sides of the face, joint pains, severe headaches with neck stiffness, or heart palpitations, among others.
Late Lyme arthritis causes large effusions, most often involves the knee with prominent stiffness. Asymmetric oligoarticular presentations may also occur.
Dx made by serologic testing.
Fungal infections are a rare cause of infectious arthritis but are important to consider in immunocompromised patients. Common agents like coccidiosis, sporothrix, cryptococcus, blastomyces and candida.
Viral infections:
HBV & HCV infections frequently cause musculoskeletal infections.
Acute HBV infection cause symmetric polyarthritis (especially hands and knees) often accompanied by rash, lasts days to weeks and then resolves.
In chronic HBV, the arthritis may persist due to immune complex deposition.
Chronic HCV can also cause poly or oligo-articular arthritis.
Parvovirus b19:
DNA virus that targets erythrocyte precursors, adults get the disease from children so school workers and parents are at risk. Infection may be asymptomatic or produce flu-like illness. It may cause slapped-cheek rash or arthritis. The arthritis begins acutely with symmetric swelling and stiffness of small joints of hands and feet, as well as wrist and kness, mimicking RA. The presence of anti-igM antibodies provides evidence of active disease.
Prosthetic joint infections

A serious complication of joint replacement, infection rates are highest in knee replacement. Coagulase(-) staphylococci like S.epidermidis are common organisms. Risk factors include superficial surgical site infection, malignancy, inflammatory arthritis, chronic illness, obesity, immunosuppression and revision arthroplasty. Occurs most within first two years after surgery and can be early(<3 months), delayed(3-12 months) or late(>12 months). Early and delayed types arise during prosthesis implantation while late-onset type from hematogenous seeding of joint. Prosthetic infections are promoted by biofilm formation on artificial joint surface.
Management

1) Pharmacologic therapy:
The cornerstone of tx and required for bacterial and fungal infections only while viral is supportive.
Synovial fluid culture should be done before therapy and it guides the tx. However if the patient is unstable or culture data are unavailable, empiric therapy should be initiated.
Commonly, 2 weeks of IV therapy followed by 2 weeks of oral therapy is required for bacterial infections.
MRSA : vancomycin or linezolid
MSSA : oxacillin

Enteric g(-) bacilli : 3rd generation cephalosporin like ceftriaxone
Psudeomonas : ceftazidime

Neisseria gonorrhea : IV ceftriaxone for 7-14 days (stepping down to oral therapy not recommended for resistance).
2) Drainage.

Drainage of purulent fluid from a bacterially infected native joint is a critical component of successful tx. This can be done by serial daily arthrocentesis or surgical drainage.