Sjogren Syndrome	
Path	Inflammatory autoimmune disorder of exocrine glands (salivary/lacrimal glands)
Exocrine Features	• Keratoconjunctivis sicca → dry mouth, salivary hypertrophy, Xerosis of skin • Xerophthalmia (dry eyes, conjunctivitis, sensation of sand in eyes) • Xerostomia (dry mouth, dysphagia, enlarged parotid glands, dental caries)
Extraglandular Features	Arthritis/arthralgias, Raynaud phenomenon, Cutaneous vasculitis, ILD
Lab tests	• Anti-SSA (Anti-Ro) Abs and Anti-SSB (Anti-La) Abs • Schirmer Test – objective signs of decreased lacrimation • Salivary gland biopsy w/ focal lymphocytic sialoadenitis
Treatment	
Dry eyes	Artificial tears, cyclosporine drops
Dry mouth	Muscarinic agonists – pilocarpine, cevimeline
Arthritis	Hydroxychloroquine or methotrexate

Polymyalgia Rheumatic (PMR)	

Clinical	• Age >50, bilateral pain + morning stiffness > 1 mo
	• 2 of the following:
	  ▪ neck/torso
	  ▪ shoulder/proximal arms
	  ▪ prox thigh/hip
	  ▪ constitutional sxs (fever, malaise, wt loss)
	• PE: decreased active ROM in the shoulders, neck, and hips

Assoc	Giant Cell Arteritis (temporal arteritis) - HA, jaw claudication, vision loss, tender over temporal artery
Diagnosis	ESR > 40 mm/h (sometimes >100 mm/h), CRP, normocytic anemia possible
Treatment	Glucocorticoids (Prednisone 10-20 mg daily) → 2-4 wks →gradual taper

Approach to Joint Disease	
Inflammatory vs. Non-inflammatory	**Inflammatory** - swollen, erythematous, tender joint, worse w/ prolonged inactivity ("jelling"), morning stiffness, improves w/ NSAIDs/steroids and movement
	Non-inflammatory - trauma/degeneration → pain w/ motion, improvement w/ rest, brief morning stiffness, bony deformity possible, mildly swollen, can have effusion
Distribution	Monoarticular, oligoarticular ($\underline{\geq}$2), polyarticular (>4)
Joint Involvement	• Peripheral vs. axial • Large vs. small • Symmetric vs. asymmetric
Timing	Acute vs. chronic (>2 mo), episodic vs. constant, migratory vs. localized
Precipitation	Infection (GI/GU), use, meds/diet, trauma, unprotected sex, IV drugs, family history

Juvenile Arthritides							
Subtype	**Age**	**F: M**	**% JIA**	**Pattern**	**Extra-articular**	**Labs**	**Treatment**
Systemic	1-5	1:1	5-15	Polyarticular (U/L ext, neck, hips)	Fever, rash, pericarditis/ pleuritis	Anemia, WBC, ESR/CRP, Plts/ferr	MTX/anti-TNF C/s IL1/6 inhib
Oligo	2-4	3:1	40-50	Knee, ankle, finger	Uveitis (30%)	ANA(+), +/- ESR/ CRP	NSAIDs, intra-articular steroids, MTX
Poly RF(-)	2-4, 10-14	3:1 10:1	20-35	Sym/Asym small/large joints	Uveitis (10%)	ANA(+) ,RF(-), ESR/CRP, anemia	MTX/NSAIDs Anti-TNF
Poly RF(+)	9-12	9:1	<10	Sym polyarthritis	Rheumatoid nodules, fever	RF(+), ESR/CRP, mild anemia	Early and aggressive
Psoriatic	2-4, 9-11	2:1	5-10	Asym. small/ med joints	Uveitis (10%), Psoriasis (50%)	ANA(+), ESR/ CRP, mild anemia	NSAID/steroids MTX, anti-TNF
Enthesitis	9-12	1:7	5-10	Lower limb, axial	Acute ant. Uveitis, reactive arth, IBD	HLA-B27 (80%)	NSAID/steroids Sulfasal,anti-TNF

Seronegative Spondylarthritides	
Psoriatic	
Clinical	10-20% of patients w/ psoriasis, arthritis precedes skin disease in 15% of patients, dactylitis, anterior uveitis, enthesitis, nail pitting, onycholysis
Arthritis Patterns	Asym/inflam arthritis of DIP joints, symm arthritis indistinguishable from RA, Severe/mutilating arthritis “arthritis mutilans,” or spondyloarthritis
Lab Testing	+ HLA-B27, RF/ANA negative (i.e. “seronegative”), XR – “pencil in cup”
Treatment	NSAIDs, celecoxib, MTX, leflunomide, or TNF-α inhibitors
Ankylosing spondylitis	
Path	Chronic inflammatory disease of the spine/pelvis → eventual bone fusion
Risks	Men > women, insidious onset at age <40, whites > blacks/latinos
Clinical	Low back pain worse w/ inactivity and improves w/ exercise, + nocturnal pain sacroiliitis, dec spine mobility (Abnormal Schober Test), chest expansion/spine mobility, Hip/ shoulder pain, Enthesitis, Dactylitis, Anterior uveitis, limited chest expansion and spinal mobility → restrictive patten (VC/TLC but normal FEV1/FVC)
Complications	Cardiovascular (aortic regurgitation, conduction disturbances), Osteoporosis/vertebral fractures (osteoclast activity from chronic inflam), Cauda equina
Diagnosis	+ HLA-B27, RF/ANA negative (i.e. “seronegative”), XR Pelvis – sacroillitis/SI joint fusion, XR L-spine – vertebral fusion (“bamboo spine”).
Treatment	PT/exercise, NSAIDs or celecoxib (scheduled continuously), TNF-α inhibitors

Joint Disease continued on next page →

Seronegative Spondylarthritides

Reactive arthritis

Clinical	Triad: conjunctivitis, urethritis, arthritis (can't see, pee, climb a tree), mucocutaneous lesions and enthesitis (achilles tendon pain) are common as well
Lab Testing	HLA-B27 +, Synovial fluid analysis is usually sterile
Treatment	NSAIDs are 1st-line

Juvenile Idiopathic Arthritis

Definition	Chronic, inflammatory arthritis, of unknown etiology in children.
Epidemiology	• Children <16 y/o, w/ arthritis (swelling/effusion) in ≥1 joints for >6 weeks • Classified based on the number of joints involved in the first 6 months of presentation • Oligoarthritis (1-4 joints), Polyarthritis (5 or more joints)
Differential	Must exclude SLE, infectious arthritis, IBD, hematologic process or malignancy
Clinical	• Symptoms worse in the morning or after long periods of sitting/rest and improves w/ movement (gelling phenomenon). • Systemic onset JIA:fevers (daily, high spiking fevers w/ normal temperatures the rest of the day – Quotidian fever). Arthritis may or may not be present at disease onset, making diagnosis difficult. MAS may be present at diagnosis or later in disease course.

Characterization

	Systemic JIA	Oligoarticular JIA	Polyarticular JIA
% of JIA	10-15%	50%	30-40%
Sex	F = M	F>M	F>M
Age	<17 yo	Peaks 2-3, rare >10	Bimodal peak: 2-5, 10-14
Fever, Rash, HSM, LAD	Yes	No	No
Uveitis	Rare	20% (assoc. ANA+)	Less frequent
Labs: **- Leukocytosis** **- Anemia** **- Inc. ESR** **- + ANA** **- + RF** **- Inc. Ferritin**	 Marked Marked Marked X Rare Marked	 X X Mild Low titer X X	 X Mild Mild Low titer 10-20% Mild
Destructive arthritis	>50%	Rare	>50%
Responsive to: **- MTX** **- TNF inhib** **- IL-1/6 inhib**	 Poor-Moderate Poor Excellent	 Excellent Excellent Poor	 Excellent Excellent Poor

Juvenile Idiopathic Arthritis

Diagnostic Studies	JIA is diagnosis of exclusion; need to rule out infection, leukemia, & other systemic diseases or malignancies.	
Treatment	• Patients require regular screening eye exams, especially in pts w/ pauciarticular JRA • Biologic agents may be required ▪ TNF-alpha inhibitors (Etanercept, Infliximab, Adalimumab) ▪ Anakinra (IL-1 receptor antagonist, appropriate in Systemic Onset JIA only) ▪ Abatacept (inhibits T cell activation) ▪ Rituximab (antibody against B cell marker CD20) • Varies based on subtype of JIA	
	Oligoarticular	Treated w/ intra-articular steroid injections and/or MTX
	Polyarticular & Systemic onset JIA	Usually require systemic immunosuppressive therapy ▪ Steroids, methotrexate, sulfasalazine, leflunomide, biologic response modifiers (targeting TNF, IL-1 or IL6)

Septic Arthritis

Pathology	Joint infection (typically bacterial) → Staph. aureus, N. gonorrhoeae (unprotected intercourse)
Risks	Underlying joint disorders (ex: RA, gout, pseudogout, osteoarthritis) increase risk for 2° joint infection, Prosthetic joints, Skin infection, IV Drug use, Alcoholism, DM, Recent joint surgery
Clinical	• Monoarticular arthritis → pain/tenderness, redness, warmth, restricted ROM • > 50% occur in the knee, but may affect wrist, hips, or ankles • Gonococcal: young/sexually active, asymmetric/migrating polyarthritis (knees, wrists, and ankles) + pustules/papules on hands/feet
Diagnosis	Fever, ESR/CRP, synovial fluid analysis (cell count, Gram stain, cx)

Joint Aspirate Analysis

	Normal	OA	RA	Septic Joint
Appearance	Clear	Clear	Translucent/opaque	Opaque
WBC count	<200	200-2,000	2,000-100,000	50,000-150,000
PMNs	<25%	25%	Often >50%	>80-90%

Treatment	Surgical drainage/irrigation of the joint +/- antibiotics

Macrophage Activation Syndrome (MAS)

Definition and Pathology	• Multisystem inflammatory process (cytokine storm), which can be a complication of JIA, SLE, KD as well as viral illnesses such as EBV • Similar pathophysiology to Hemophagocytic Lymphohistiocytosis (HLH) • May be triggered by viral infections/meds leading to dysregulation of immune system w/ insufficient cytotoxic T & NK cell response and eventually to cytokine storm & over-activation of macrophages
Clinical	• High fevers • HSM • Pancytopenia • Lymphadenopathy • DIC

Joint Disease continued on next page →