



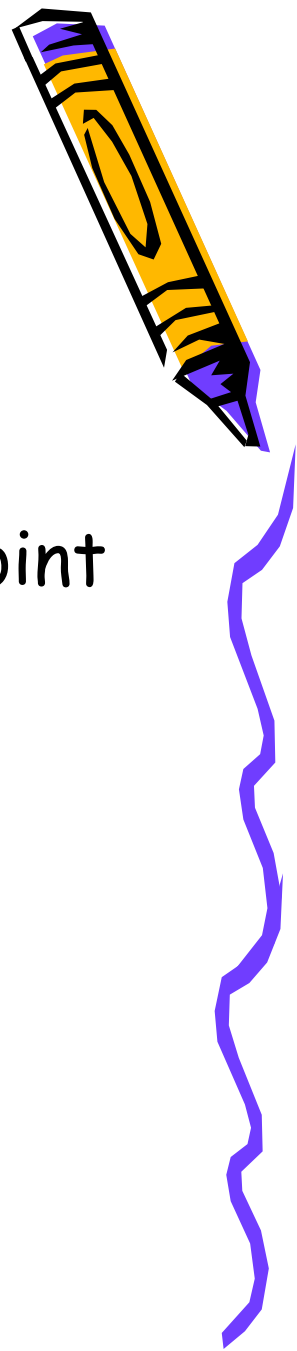
# Infectious Arthropathies

Septic Arthritis, Lyme Disease &  
Rheumatic Fever

Roger Kasendorf, D.O.



# Septic Arthritis

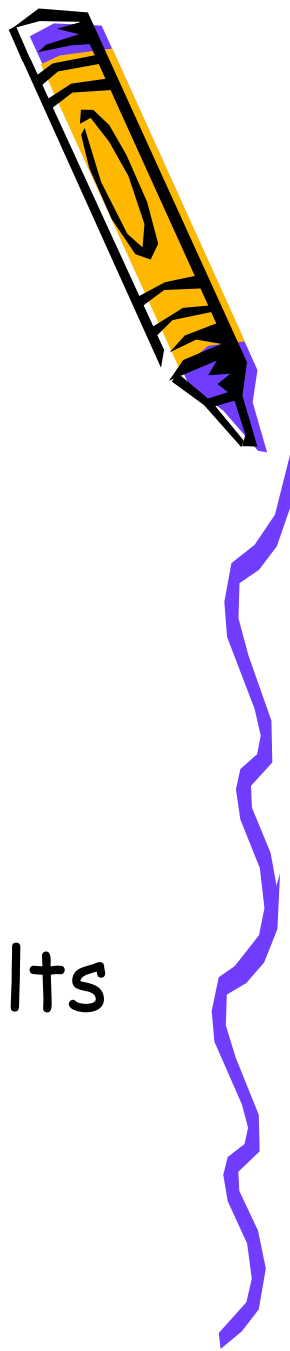


- Clinical Picture:
  - Rapid onset of moderate to severe joint pain, erythema, and decreased ROM
  - Monoarticular
  - Leukocytosis
  - Knee most common joint

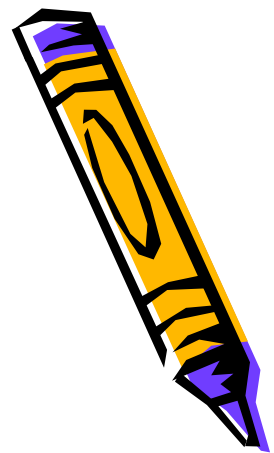


# Septic Arthritis

- Risk Factors:
  - Age
  - Prosthetic joints
  - Co-morbidities (anemia, chronic diseases, hemophillia, RA)
- N. Gonorrhea- most common in adults



# Septic Arthritis



- In children:
  - Most common causes are otitis and infected IV lines
  - Staph aureus most common organism
  - Occurs more often in children less than 2 with boys>girls with joint involvement by hematogenous spread.
  - Monoarticular involvement most common



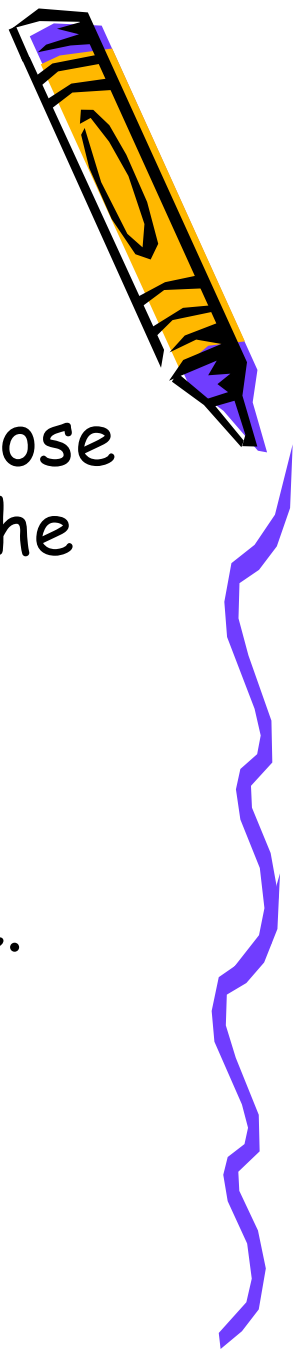
# Septic Arthritis

- In adults/elderly:
  - In adults equal or less than 60, STD's most common cause
  - In adults greater than 60, source is commonly from another focus

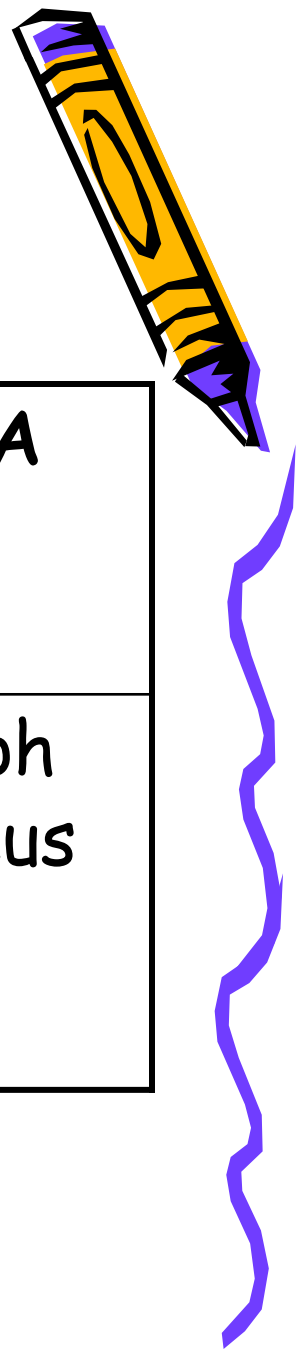


# Septic Arthritis

- Previously damaged joints, especially those damaged by rheumatoid arthritis, are the most susceptible to infection
- In patients with Rheumatoid arthritis, Staph aureus is the most common cause.



# Septic Arthritis



Neonate	6 mo- 2 yrs	Children >2 yrs	Adults	RA
Staph aureus	H. Influenza	Staph aureus Group B strep	N. Gonorr	Staph aureus



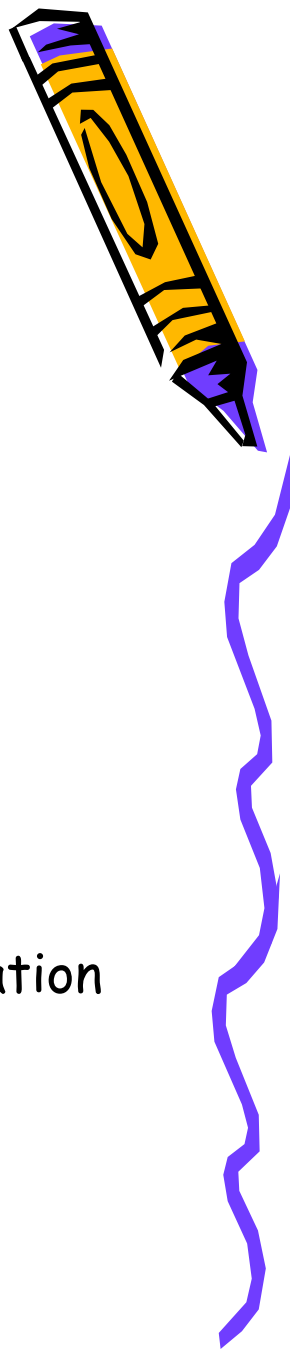
# Septic Arthritis

- Polymicrobial joint infections (5-10% of cases) and infection with anaerobic organisms (5% of cases) usually are a consequence of trauma or of abdominal infection

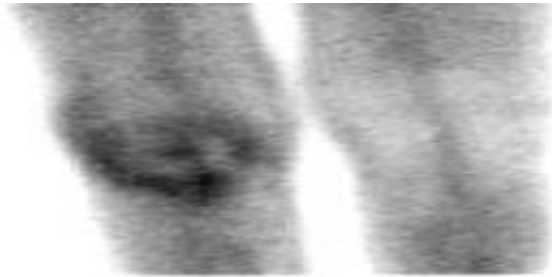


# Septic Arthritis

- Diagnostic Approach:
  - Synovial fluid analysis\*\*\*
  - Inflammatory
  - Radiologic films
    - Early: soft tissue swelling
    - Later: joint space narrowing, erosions, gas formation
  - Plain films



# Septic Arthritis



POSTERIOR



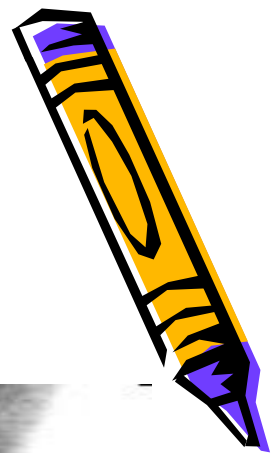
ANTERIOR



ANTERIOR

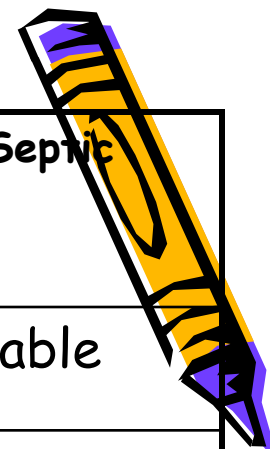


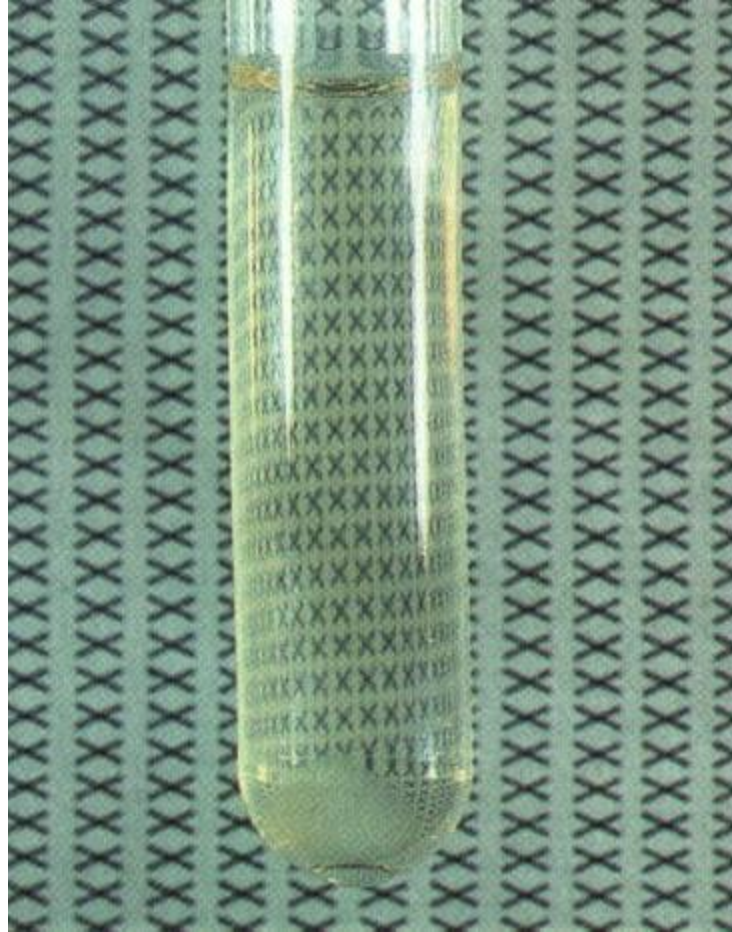
POSTERIOR



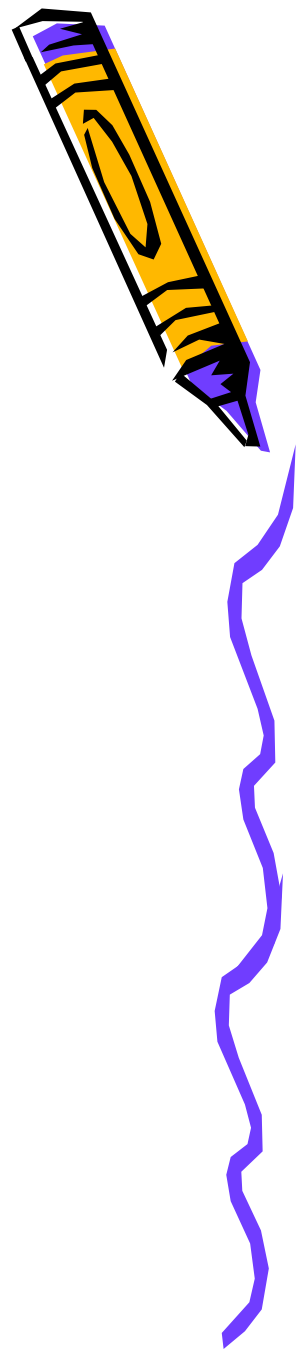
# Synovial Fluid Analysis

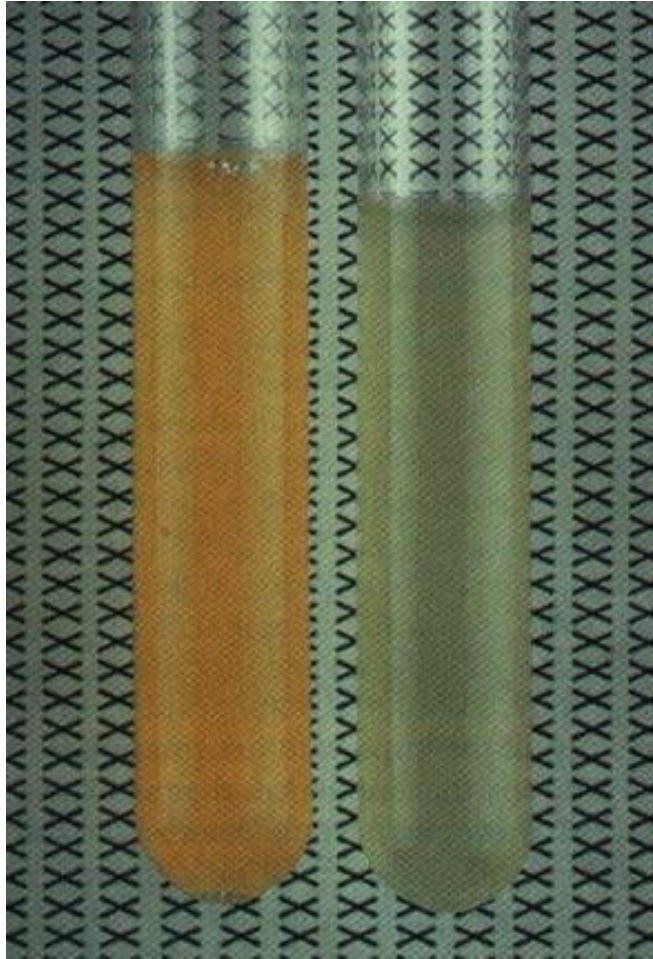
Property	Normal	Non-inflam	Inflam	Septic
Viscosity	High	High	Low	Variable
Color	Colorless	Straw	Yellow	Yellow-turbid
Clarity	Transluc	Transluc	Transluc	Opaque
WBC	<200	<5000	1000-75000	>100,000
PMN%	<25	<25	>50	>85
Culture	(-)	(-)	(-)	(+)
Mucin clot	Good	Good	Fair	Poor
Glucose	= to blood	= to blood	< 50 mg/dl < blood	>50 mg/dl < blood



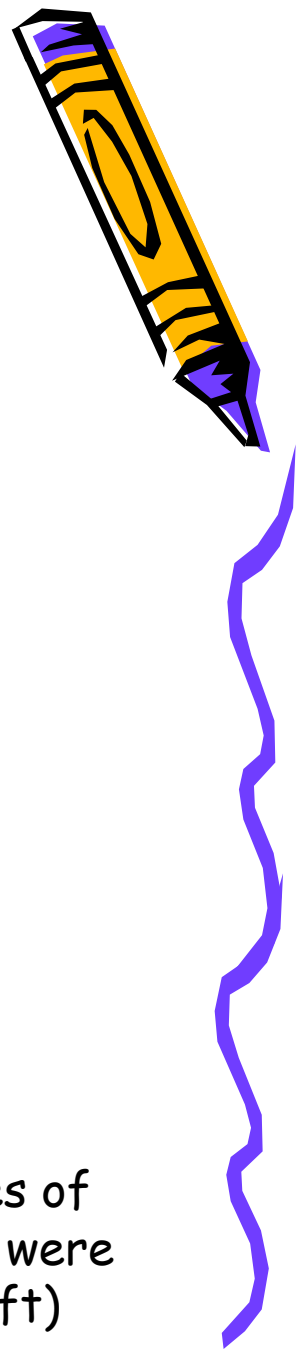


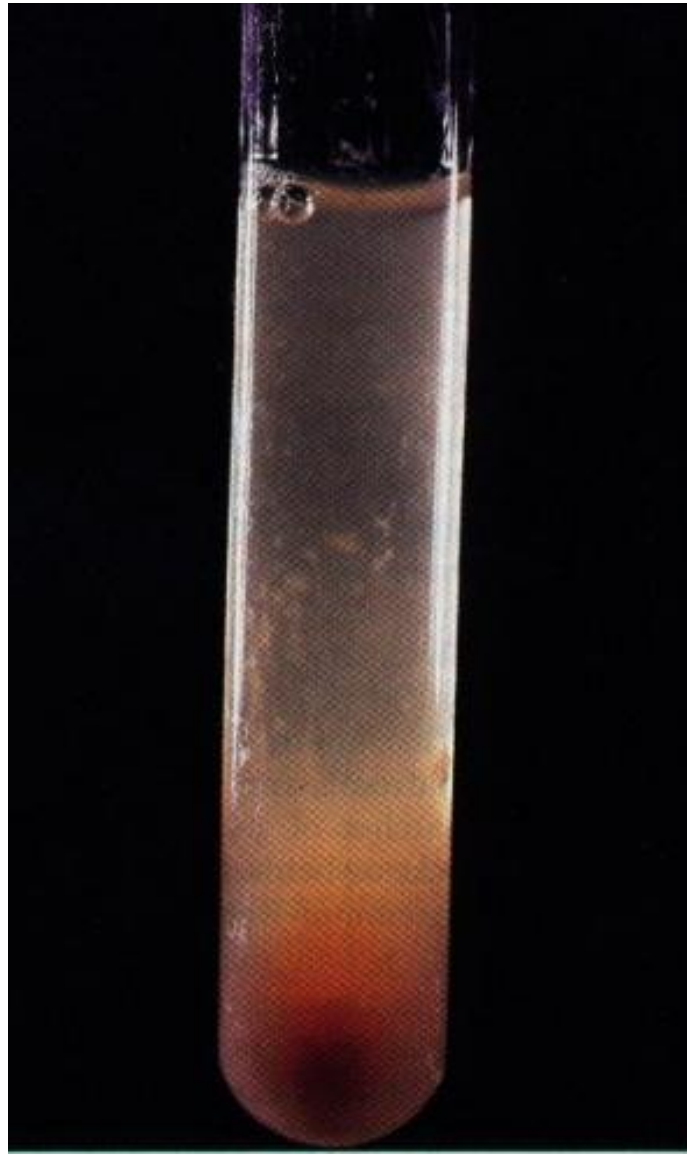
This is the colorless, clear synovial fluid from a patient with osteoarthritis accompanied by a low synovial-fluid white cell count.



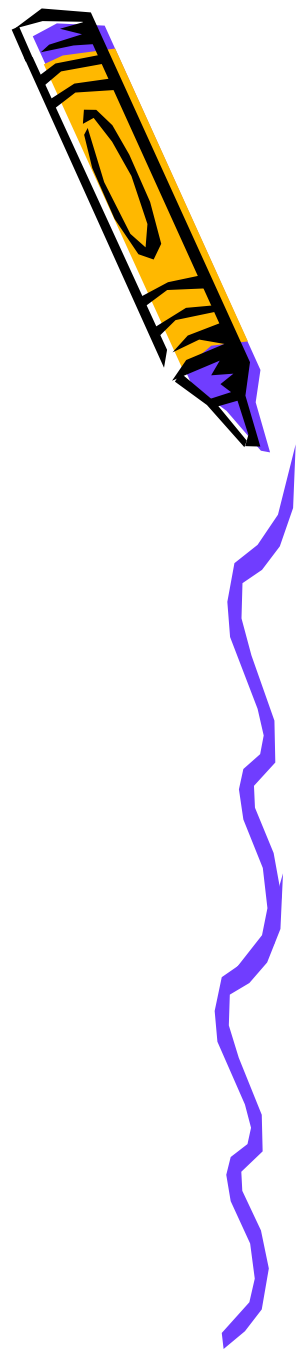


These fluid collections which serve as good samples of cloudy but translucent inflammatory synovial fluid were taken from a patient with rheumatoid arthritis (left) and gout (right) respectively.



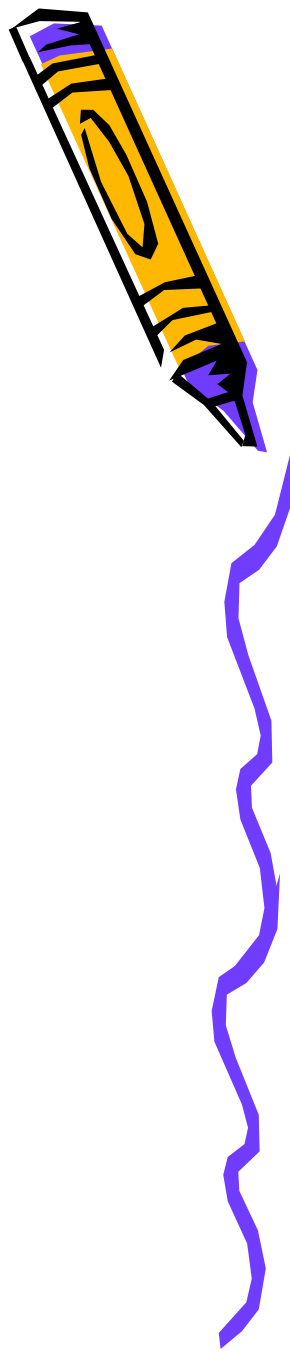


This fluid is a good example of a cloudy, pus-like fluid aspirated from a patient with acute bacterial infectious arthritis.



# Septic Arthritis

- Treatment:
  - Antibiotic Coverage
  - Frequent needle aspiration with arthroscopic lavage



# Septic Arthritis



- Prognosis:
- 50% of adults with have decreased range of motion or chronic pain after infection.
- Predictors of poor outcome in suppurative arthritis include:
  - Age older than 60 years
  - Infection of the hip or shoulder joints
  - Underlying rheumatoid arthritis
  - Positive findings on synovial fluid cultures after 7 days of appropriate therapy
  - Delay of 7 days or more in instituting therapy



# Lyme Disease



- First described in the United States in the town of Old Lyme, Connecticut in 1975
- Now been reported in most parts of the United States.
- Most cases occur in the Northeast, upper Midwest, and along the Pacific coast.
- Most infections occur in the summer.



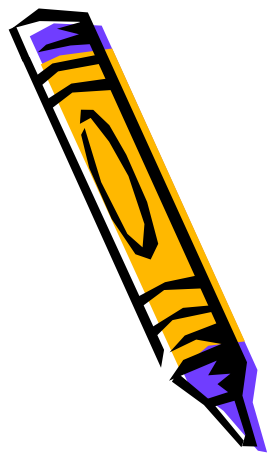
# Lyme Disease

- Vector:
  - Deer Tick or Black-legged Tick (*Ixodes scapularis*)
  - Pacific Black-legged Tick (*Ixodes pacificus*)



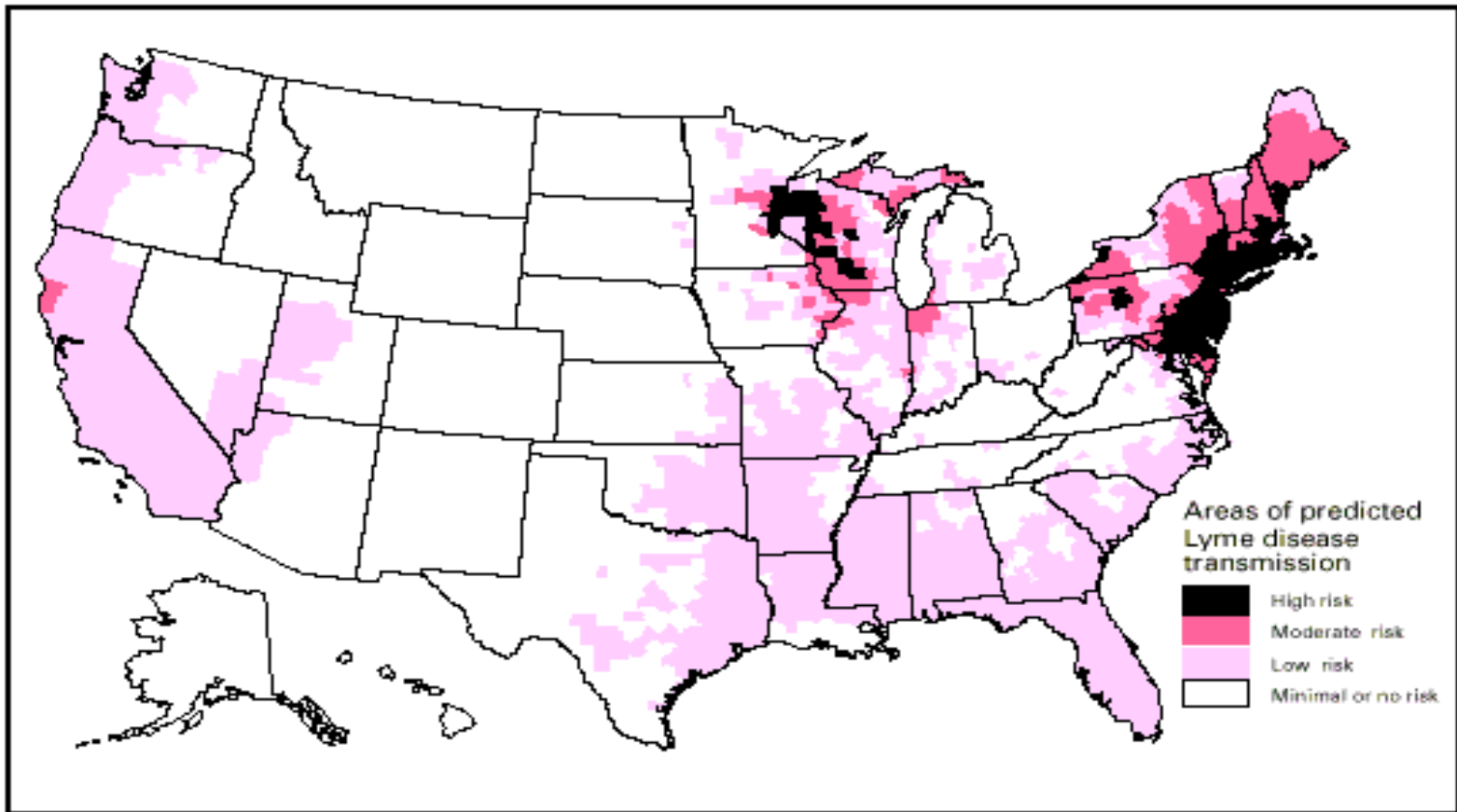
# Lyme Disease

- Tick borne- *Borrelia burgdorferi*
- Incidence- 3.2 per 100,000



# Lyme Disease

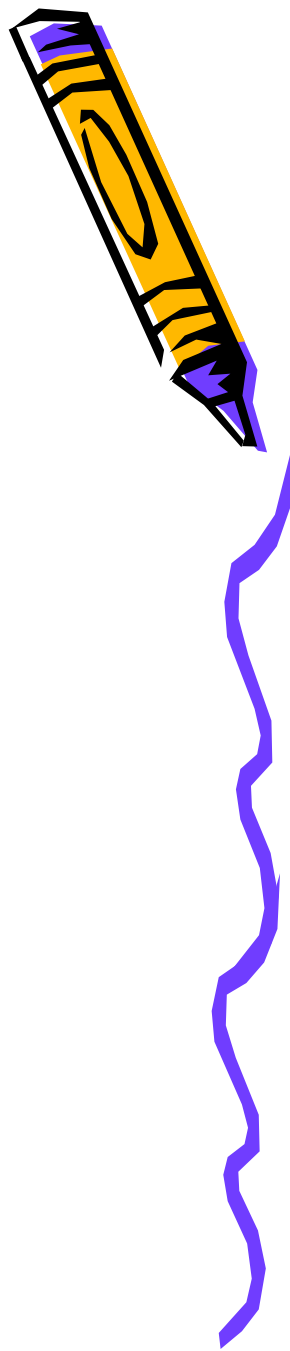
National Lyme disease risk map with four categories of risk



Note: This map demonstrates an approximate distribution of predicted Lyme disease risk in the United States. The true relative risk in any given county compared with other counties might differ from that shown here and might change from year to year. Risk categories are defined in the accompanying text. Information on risk distribution within states and counties is best obtained from state and local public health authorities.

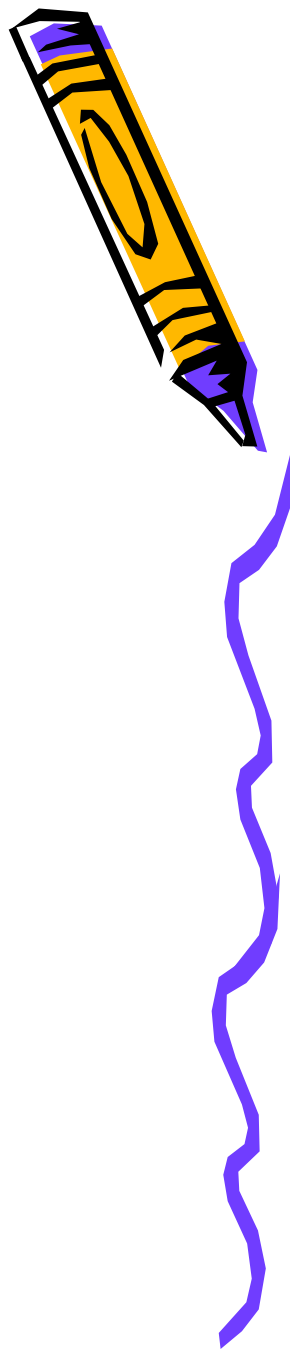
# Lyme Disease

- Incubation period:
  - 3 days-6 months



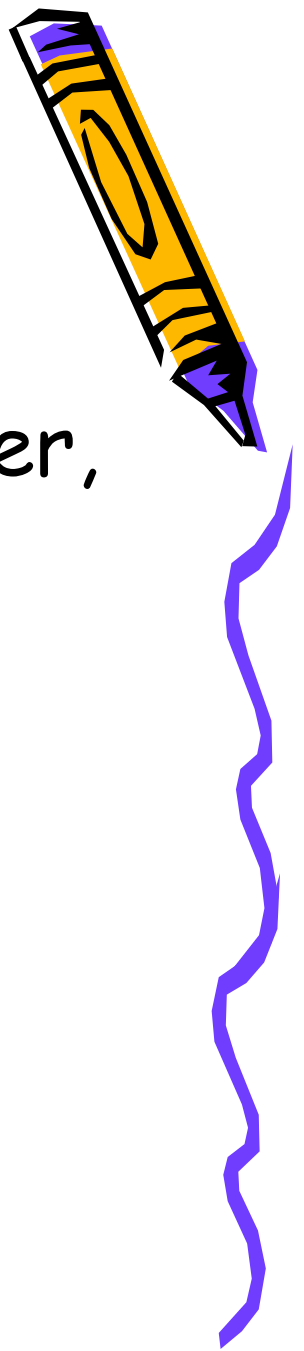
# Lyme Disease

- Pattern of Onset:
  - Bite
  - Rash
  - Systemic Disease
  - Neurologic involvement



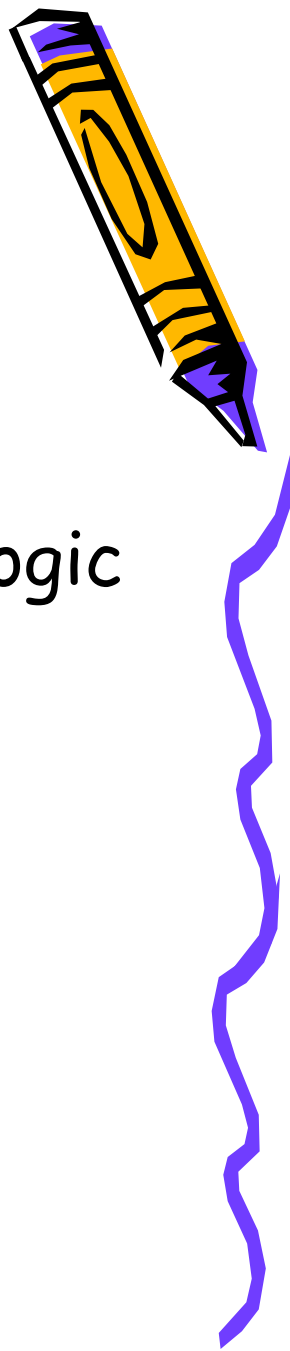
# Lyme Disease

- Initial phase characterized by fever, fatigue, headache, arthralgia, myalgia, and stiff neck



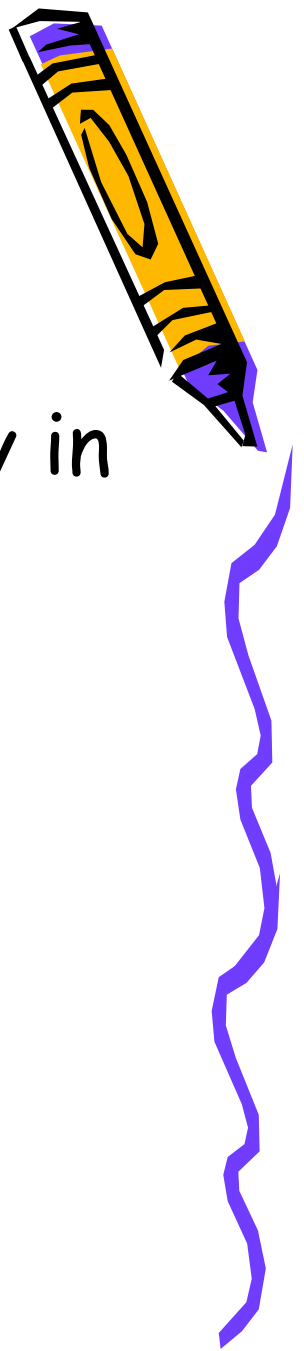
# Lyme Disease

- Late phase:
  - Arthritis, cardiac disease and neurologic disease



# Lyme Disease

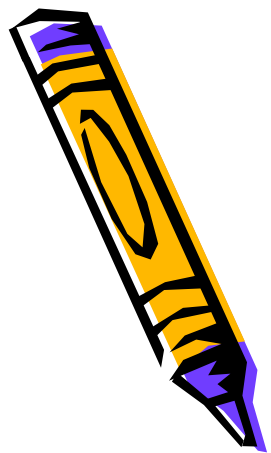
- Bell's Palsy is seen more frequently in children than in adults



# Lyme Disease

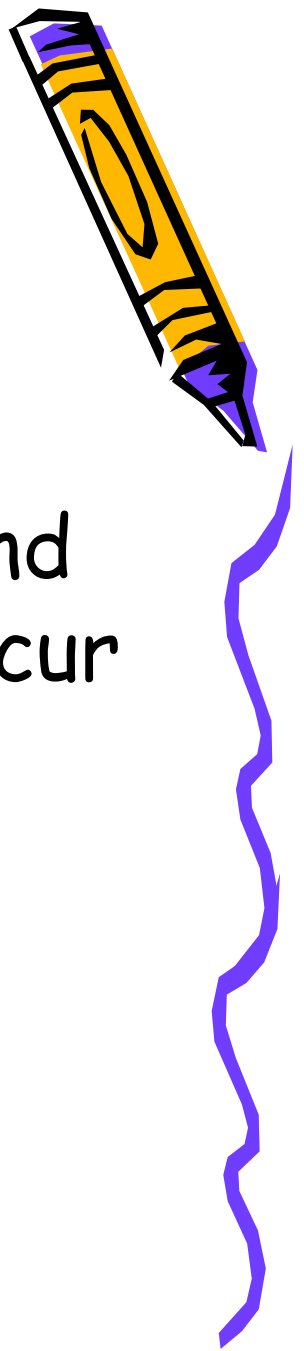


- Classic Presentation:
  - Erythema migrans- bull's eye rash



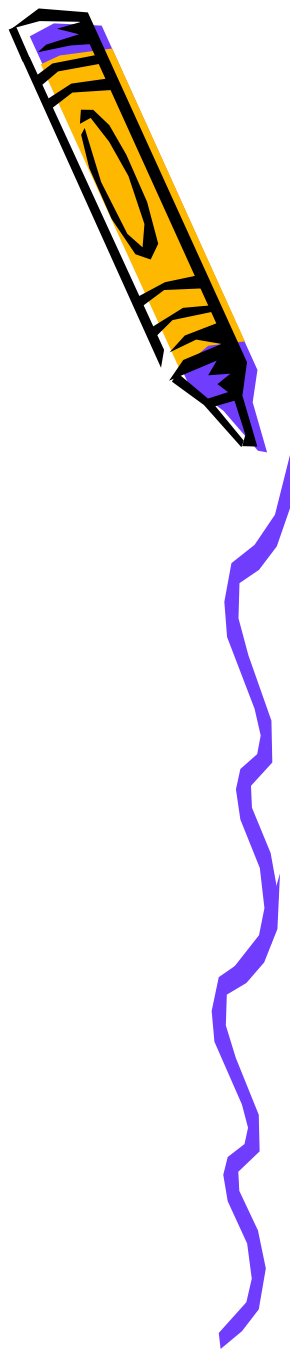
# Lyme Disease

- Cardiac Manifestations of heart block occur in 5-10% of children and chronic neurologic manifestations occur in 15%



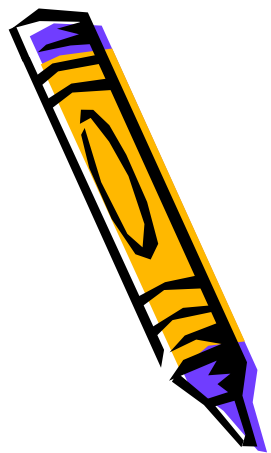
# Lyme Disease

- \*\*\*Intermittent migratory episodes of polyarthrititis\*\*\*



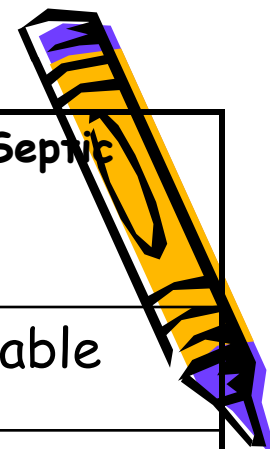
# Lyme Disease

- Commonly affects the knee
  - Synovial fluid shows inflammatory traits



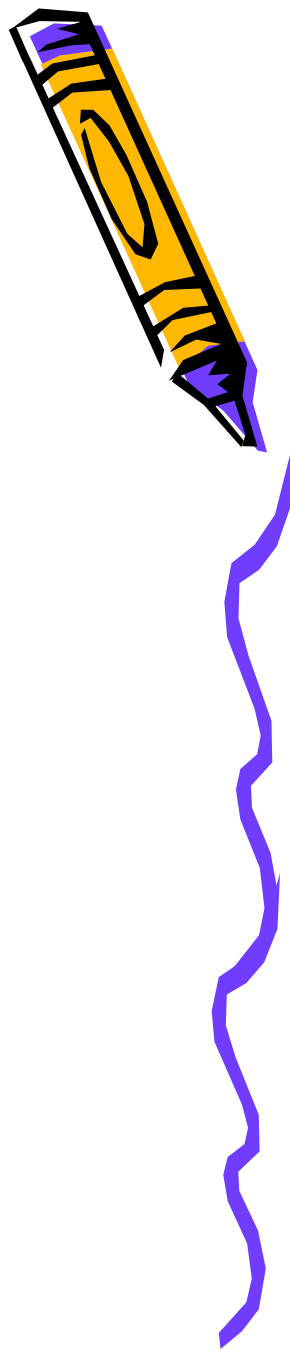
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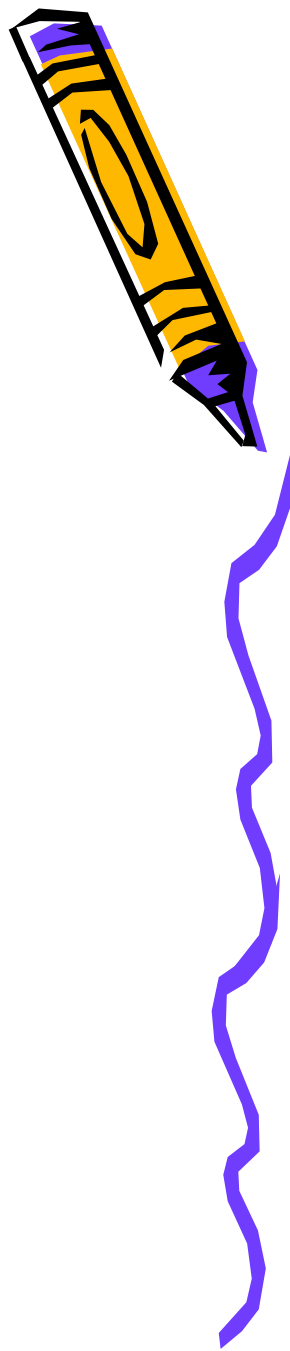
# Lyme Disease

- Diagnosis:
  - ELISA
  - Western Blot Test



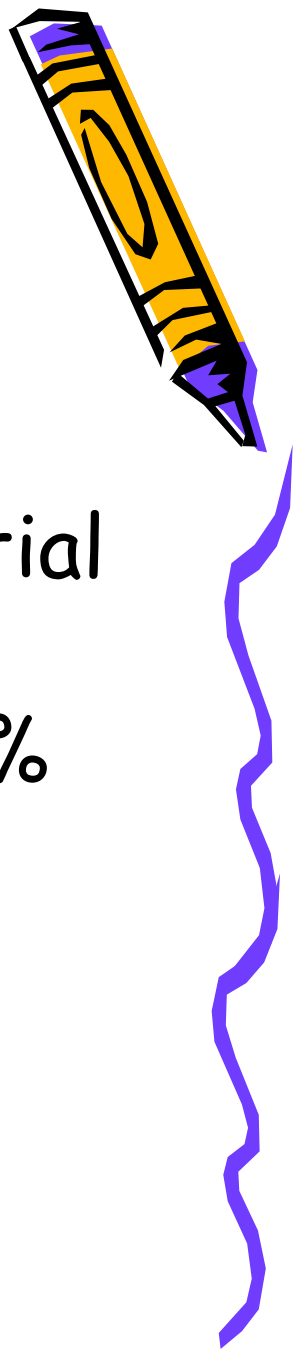
# Lyme Disease

- Management:
  - Adults: Doxycycline
  - Children: Amoxicillin



# Lyme Disease

- In 85% of children, the arthritis resolves before the end of the initial treatment, but a chronic inflammatory phase develops in 10% of those affected.



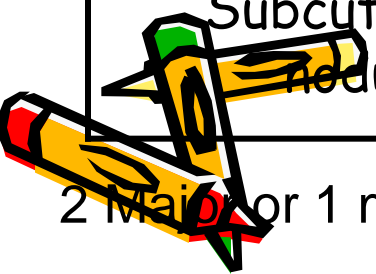
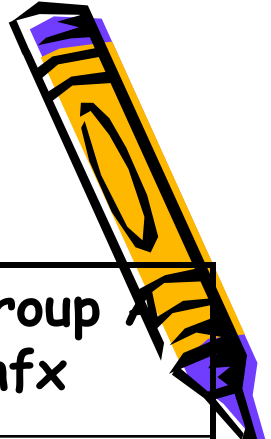
# Rheumatic Fever

- Occurs in children greater than 4 y.o.
- boys=girls
- History of prior streptococcal infection
- Associated findings of carditis, fever, rash, chorea, and nodules



# Rheumatic Fever

## Jones Criteria



Major	Minor	Preceding Group A Strep Infx
Carditis	Fever	Throat Cx
Polyarthrititis	Arthralgia	Rapid Strep antigen
Erythema marginatum	Prolonged PR interval	Elevated Strep antibody
Chorea	Elevated ESR or CRP	
Subcutaneous nodules		

2 Major or 1 major and 2 minor required with evidence of preceding strep infx.

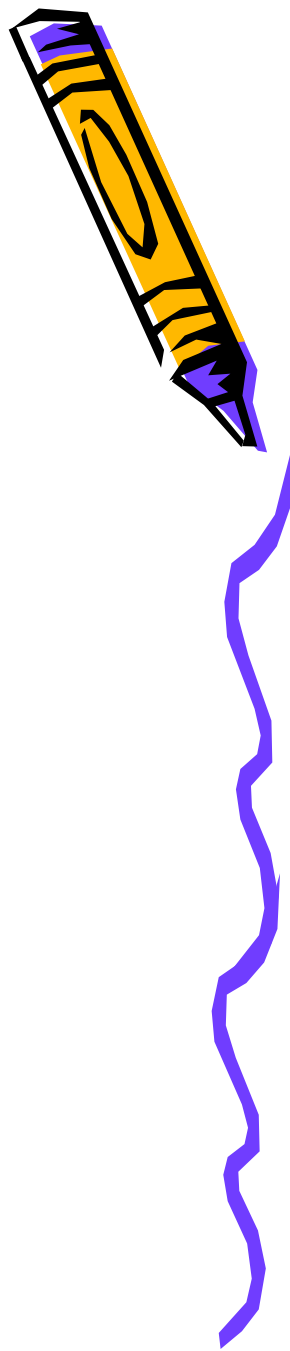
# Rheumatic Fever

© Images Paediatr Cardiol



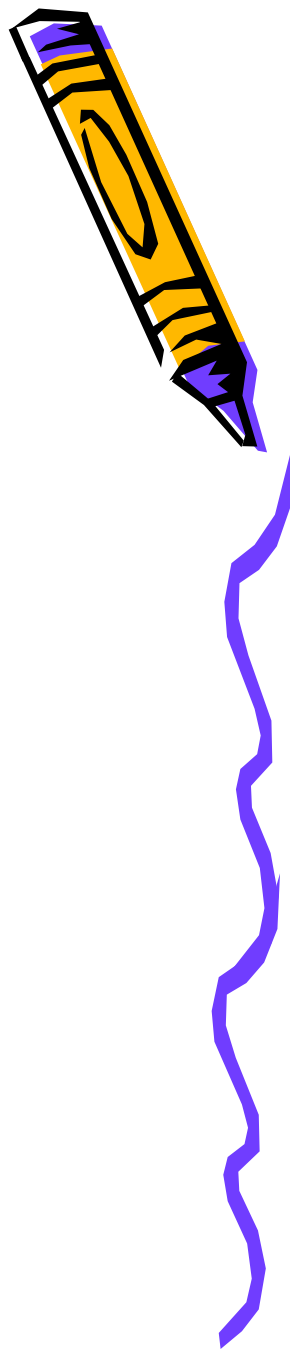
# Rheumatic Fever

- Treatment:
  - Anti-inflammatory meds
    - Salicylates
    - Corticosteroids
    - Physical Therapy

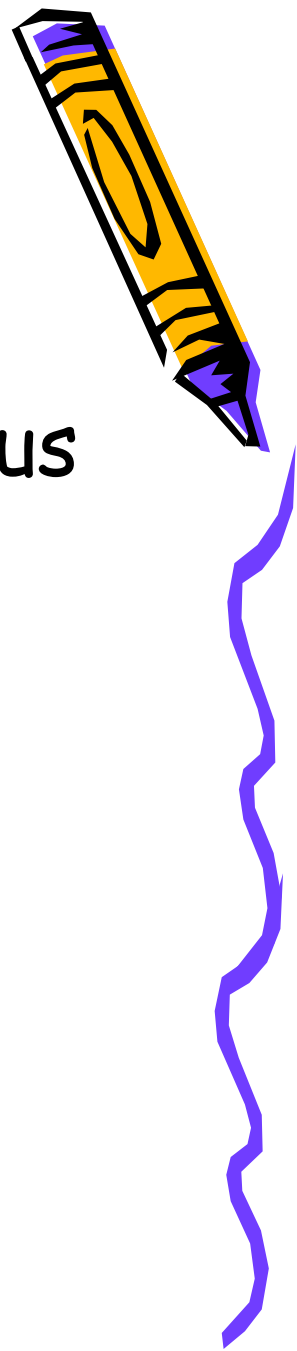


# Rheumatic Fever

- Prognosis:
  - No long-term debility
  - Prognosis related to cardiac involvement.



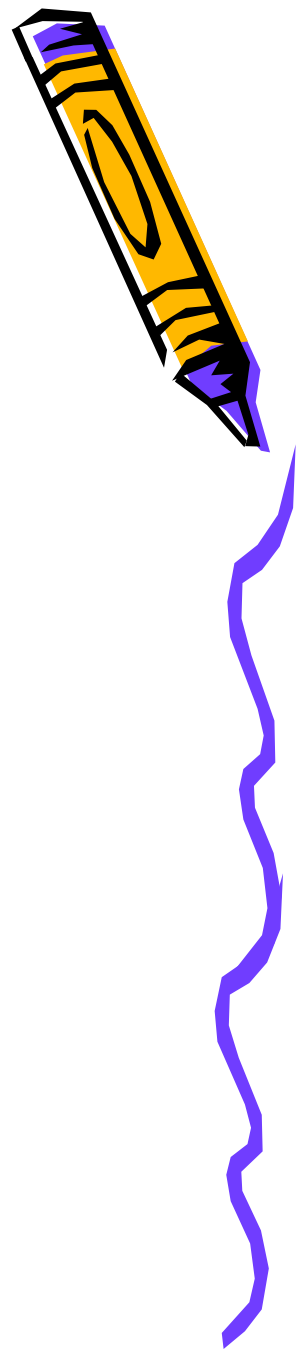
# Other Infectious Causes of Arthritis



- Viral Infections- Rubella, Infectious Hepatitis
- Fungi- seen in immunocompromised kids



# Other Infectious Causes of Arthritis



- Mycobacterium- TB of the spine (Pott's Disease)
  - Thoracic involvement
  - \*\*\*Affects hips and knees\*\*\*
  - Radiologic Findings:
    - Phemister's triad
      - Juxta-articular osteoporosis
      - Marginal erosions
      - Joint space narrowing



# THE END

