Financial Disclosure

- I have no personal financial relationship with a manufacturer of pharmaceutical products or services that will be discussed in this presentation.

General vaccine recommendations

- All vaccines can be administered at the same visit as all other vaccines.
- If not given at the same visit, live parenteral vaccines or live intranasal influenza vaccine should be separated by at least 4 weeks.
General vaccine recommendations

- Increasing the interval between doses of a multidos e vaccine does not diminish the effectiveness of the vaccine.
- Decreasing the interval may interfere with antibody response

Common Vaccine Questions

- Can you give live virus vaccine to children taking corticosteroids?
  - No: if taking >2 mg/kg/day or >20 mg/day of prednisone for greater than 14 days.
  - Yes: if taking lower daily doses, on alternate day dosage, on systemic steroids for less than 14 days, on inhaled or topical steroids

General vaccine recommendations

- Live vaccine should not be administered to severely immunosuppressed patients.
- Inactivated vaccines are safe for immunosuppressed patients.

Common Vaccine Questions

- What are precautions to further vaccinations with pertussis vaccine?
  - Fever >40.5 within hours of a previous dose
  - Persistent inconsolable crying for >3 hours
  - Collapse or shock-like state
  - Seizure within 3 days of previous vaccine
Common Vaccine Questions

• What are contraindications to further immunization with pertussis vaccine?
  • Anaphylactic reaction to the vaccine
  • Encephalopathy developing within 7 days of the vaccine

Invalid contraindications to vaccination

• Mild illness
• Antimicrobial therapy
• Pregnant or immunosuppressed person in the home
• Breastfeeding
• Premature birth
• Tuberculin skin test

Influenza Vaccine 2013

• Administer annually to children/adolescents 6 months through 18 years of age. (trivalent inactivated vaccine)
  • Live attenuated vaccine for children over 2 years of age except:
    • children with asthma
    • children 2-4 yo with wheezing in past year
    • underlying conditions predisposing to complications from influenza

Influenza hospitalizations per 10,000 by age group for 3 seasons
Influenza
- 6 yo with cough and high fever

Measles cases reported in U.S. 2001-2011

U.S. rates of meningococcal disease by age

Pertussis in California
- 9,120 cases of pertussis reported in California in 2010.
  - Highest incidence since 1958
  - 804 cases hospitalized
  - 10 deaths
    - 9 infants < 2 months of age (none vaccinated)
    - 1 infant, 2 months of age, 1 vaccination
Pertussis in California
- Rates of infection by age
  - < 6 months: 435 cases/100,000
  - 6 months – 6 years: 61 cases/100,000
  - 7-9 years: 67 cases/100,000
  - 10-11 years: 49 cases/100,000

Pertussis cases in U.S. from 2011-2012

Pertussis Vaccine 2013
- Tdap vaccine
  - 7-10 years yo; single dose of Tdap if incompletely immunized
  - Administer Tdap to all adolescents 11-12 yo regardless of last interval since last tetanus and diphtheria toxoid containing vaccine

Tuberculosis
- U.S., 2007
  - 13,000 new cases
  - 820 in children < 15yo
  - 60% of all cases in California, Florida, Georgia, Illinois, New Jersey, New York, Texas
### Risk of Progression from TB infection to disease

<table>
<thead>
<tr>
<th>Age at Primary Infection</th>
<th>No Disease (%)</th>
<th>Pulmonary Disease (%)</th>
<th>Miliary or CNS (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 1yo</td>
<td>50</td>
<td>30-40</td>
<td>10-20</td>
</tr>
<tr>
<td>1-2yo</td>
<td>75-80</td>
<td>10-20</td>
<td>2.5</td>
</tr>
<tr>
<td>2-5yo</td>
<td>95</td>
<td>5</td>
<td>0.5</td>
</tr>
<tr>
<td>5-10</td>
<td>98</td>
<td>2</td>
<td>&lt;0.5</td>
</tr>
<tr>
<td>&gt;10</td>
<td>80-90</td>
<td>10-20</td>
<td>&lt;0.5</td>
</tr>
</tbody>
</table>

### Tuberculosis in Children

- **Clinical Manifestations of Disease**
  - Lung: 80% of all cases
  - Extrapulmonary
    - Lymphadenopathy 67%
    - Meningitis 13%
    - Pleural 6%
    - Miliary 5%
    - Skeletal 4%

### Tuberculosis

Reaction of tuberculin skin test considered positive

<table>
<thead>
<tr>
<th>Reaction Size</th>
<th>Risk Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥5mm</td>
<td>HIV infection</td>
</tr>
<tr>
<td></td>
<td>Abnormal CXR c/w TB</td>
</tr>
<tr>
<td></td>
<td>Contact with infectious case</td>
</tr>
</tbody>
</table>

### Tuberculosis

Reaction of tuberculin skin test considered positive

<table>
<thead>
<tr>
<th>Reaction Size</th>
<th>Risk factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>10mm</td>
<td>Age &lt; 4yo&lt;br&gt;Birth or residence in high prevalence country&lt;br&gt;Residence in correctional facility&lt;br&gt;Certain medical conditions (diabetes, renal failure)&lt;br&gt;Any child with close contact of adult with above risk factors</td>
</tr>
</tbody>
</table>
Tuberculosis

Reaction Size of Tuberculin Skin Test Considered Positive

<table>
<thead>
<tr>
<th>Reaction Size</th>
<th>Risk Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥ 15 mm</td>
<td>no risk factors</td>
</tr>
</tbody>
</table>

Tuberculosis

Treatment of TB infection (neg CXR)
- INH for 9 months
- If source case has isolate resistant to INH but sensitive to rifampin, can treat with rifampin

Tuberculosis

Immediate TSTs
- Contacts of confirmed or suspicious cases
- Children with clinical findings of disease
- Children immigrating from or with recent travel to endemic countries and/or significant contact with indigenous persons from such countries.

Tuberculosis

- TST in children who have received BCG
- Prior BCG may not explain a positive TST
- BCG administered in parts of the world with high rates of TB
- Use of whole blood interferon-gamma release assays to discriminate infection from BCG effect
Pulmonary tuberculosis

- 16 year old female with history of worsening cough and weight loss for one month

Pharyngitis in Children

- Etiology
  - Most cases are benign self-limited viral infections:
    - Adenovirus (pharyngoconjunctival fever)
    - Rhinovirus
    - Coxsackievirus A, Echovirus (herpangina; hand, foot, mouth disease)
    - Parainfluenza
    - Influenza
    - EBV
    - Herpes simplex, type 1 (gingivostomatitis)

- Uncommon causes – Grp C and G beta hemolytic streptococcus, N gonorrhea, tularemia
- Mycoplasma infections of the upper respiratory tract are also associated with pharyngitis
Pharyngitis in Children

- Features suggestive of GAS pharyngitis
  - Sudden onset
  - Scarlet fever rash
  - Fever, headache, abdominal pain
  - Sore throat in absence of viral symptoms
  - Tonsillar erythema, exudate
  - Palatal petechiae
  - Cervical lymphadenitis
  - Age 5-15 years

- Features suggestive of viral infection
  - Conjunctivitis
  - Coryza
  - Cough
  - Hoarseness
  - Myalgia
  - Diarrhea
  - Characteristic enanthems and exanthems

Pharyngitis in Children

- Throat Cultures
  - Laboratory confirmation of infection recommended as clinical identification not reliable
  - Throat culture remains the gold standard
  - Rapid antigen tests are highly specific, but have variable sensitivity (negative antigen tests should be followed up with culture)
  - Neither culture nor RAT’s discriminate between GAS infection and carrier state
  - Antistreptococcal antibody titers have no value in diagnosis of acute GAS pharyngitis

GAS Pharyngitis – Why Treat?

- Suppurative sequelae
  - Peritonsillar abscess, retropharyngeal abscess, cervical adenitis, otitis media

- Nonsuppurative sequelae
  - Acute rheumatic fever (pharyngeal infection only, treatment within 9 days of onset of infection)
  - Post-streptococcal glomerulonephritis (after pharyngeal or skin infection, not prevented by treatment of primary infection)
  - Poststreptococcal reactive arthritis (symmetrical large joint involvement, hands)
**GAS Pharyngitis - Treatment**

- **Penicillin V**
  - 250 mg BID for children for 10 days
  - 500 mg BID for teens for 10 days
- **Benzathine penicillin G**
  - 600,000 units IM for kids <60 lbs
  - 1.2 million units for everyone >60 lbs

**GAS Pharyngitis - Treatment**

- **Amoxicillin**
  - Single daily dose, 50 mg/kg/d for 10 days
- **Macrolides**
  - Erythromycin, azithromycin, clarithromycin
- **First generation cephalosporin**
  - Keflex 20-50 mg/kg/d

**Streptococcal Pharyngitis**

- Palatal petechiae

**Streptococcal scarlet fever**

- Typical facial rash with erythema of cheeks and perioral pallor
Streptococcal Scarlet Fever

- Sandpaper exanthem of scarlet fever

Streptococcal Scarlet Fever

- Pastia's Lines

Streptococcal Scarlet Fever

- Peeling of palms and soles 1-2 weeks after the illness

Streptococcal Infections

- Perianal streptococcal cellulitis
  - Diagnosis confirmed by culture of rectal swab
  - Treat like strep pharyngitis
Otitis Media

- Leading cause of physician visits among children
- Peak incidence rates occur at 6-18 months
- Onset of AOM in the first few months of life often associated with recurrent middle ear disease.

Acute Otitis Media

- Elements of the definition of AOM are all of the following:
  - Recent, usually abrupt, onset of signs and symptoms
  - Presence of MEE that is indicated by any of the following:
    - Bulging of the TM, decreased TM mobility, air fluid level behind the TM, otorrhea
    - Signs or symptoms of middle-ear inflammation
    - Distinct otalgia; distinct erythema of the TM

Acute Otitis Media

- Eustachian tube dysfunction
  - Acute Viral URI, GERD, allergic rhinitis
  - Shorter eustachian tubes in younger children

Otitis Media

- Opacification of the tympanic membrane with loss of normal landmarks
Acute Otitis Media

- Bacteriology
  - S. pneumoniae
  - H. flu (non-typeable) - "otitis-conjunctivitis syndrome"
  - M. catarrhalis (beta-lactamase positive, more frequent in infants)
  - Grp A Strep (usually in children > 5yo)

Acute Otitis Media

- Severe illness
  - Moderate to severe otalgia or temperature greater than 39 C
- Nonsevere illness
  - Mild otalgia and temperature less than 39 C

Acute Otitis Media

- Treatment Recommendations
  - Infants younger than 6 months should receive antibiotics
  - Children 6 months – 2 years old: should receive antibiotics if diagnosis is certain. If diagnosis uncertain and illness nonsevere, observation for 48-72 hours can be considered

Acute Otitis Media

- Children 2 years and older:
  - Should receive antibiotics if diagnosis certain and disease severe
  - Observation is an option when diagnosis uncertain or if diagnosis is certain and disease nonsevere
Acute Otitis Media

- Antibiotic Treatment
  - Amoxicillin 80-90 mg/kg/d
  - Treat all children < 6 years of age or those with severe disease for 10 days
  - Children 6 years and older with nonsevere disease, intact TM's, and no AOM within the previous month can be treated for 5-7 days
  - For children with penicillin allergy
    - Cefdinir 14 mg/kg/d in 1 or 2 doses
    - Cefuroxime 30 mg/kg/d in 2 divided doses
    - Cefpodoxime 10 mg/kg/d in 2 divided doses
    - Ceftriaxone 50 mg/kg IM for 1-3 days

Acute Otitis Media

- Antibiotic Treatment
  - For patients with severe disease, first line treatment should be augmentin (90 mg/kg/d amoxicillin, 6.4 mg/kg/d clavulanate)
  - Ceftriaxone 50mg/kg IM qday X 3 days

Sinusitis in Children

- Development of Sinuses in Children
  - Ethmoid and maxillary sinuses present at birth
  - Frontal sinuses begin to develop at 2 years old but not fully developed until 6 years of age
  - Sphenoid sinus developed by 6 years of age

Sinusitis

- Diseases predisposing patients to sinusitis
  - Viral rhinitis
  - Allergic rhinitis
  - Ciliary dysmotility
    - Kartagener's Syndrome
    - Cystic Fibrosis
    - Asthma
### Acute Sinusitis

- **Persistent symptoms**
  - Nasal discharge, cough or both > 10 days

- **Severe symptoms**
  - High fever and purulent nasal discharge for > 3 days

- **Worsening symptoms**
  - Resolving URI; worsening on day 6 or 7 with new fever and worsening nasal discharge and/or cough

### Sinusitis

- **Diagnosis**
  - Sinus x-rays not necessary to make diagnosis
  - CT scan for:
    - Complicated sinus disease (orbital or CNS complications)
    - Recurrent sinusitis
    - Protracted or nonresponsive

### Sinusitis in Children

- Bacterial etiology of acute sinusitis
  - Strep pneumoniae - 30-40%
  - H.influenza – 20%
  - M.catarrhalis – 20%

  - 35-50% H flu, 55-100% M Catarrhalis are beta-lactamase producing

### Sinusitis in Children

- Outpatient Treatment (10-14 days)
  - Amoxicillin- 90 mg/kg/d
  - Augmentin- 90/ 6.4 mg/kg/d
  - Cefdinir, Cefuroxime, Cefprozil, Cefpodoxime
  - Azithromycin
Acute Sinusitis

- Major Complications:
  - Orbital
    - Subperiosteal abscess, Orbital Cellulitis, Orbital abscess
  - Intracranial
    - Epidural empyema; Subdural empyema, Cavernous Sinus Thrombosis, Meningitis, Brain Abscess
  - Osteitis
    - Frontal (Pott’s Puffy Tumor)

Sinusitis

- Orbital cellulitis secondary to extension of ethmoid sinusitis

Sinusitis

- 17 yo boy being treated for presumed sinusitis; worsening headache and appearance of mass over forehead

Bronchiolitis

- Definition: child younger than 2 yo with “rhinitis, tachypnea, wheezing, cough, crackles, use of accessory muscles, and/or nasal flaring” (AAP, AAFP 2006)
- Leading cause of hospitalization for infants in U.S.
Bronchiolitis

- Pathophysiology
  - Acute edema and necrosis of epithelial cells lining small airways.
  - Increased mucus production
  - Bronchospasm

- Etiology
  - Respiratory Syncytial Virus (most common)
  - Rhinovirus
  - Human metapneumovirus
  - Influenza
  - Adenovirus
  - Parainfluenza

- 2 month old infant; cough, tachypnea, wheezing, rales
- Admission for hypoxia, dehydration
- RVP positive for human metapneumovirus

- Risk factors for severe disease
  - History of prematurity (< 37 weeks)
  - Young age of infant (6-12 weeks)
  - Underlying conditions
    - Congenital heart disease
    - Chronic lung disease (e.g., BPD, cystic fibrosis)
    - Immunocompromise
**Bronchiolitis**

- **Treatment**
  - Hydration
  - Hypertonic saline
  - Bronchodilators
    - If helpful
  - Corticosteroids
    - Not for routine use
- **Antibiotics**
  - For specific indications of coexisting bacterial infection
  - Supplemental oxygen
    - For O2 saturations consistently < 90%

**Pneumonia in Children**

- **Etiology of community acquired pneumonia**
  - S. pneumoniae is most common bacterial cause of pneumonia in children.
  - Viruses account for 14-35% of cases
  - Viruses more commonly identified in children <5yo
  - In children >5yo Mycoplasma pneumoniae and Chlamydia pneumoniae are more common

**Infants < 1 yo**

- **Pertussis**
  - Coughing paroxysms, lymphocytosis
  - Afebrile pneumonia of infancy
  - Chlamydia trachomatis
    - 2 weeks – 4 months of age
    - Staccato cough, rales
    - Bilateral interstitial infiltrates
    - Elevated Chlamydia IgM

- **2 month old infant with 2 weeks of cough, tachypnea**
  - History of neonatal conjunctivitis
  - Bilateral rales
  - Elevated Chlamydia IgM
Pneumonia in Children

- Infants and Children < 5yo
  - Viruses are the most common cause of CAP
    - RSV
    - Influenza A & B
    - Parainfluenza
    - Adenovirus
    - Human metapneumovirus
    - Rhinovirus

- Hospitalization rates for empyema increased in children in spite of pneumococcal conjugate vaccine

Pneumonia in Children

- Children > 5 yo
  - S. pneumoniae most common bacterial cause of pneumonia
  - M. pneumoniae and C. pneumonia are more common in children > 5yo

Pneumonia in Children

- Infants and Children < 5yo
  - S. pneumoniae most common bacterial pathogen
  - H. influenza now rare cause of pneumonia
  - S. aureus and Strep pyogenes becoming more frequent causes of CAP; particularly in association with influenza.
Pneumonia in Children

• Hospital Admission Criteria
  • Infants < 4 mos with fever and pneumonia
  • O2 saturation < 91%
  • Dehydration, unable to hydrate orally
  • Moderate to severe respiratory distress
  • Has failed outpatient therapy
  • Unable to assure compliance with outpatient therapy

Pneumonia in Children

• Infants and Children < 5yo
  • Outpatient treatment
    • High dose amoxicillin (80-90 mg/kg/d) for 7-10 days when bacterial cause likely
    • If allergic to penicillin, macrolide or cephalosporin
    • Consider initial dose of ceftriaxone before initiating oral antibiotic

Pneumonia in Children

• Children > 5 yo
  • Outpatient treatment
    • Macrolide antibiotic for 7-10 days (azithromycin for 5 days)
    • more severe pneumonia- macrolide plus beta lactam antibiotic (high dose amoxicillin or ceftriaxone)

Pneumonia in Children

• Inpatient therapy:
  • Third generation cephalosporin- ceftriaxone
  • Macrolide for suspected mycoplasma, chlamydia, or pertussis
  • Toxic child, complex pneumonia- vancomycin/clindamycin, ceftriaxone, macrolide
Pneumonia in Children

- 8 year old boy with 1 week history of abdominal pain, fever, vomiting

Mycoplasma pneumoniae

- 8 yo female with 10 day history of fever and cough

Pneumonia in Children

- 8 year old boy; WBC 28,000, right upper lobe consolidation, worsening respiratory distress

Pneumonia in Children

- 2 yo boy with three day history of persistent cough
UTIs in Infants and Children

- Prevalence of UTIs in children; highest in the first year of life
  - Febrile Infants < 3 months of age without source of infection - 7-9% (regardless of sex)
  - Girls 1-2 years of age 8.1%
  - Boys 1-2 years of age 1.2% (<0.5% >2yo)

Urinary tract Infections in Children

- Neonatal circumcision decreases risk of UTI 90% in first year of life.
  - Risk of UTI in first year of life of male infant
    - 1/1000 if circumcised
    - 1/100 if uncircumcised

Urinary Tract Infections

- Microbiology:
  - E Coli (75-90%)
  - Proteus (males)
  - Staph saprophyticus (sexually active teens)
  - Enterococcus
  - Klebsiella
  - Enterobacter, pseudomonas

Urinary Tract Infection: Clinical Practice Guideline for the Diagnosis and Management of the Initial UTI in Febrile Infants and Children 2 to 24 months
Pediatrics volume 128, number 3, September 2011
**UTI Guidelines 2-24 months 2012**

**Diagnosis:**
- In a febrile infant who clinically appears ill urine should be obtained by catheterization for urinalysis and culture prior to treating with antibiotics.
- The diagnosis of a UTI cannot be established reliably by culture of urine collected in a bg.

**Diagnosis of UTI:**
- Clinicians should require both urinalysis results that suggest infection (pyuria and/or bacteriuria) and presence of at least 50,000 CFU's per ml of a uropathogen cultures from urine obtained by catheterization.

**Management:**
- When initiating treatment base choice of antibiotic on local sensitivity patterns and adjust choice according to sensitivity testing.
- Choose 7-14 days as duration of antimicrobial therapy.
UTI Guidelines 2-24 months 2012

- Febrile infants with UTI’s should undergo renal and bladder ultrasonography. (RBUS)
  - Recommended in the first 2 days of treatment.
  - In this population, RBUS will yield 15-20% abnormal results and 1-2% will have results that will lead to additional evaluation, referral, or surgery.

UTI Guidelines 2-14 months 2012

- VCUG should not be performed routinely after the first febrile UTI.
  - VCUG is indicated if RBUS reveals hydronephrosis, scarring, or other findings suggestive of high grade VUR or obstruction.
  - Perform a VCUG if there is a recurrence of a febrile UTI.

UTI Guidelines 2-24 months 2012

- After confirmation of a UTI, parents should be instructed to seek medical attention within 48 hours for a febrile illness to ensure recurrent infections be detected and promptly treated.

UTI's in children

- Inpatient treatment:
  - Infants less than 3 months old
  - >3 months old:
    - Dehydration; inability to take fluids po
    - Ill appearing
    - Co-existing chronic disease (eg, sickle cell, diabetes, CF, urinary tract anomalies)
UTIs in Children

- Inpatient therapy for children who are toxic, dehydrated, or unable to take po fluids
  - Ceftriaxone 75 mg/kg/d
  - Cefotaxime 150 mg/kg/d divided q6h
  - Ceftazidime 100-150 mg/kg/d divided q8h
  - Gentamicin 7.5 mg/kg/d divided q8h

- Outpatient treatment
  - Empiric antibiotic therapy is directed against E Coli
    - Cephalexin 50-100 mg/kg/d in 4 doses
    - TMP-SMX 6-12 mg/kg trimethoprim and 30-60 mg/kg sulfamethoxazole per day
    - Cefpodoxime (vantin) 10 mg/kg/d in 2 doses
    - Amoxicillin-clavulanate 20-40 mg/kg/d
    - Cefuroxime axetil 20-30 mg/kg/d in 2 doses

Bacterial Meningitis in Infants and Children

- The Bugs
  - 0-3 months: Grp B Strep, Listeria, E Coli
  - 1-3 months: the above and S pneumoniae, N meningitidis, H influenzae
  - 3-36 months: Strep pneumoniae, N meningitidis, H influenzae, M tuberculosis

Meningitis in Infants and Children

- Viral meningitis
  - Enterovirus (coxsackie, echo)
  - Mumps
  - HSV
  - VZV
  - EBV
  - Adenovirus
**Meningitis in Infants and Children**

- **Treatment**
  - < 30 days: ampicillin and gentamicin or cefotaxime
  - > 30 days: vancomycin and ceftriaxone or cefotaxime
  - Dexamethasone
    - Decreased neurologic and audiologic sequelae in children with H Flu B meningitis
  - Prophylaxis of contacts

- **Duration of Antibiotic Treatment**
  - Grp B Strep: 10 - 14 days
  - E Coli: 21 days or 14 days beyond first negative CSF culture (whichever is longer)
  - Listeria: at least 21 days
  - Meningococcus: 7 days
  - Strep pneumoniae: 14 days
  - H influenza: 10 days

**Pneumococcal Meningitis**

- 6 month old infant with pneumococcal meningitis
- MRI showing multiple brain emboli.

**Kawasaki’s Disease**

- An acute multisystem vasculitis of unknown etiology
- A leading cause of acquired heart disease in children
Kawasaki’s Disease

- Peak age of occurrence between 18 months and 2 years
- 80% of patients less than 5 years old
- Incidence is highest in Asians

Kawasaki’s Disease

- Diagnostic Criteria:
  - Fever for 5 or more days
  - Bilateral nonexudative bulbar conjunctivitis
  - Polymorphous exanthem with perineal accentuation
  - Red cracked lips, strawberry tongue, pharyngeal erythema
  - Erythema and induration of hands and feet
  - Cervical adenopathy present in 50% of cases

Kawasaki’s Disease

- Associated findings
  - Urethritis with sterile pyuria
  - Hepatic dysfunction
  - Arthritis, arthralgia
  - Aseptic meningitis
  - Pericardial effusion
  - Myocarditis with CHF
  - Gallbladder hydrops

Kawasaki’s Disease

- Coronary artery dilatation or aneurysms will develop in 15-25% of untreated patients
- Risk factors for coronary artery aneurysms
  - Male
  - < 1 year old
  - Long duration of fever (> 10 days)
  - Elevated sedimentation rate
  - Elevated band count
  - Hgb < 10, thrombocytopenia, hypoalbuminemia
Kawasaki’s Disease

- Treatment/Management
  - IVIG
  - Aspirin
  - Echocardiography
  - Immunizations

Kawasaki’s Disease

- Dry, cracked lips

Kawasaki’s Disease

- Bulbar, nonexudative conjunctivitis

Kawasaki’s Disease

- Erythema and tender induration of hand
Common Pediatric Viral Infections
- Erythema infectiosum
- Parvovirus B19
- Low grade fever
- Parvovirus affects red blood cell precursors
- Decrease in reticulocyte count

Common Viral Infections
- Coxsackie virus infection
- Hand-foot-mouth syndrome
- Summer and Fall
- Lesions on hands and feet are usually vesicular
- May be associated with aseptic meningitis

Common Viral Infections
- Coxsackie virus
- herpangina

Common Viral Infections
- Roseola
- Human Herpesvirus 6
- High fever for 1-5 days
- Rash follows fever
- Post-Occipital adenopathy
- Common cause of febrile seizures
Scabies in Babies

- Predilection for axilla

Scabies

- 3 month old infant with typical lesions of scabies including papules and burrows

Scabies in Babies

- Commonly associated with nodular lesions
- May involve the face
- Caused by the mite, Sarcoptes scabiei
- Elimite