CASE HISTORY #1:  
The patient is a 5 year-old healthy female who has had a temperature of 101.5°F for two days. On the second day of fever, she developed a lace-like rash on her arms and trunk, and her cheeks became intensely red, with a “slapped cheek” appearance. The fever resolved on the third day, and the rash faded over the next week. She has continued to be playful during the illness and is drinking liquids well.

A clinical diagnosis of Erythema Infectiosum is made by the Pediatrician. What infectious agent is responsible for the disease?

A. Human Herpes Virus 6  
B. Respiratory Syncytial Virus  
C. Parvovirus B19  
D. Paramyxovirus Type 3  
E. Rotavirus
A similarly aged child, but with history of hereditary spherocytosis, presents with additional symptoms of pallor and fatigue. CBC reveals severe normocytic anemia. Reticulocytes are not detectable in the peripheral blood.

What complication of the above viral infection is this patient manifesting?

A. Iron deficiency anemia
B. Aplastic crisis
C. Hemolytic anemia

Mechanism of spread of parvovirus within the body

- Seven question approach:
  1. Parvovirus B19 (ssDNA virus with capsid) causes “Fifth Disease” or Erythema Infectiosum
  2. Respiratory transmission
  3. Generally a clinical diagnosis; detection by PCR from serum if necessary.
  4. See previous figure for pathogenesis
  5. No specific therapy
  6. No vaccine
  7. Consequences – recovery and immunity in healthy children

Rare but highly significant:
- Aplastic crisis
- Hydrops in pregnant women
CASE HISTORY #2:
A 6-month-old female with a ventricular septal defect is brought to the Emergency Department in January. Two days prior to admission she had developed a cough and runny nose. On the day of admission she began wheezing, developed a fever, and became lethargic. The patient’s three year old sister had a “cold” with cough and runny nose.

On examination the infant was agitated and coughing. Vitals: T - 38.9°C, P - 130, R - 40, BP - 90/58 mm Hg. Her fontanelles were open, soft, and flat. Her throat was clear. The left tympanic membrane was bulging, opaque and did not move with pneumatic otoscopy. She had use of accessory muscles, intercostal retractions and nasal flaring. On lung exam, there was hyperresonance to percussion. On auscultation of her lungs, expiratory wheeze and crackles were heard.

Are there any effective therapeutics available for this viral infection?
A. No
B. A live-attenuated vaccine
C. A killed-virus vaccine
D. Palivizumab, but it should have been administered in Nov/Dec
E. Ribavirin

How is this viral infection detected at LUMC?
A. High viral specific IgM
B. RT-PCR of nasopharyngeal aspirate (NPA)
C. Culture of NPA to detect syncytia
D. Detection of viral antigens by immunofluorescence assay
CASE HISTORY #3:

A 13 month-old Hispanic male was brought to the Emergency Department by his mother for fever and cough. The family had arrived in Chicago 1 week prior from Mexico where they had previously resided. The child had fever to 39°C for two days, persistent cough, rhinorhea and conjunctivitis. On the day of presentation to the ED, the mother had noted a red rash on the neck and behind the ears. There was no rash on the rest of the body. The child had received immunizations at 2, 4 and 6 months of age but none since then. The physician noted that the child's mouth was very red with white spots near the molars the size of coarse salt. Over the next 1-2 days, the rash spread to involve the entire body and then all symptoms resolved over the next few days. A 4 month-old cousin resided with the family.
Measles infection in young infants is associated with:

A. A mild disease due to protection by maternal antibody.
B. Atypical measles with rash on the more distal areas of the body.
C. An increased risk for developing SSPE.
D. Prolonged development of Koplik’s spots.

Infection with measles can be prevented by:

A. Drinking only bottled water.
B. An effective killed virus vaccine.
C. Immunization with a live-attenuated vaccine.
D. Not standing in line at Disneyland.
CASE HISTORY #4:

In September, a 3-year-old male presented to his pediatrician with a 1 day history of fever to 101.5°F. The child complained of pain when swallowing and the mother had begun to see small bumps on the palms and soles of the feet. Physical examination revealed several pharyngeal ulcerations and papulovesicular lesions on the palms and soles. A clinical diagnosis was made. The next week, the boy’s 8-year-old sister brought home a note from school describing a recent outbreak of this disease.
What is the primary route of transmission for this infection?

A. Mother to child  
B. Respiratory droplets  
C. Fecal-oral contamination  

The New England Journal of Medicine
Hand, Foot, and Mouth Disease in an Adult
Murakami C. and Aizpuru M. June 2010
Case History #5: One of the memorable events from the Winter Olympics in Sochi was poor Bob Costas…

The name “pink eye” is obvious. What virus is commonly associated with this clinical presentation?
A. Enterovirus  
B. Adenovirus  
C. Cytomegalovirus  
D. Influenza virus  
E. Rhinovirus

Seven question approach:
Adenovirus (dsDNA virus with capsid) causes “Pink Eye” or Respiratory or GI Infections
Respiratory transmission
Detection by PCR from site of infection, Pink Eye is generally a clinical diagnosis
Virus replication at the site, inflammation due to immune response
No specific therapy
No vaccine
Consequences – recovery and immunity in healthy children
Adenoviruses can also cause:
Pneumonia
Gastroenteritis
Pharyngitis and pharyngoconjunctival fever