Pathogenic Bacteria and Viral Illness: Are They Associated? 
What the Microbiome Tells Us

Kirsten Kloepfer MD 
Indiana University

James E. Gern MD 
University of Wisconsin-Madison

1. Role of respiratory viruses in wheezing illnesses
   a. Infancy – RSV and rhinovirus-induced wheeze
   b. Viral wheeze and the development of asthma
   c. The question of causality
   d. Viral illnesses and exacerbations of asthma

2. Bacteria, wheezing and asthma
   a. COPSAC: colonization with H. flu, S. pneumo, M catarrhalis and subsequent asthma (1)
   b. Bacterial infections and wheezing episodes (2)
   b. Microbiome studies in asthma
      i. Hilty PLoS One 2010 (3)
      ii. Huang JACI 2011 (4)
      iii. Huang Ann Am Thorac Soc 2014 (5)
   c. Microbiome studies of bronchiolitis
      i. Hyde JACI 2014 (online ahead of print)
   d. Asthma and chlamydia or mycoplasma
   e. Bacterial sinusitis and asthma

3. Virus/bacterial interactions and rhinovirus illnesses
   a. Kloepfer (under review)

4. Possible mechanisms of virus-bacterial interactions
   a. Virus-induced inflammation and bacterial invasiveness
   b. Reduced epithelial barrier function
   c. Other immunologic mechanisms

5. Implications for treatment
   a. Identification of cases with bacterial contribution
   b. Antibiotics (groan…)
   c. Probiotics
   d. Vaccines
   e. Other
References


