Immunity is gained from infection and/or vaccination. An effect of immunity is in the ability of a host’s body to resist infection. This effect, however, may be less likely to occur as time since vaccination increases – immunity can wane over time, allowing asymptomatic or mild infections, or severe infections if immunity fully wanes. In this talk I will introduce models of waning immunity applied to different childhood and respiratory diseases. I will then discuss the effect of immunity waning rates on herd immunity, and on infection observations in a population. (Received August 10, 2020)