

**Figure S1:** The local wavelet power spectrum (sqrt-transformed, dark red = high, dark blue = low) corresponds to the amount of variation in the signal that is explained by different periods (y-axis) as a function of time (x-axis). The global wavelet spectrum averages this variation across time. Throughout most of the time series there is a strong annual component with some sub-annual components driven by differences in epidemic timing and a double peak during the 2008-09 season. Multi-annual components are present, on the order of 2-3 years, but the length of the time series is too short to provide strong support. Accounting for edge effects, the periods that can be detected at a particular time lie above the thick black line (cone of influence). The areas of statistically significant power at the 5% level are contoured by the thin black lines. On the global wavelet spectrum, this threshold is indicated by the dashed line. (a) result assuming uncorrelated, white noise; (b) result assuming autocorrelated, red noise. Note in (b) the two novel serotype introductions are emphasized (2001-2002 and 2008).