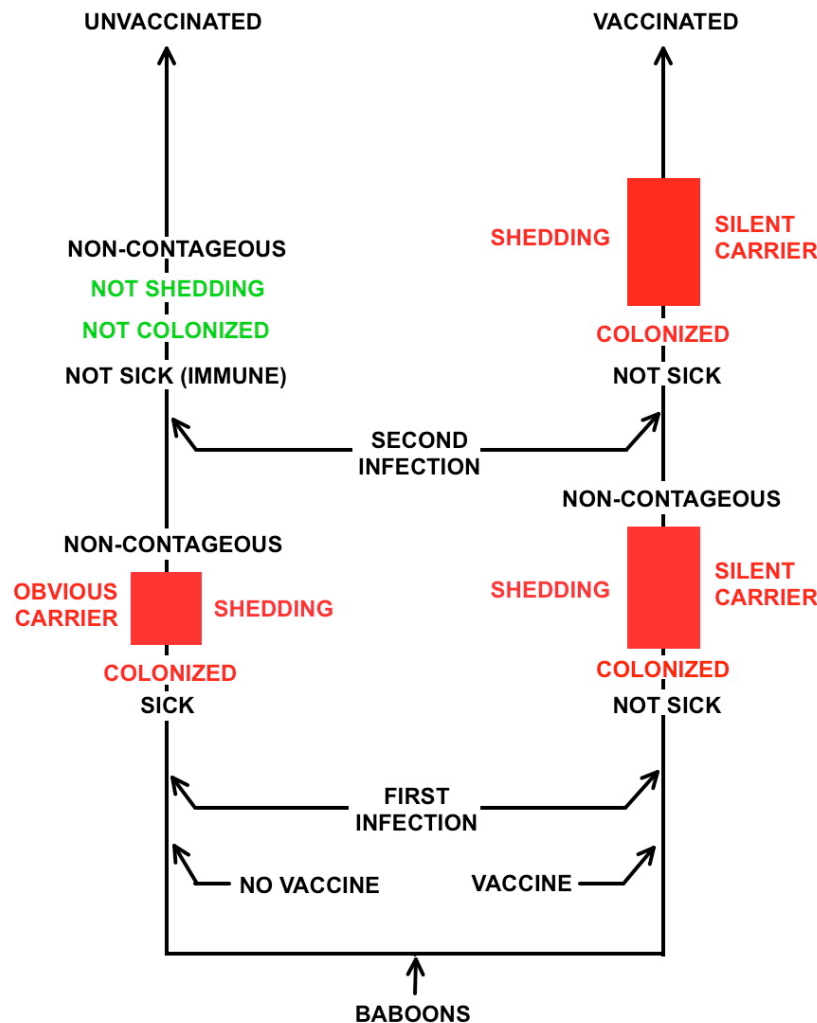


The Classic Baboon Study of Acellular Pertussis Vaccine Ineffectiveness

<http://www.pnas.org/content/111/2/787.full.pdf+html>

The baboon immune system is closely related to the human immune system. In this 2014 experiment, one group of baboons was vaccinated with the acellular pertussis vaccine, another received no vaccine, and a third the whole-cell vaccine. (Since the whole-cell vaccine was abandoned years ago as too dangerous, it is skipped here). Both the acellular and unvaccinated groups were exposed to pertussis virus.

In both groups, the noses and throats of the baboons were "colonized" by the bacteria, and thus could be shed, infecting others. As might be expected, the unvaccinated group "got sick" (showed symptoms), while the vaccinated group did not. **But surprisingly, the unvaccinated group cleared the bacteria faster than the vaccinated group.**



After the infection eventually cleared, both groups were again exposed to the bacteria. **This time the bacteria again colonized the vaccinated group (silently), but could not colonize the unvaccinated group (i.e., they were now immune).** This difference was ascribed to the fact that natural infection stimulates both the innate cellular (TH1) and humeral antibody (TH2) parts of the immune system, while the vaccine stimulates primarily the antibody part.

This result showed that vaccinated people are more capable of infecting others -- both in the aftermath of vaccination and during any subsequent (silent) infection -- than unvaccinated people, who can do so only during the first -- and only -- (visible) infection.. This has direct relevance to the risk of infection of immunocomprised children in the classroom by unvaccinated vs. vaccinated children.