MEASLES / MMR VACCINE | Recent science

- **Czescik et al, Polish Journal of Microbiology, 2014**: “...it is increasingly being considered that antibody-based definitions of vaccine success or failure may be incomplete.”

- **Rosen et al., Clinical Infectious Disease, 2014**: In the NYC outbreak of 2011, “The index patient had 2 doses of measles-containing vaccine; of 88 contacts, 4 secondary patients were confirmed who had either 2 doses of measles-containing vaccine or a past positive measles IgG antibody.”

- **De Serres et al., Journal of Infectious Disease, 2013**: Detailed analysis of Quebec outbreak revealed under-diagnosis and under-reporting of measles in fully vaccinated persons. The mean age of case patients was 15 years and incidence was highest in adolescents and 20% of them had received 2-doses of vaccine as recommended.

- **Waaizenborg et al, Journal of Infectious Diseases, 2013**: “Children of mothers vaccinated against measles and, possibly, rubella have lower concentrations of maternal antibodies and lose protection by maternal antibodies at an earlier age than children of mothers in communities that oppose vaccination. This increases the risk of disease transmission in highly vaccinated populations.”

**Loss of maternal protection as a consequence of the vaccination program was well documented in the literature as recently as 2009.**

- **Heffernan and Keeling, Proceedings of the Royal Society B, 2009**: Implications of vaccination and waning immunity: “In the absence of vaccination, lifelong immunity is maintained through frequent encounters with infection, which act to boost the waning immune memory (this agrees with the findings of Whittle et al. 1999). However, when vaccination is introduced the prevalence of infection declines, which in turn reduces the amount of boosting and hence the level of immunity (in agreement with Muller 2001). What is more surprising is that the interaction between vaccination and waning immunity can lead to pronounced epidemic cycles in which the peak levels of infection can be of the orders of magnitude greater...
than the mean.”

- Mossing, et al, Americal Journal of Epidemiology, 1999, Modeling the Impact of Subclinical Measles Transmission in Vaccinated Populations with Waning Immunity: “Several studies have shown that measles epidemics can occur even in highly vaccinated populations (1-4). A variety of factors are likely to be contributory to this observation including failure to seroconvert and waning of vaccine-induced immunity (5). It is well documented from outbreak investigations that current measles vaccines protect between 90-95 percent of vaccinees from typical measles (3, 6-8). However, evidence is accumulating which suggests that vaccine derived immunity might be less protective than previously assumed. There is a growing concern that among individuals who respond to vaccine, a substantial proportion are or will become susceptible to clinical (symptomatic) or subclinical (asymptomatic) infection.”

- Levy, Am J Epidemiol (1984), The future of measles in highly immunized populations. A modeling approach. “The results of this study suggest that measles elimination in the United States has been achieved by an effective immunization program aimed at young susceptibles combined with a highly, naturally immunized adult population. However, despite short-term success in eliminating the disease, long-range projections demonstrate that the proportion of susceptibles in the year 2050 may be greater than in the prevaccine era. Present vaccine technology and public health policy must be altered to deal with this eventuality.”