

DEBATE

Vaccinations: for or against

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The paper by Teixeira¹ makes the case that a number of untoward effects have been linked to immunizations. Adler² challenges that view.

Each author wrote a scholarly piece, well conceived and with conclusions well supported by up-to-date literature. However, each arrived at opposite conclusions from the published literature he chose to consider. This indicates once again that science is not the objective process we would like it to be, but a process in which, as in many human endeavours, a priori bias is critical for interpreting available data. This variability in data interpretation can also be found within institutions or even countries. For example, while immunisation against tuberculosis (BCG) is mandatory in France, it is generally discouraged in the USA where it is considered only in very rare specific situations.

In light of the emotion and uncertainty (or should I say 'certainties') that still surround the question of vaccinations despite the mass of available data, it is not the purpose of this editorial to attempt to provide a resolution of this contentious issue. Rather, I propose to share my meandering thoughts on the topic.

In January 1977, I defended a PhD thesis in molecular immunology. Three months later I met homeopaths who introduced me to their view of the world, a view, to say the least, rather different from my formal training. However, from both the immunologic and homeopathic standpoints, it seemed to me that vaccinations made sense. Therefore, by the early to mid-1980s, when my first three children were born, they received the full complement of vaccines available at the time.

For the next couple of decades I grew, if not wiser, at least more confused, likely a case of progressive old timer's disease. By 2003, when my latest baby girl was born, my wife and I were not sure about which immunisation to give and when. When we turned to university-based pediatricians for guidance, we did not receive satisfactory answers to our questions, which

aimed mostly at understanding the risk-benefit ratio of mandatory vaccines. We were simply given some fact sheets published by the Center for Disease Control and Prevention (CDC).

The general thrust of the fact sheets we received was the same: vaccines are necessary and their benefits far outweigh their risks, which are generally considered minor (although all the sheets mentioned the National Injury Compensation Program, 'a Federal program [that] has been created to help pay for the care of those who have been harmed'). The fact sheets did not mention any possible long-term risks and I found the statistics cited to be somewhat confusing: risks were mostly expressed relative to vaccinations performed (eg, less than 1 in 1000 reported case of seizures as a result of chicken pox immunization-caused fever), while the dire consequences of the disease among all persons were given as absolute numbers of events (eg, 100 deaths per year caused by chicken pox in the USA). Further, there was no mention of whether some of the vaccinated children contracted the disease; how many unvaccinated children contracted the disease; and among all persons, how many had concomitant medical conditions that could be predisposing factors to serious consequences of the disease (eg, immunodeficiency, malnutrition, other infections, etc). In the absence of proper information, I found it difficult to interpret the figures cited in the CDC fact sheets.

As I gathered more (dis)information about vaccines, I began to formulate a few comments and questions that, I hope, are not too unreasonable.

First, it seems to me that the real issue is not whether vaccines are good or bad *in general*. From a fundamental standpoint, the fact that there are theoretical explanations for potential adverse events of immunization is a good thing. However, the very fact that there is an on-going controversy points to the fact that if these adverse events do occur, it is only in a proportion of the immunized individuals. Who are these individuals? Are there genetic (eg, HLA make-up) and/or environmental (eg, co-infection, immunodeficiency, autoimmune diseases, etc) co-factors that potentiate the expression of such events? Even better, could individuals likely to develop such adverse events be

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typed? (That latter perspective should thrill homeopaths who delight in individualization).

If naturally-occurring infections lead to the expansion of immune cell subsets different from those induced by immunizations, would the form of the vaccine affect the expression of adverse events? For example, would attenuated vaccines differ from genetically engineered ones (in which only part of the infectious agent is administered)? Further, could the frequency of adverse events be decreased by adjusting the timing of immunization to the expected maturation of the immune system, at least for the individuals at risk?

Second, collateral effects of vaccines may be related to the manufacturing of the vaccine rather than the immunization proper. Vaccines can carry contaminants that are potentially toxic, whether these contaminants are biological or chemical. For example, during the winter 2004-2005, the supply of the flu vaccine was severely curtailed in the USA because of a contamination that occurred during its preparation. Similarly, in the late 50s some anti-polyomyelitis vaccine was contaminated with SV40 (a virus that has been associated with some cancers, although a causal relationship has not been established). Also, chemical adjuvants and stabilizers can be potentially toxic.

Third, and perhaps most important, the critical fact is to evaluate the risk/benefit ratio of particular vaccines. For example, the potential benefits of the small pox vaccine were well worth the risks at the time when the disease caused many casualties. Now that the disease is considered eradicated the risks are not worth taking any longer and the vaccine is no longer recommended. Would, say, atopic dermatitis, or asthma, be an acceptable risk if the vaccine is destined to avert a relatively benign common childhood disease (eg, chicken pox) that usually resolve by itself and most

often without sequels? Would the same atopic dermatitis, or asthma be an acceptable risk if the seemingly benign disease (eg, chicken pox) is contracted at a later age, by a pregnant woman, with potentially dire consequences for the child she carries?

These are a few of the questions I thought would be relevant to making a reasonable decision as to whether to vaccinate or not.

Now, where do we go from here? I do not have clear-cut answers to most of these questions, because, as in the papers that sparked this editorial, I could not easily find publications that attempted to explain and/or reconcile the controversy. Yet, as Mr Fix-it, I like conclusions. So I had a wicked idea. Would Teixeira and Adler consider being co-chairs of a workshop of 15-20 participants (eg, public health, pediatrics, vaccine manufacturers, researchers in the field) with the sole purpose of formulating questions pertinent to answering the problem they addressed (perhaps some of them will look like the ones I outlined above). A task force could be then formed from some or all of the workshop participants to co-ordinate the collection and interpretation of fragmentary answers to those questions, then to synthesize and publish the findings. Indeed, I believe that much of the necessary information may already be embedded in the data available to the authors they cited in their papers.

References

- 1 Teixeira MZ. Is there scientific evidence that suppression of acute diseases in childhood induce chronic diseases in the future? *Homp* 2002; **91**: 207-216.
- 2 Adler UC. The influence of childhood infections and vaccination on the development of atopy: a systematic review of the direct epidemiological evidence. *Homp* 2005; **94**: 182-195.