

## Vaccination Issues: Putting Them in Proper Perspective

In "Issues in Chiropractic Pediatrics: Vaccination" (*DC*, 2-23-98) Joel Alcantara, BSc, DC, addresses some important issues in chiropractic education and practice associated with immunization, and he cites a number of valid references to support his points. However, he also broadly generalizes and makes several comments that require clarification or explanation.

He begins his paper with the general statement that vaccine failures and adverse reactions to immunizing agents "bring about the question of the efficacy of vaccines." He then lists a number of adverse reactions that have been associated with immunizations and implies that these are linked to immune disorders. Adverse reactions purportedly related to vaccination certainly do occur, but Dr. Alcantara failed to provide either a proper perspective or current analysis of those events. Several of his citations are outdated and do not include more current studies contradicting his assertions. Some of his references are letters or isolated cases, not surveys. There is no indication that any of these reports are confirmed to be vaccine related. Finally, his statement regarding the efficacy of vaccines is no more than an opinion, because he has neglected to present his data in an epidemiological context.

The basic principle of epidemiology in public health is to measure how disease is distributed in a population and to determine the factors that influence or determine this distribution. These include evaluating the cause of disease, measuring its occurrence, and estimating risk by determining if there is a statistical association.

The importance of epidemiological assessment can be illustrated with a different example, but using the same logic that Dr. Alcantara applies to immunization. Suppose an article appeared condemning all cervical manipulations because cerebrovascular accidents have been reported after manipulation of the neck. Such a categorical condemnation is virtually meaningless without risk-factor analysis. American insurance data indicate that incidence of stroke is one per two million treatments of the neck, and irreversible cerebrovascular accident one per 1.3 million treatments of the neck.<sup>1,2</sup>

Some cervical manipulations are not associated with any risk. No reasonable person would dismiss all cervical procedures on the basis of such insignificant risks. Likewise, it is impossible to make valid judgments of vaccinations without similar data. Furthermore, many infectious diseases are severe or even life threatening. The risk of morbidity and mortality of the disease should be weighed against the risk of injury from the vaccine. Rabies is a viral disease that is inevitably fatal. Would anyone who had been bitten by a rabid wild animal seriously question the transient side effects of the vaccine? Likewise would any rational, informed person continue to question the efficacy of the smallpox vaccine in light of the world-wide eradication of the disease in the World Health Organization (WHO) international campaign and the subsequent discontinuance of vaccination?<sup>3</sup>

Dr. Alcantara also fails to mention that many adverse events once thought to be possibly associated with vaccines have, with larger, more sensitive studies been proven to be unrelated to vaccines.

- Mitchel<sup>4</sup> studied the birth cohort of New Zealand for three years and found that the incidence of SIDS in vaccinated children was lower than in unvaccinated children.
- Several recent studies have failed to confirm DTP-related encephalopathy.<sup>5</sup>
- Concerns about vaccine-related asthma and diabetes have not been supported in clinical studies.<sup>6,7</sup>
- Many concerns about vaccine-related Guillain-Barre syndrome (GBS) have likewise been proven false. DaSilveira found "no statistically significant association between measles vaccinations and GBS."<sup>8</sup> Likewise, Rantala found "strong evidence against a causal relationship between oral polio vaccine administration and the incidence of GBS."<sup>9</sup>

Hypersensitivity reactions have been reported to occur after the administration of the measles-mumps-rubella (MMR) vaccine, and may be used as an example of risk assessment. Does temporal association of anaphylaxis with immunization mean that these vaccines should be eliminated? What is the actual risk? Epidemiological evidence tells us that anaphylactic reactions following MMR are extremely rare. Although over 70 million doses of MMR vaccine have been distributed in the U.S. since the vaccine adverse events reporting system (VAERS) was implemented in 1990, only 33 cases of anaphylactic reactions that occurred after MMR vaccination have been reported. Furthermore, only 11 of these cases occurred immediately after vaccination.<sup>10</sup>

These data should be weighed against WHO statistics: 56 percent decline in the prevalence of measles from approximately 100 million cases and 5.8 million deaths worldwide in 1980, to an estimated 4.4 million cases and 1.1 million deaths in 1995 as a result of widespread infant immunization. In regard to the efficacy of the measles vaccine, the WHO, the Pan American Health Organization, and the Centers for Disease Control project a plausible date of 2005 to 2010 for the global eradication of measles.<sup>11</sup> This projection is based in part on continuing to utilize the methodology and surveillance program which has been successful in completely eliminating polio from the northern and southern hemispheres and many other regions of the world.

The WHO polio campaign is still on schedule to eradicate the disease worldwide by 2000. Only 4,000 polio cases were reported worldwide in 1996, which is a decline of nearly 90 percent from 35,000 cases reported in 1988. Some have suggested that the elimination of polio is only a coincidence of improvements in sanitation. This is definitely not the case. In South America the last case of polio from wild infection was recorded in 1991.<sup>12</sup> In the same year, South America experienced a major cholera epidemic with thousands of cases and deaths. By the end of 1992, 339,561 cholera cases and 2,321 deaths were reported in 21 countries in the Western Hemisphere.<sup>13</sup> Polio and cholera have identical epidemiology. The infectious microorganisms are transmitted in sewage, and epidemics are associated with poor sanitation. The only rational explanation for the disappearance of polio in South America during this period is that it was eliminated by establishing and maintaining immunization rates of at least 80 percent, thus breaking the chain of transmission.<sup>14</sup>

Dr. Alcantara cites a BCG vaccination campaign against tuberculosis in the Czech Republic, a developed European country, as an example of the consequences of terminating a questionable vaccine program. In this example he presents statistical data that indicate low rates of disease in the general population led to a recommendation to continue vaccination in high risk individuals only. Tuberculosis is a chronic, slowly developing disease with the highest rates in the developing countries of Africa, Asia, and South America.

More dynamic examples of rapid change in disease incidence are seen in several developed countries that let their immunization levels for pertussis drop. Great Britain, Sweden, and Japan cut back their use of pertussis vaccine because of fears about its safety. In Great Britain in 1974 this was followed by an epidemic of more than 100,000 cases of pertussis and 36 deaths in 1978.<sup>15</sup> In Sweden pertussis immunization was discontinued in 1979. The annual incidence rate increased from 700 per 100,000 population in 1981 to 3,200 cases in 1985.<sup>16</sup> In Japan at about the same time, a drop in vaccination rates from 70-40 percent led to a jump in pertussis from 393 cases and not deaths in 1981, to 3,200 cases and 41 deaths in 1,979.<sup>17</sup> In a more recent example, a major epidemic of diphtheria is now taking place in the former Soviet Union, where low primary immunization rates in children and lack of booster immunizations in adults have resulted in an increase from 839 cases in 1989 to nearly 50,000 cases, and 1,700 deaths in 1994 with the number of cases increasing 2-10 fold every year.<sup>18</sup>

In the last section of his paper, Dr. Alcantara makes some comments on patient education and recommends immunization for "inner city children living in poverty with poor hygiene and poor nutrition," and later repeats that there is ample evidence that "vaccination needs to be directed to low income minority preschool children." However, the references he provides do not support this assertion. The study he cited by Wood only examines factors associated with under-vaccination in inner city areas.<sup>19</sup> Dr. Alcantara should have looked at studies by the same author which directly compared the value of mass immunization campaigns versus routine immunization programs, which conclude that "mass campaigns appear to be highly effective in raising the dose-related poliovirus type-specific immunity of the population above that achieved by the routine immunization program."<sup>20</sup> We hope that Dr. Alcantara's recommendation for selective immunization was meant to suggest the importance of counseling all patients regardless of race or social standing, but that is not made clear in the article.

These statements really do need to be clarified because they seem to imply that the author is suggesting that chiropractors should apply a double standard in advising patients about immunization. This is exactly the rationalization that was used in the infamous U.S. Public Health Service untreated syphilis study in rural Alabama (1936-68). The logic was that if the disease was not controlled in the poor black population, that it would spread to the white population. This attitude did not begin to change until the civil rights movement. The WHO, American Public Health Association and other professional public health agencies operate under the principle that public health is a universal concern and infectious disease know no racial or regional boundaries. We hope that Dr. Alcantara will clarify this and the other points we have mentioned in his next article.

While no vaccine is 100 percent safe or effective, immunization has dramatically reduced the incidence of numerous diseases with high childhood morbidity to less than one percent of former levels in many countries, eradicated smallpox, and has saved countless millions of lives worldwide. Some members of the chiropractic profession are still unwilling to accept this fact despite overwhelming scientific evidence supporting it.<sup>21</sup> This attitude by a small and outspoken minority contributes to an unwarranted but widespread impression that chiropractors have limited education, training or perspective in basic science and public health.<sup>22,23</sup> We anticipate no change in this pattern until certain chiropractic organizations and institutions set their prejudices aside and work for the benefit of the public on the grounds of professional, objective and valid examination of the evidence for and against immunization.

## *References*

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