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# Editorials, Annotations, and Topics for Our Times

## Editorial: The Era of Health Promotion for Children and Adolescents—A Cross-Sectional Survey of Strategies and New Knowledge

Public health for children is steadily emphasizing health promotion. This convention is much in evidence in the series of papers included in the special section of the *Journal on child health*. The research reported in this issue ranges from the effects of exposure to tobacco on the health of infants to adolescent risk behaviors, approaches to prevention, and access to services.

The case for controlling exposure to tobacco and reducing tobacco use among youth emerges as the most absorbing area of concern. There is undoubtedly the sweet smell of victory in the air. The Davids of public health have engaged the Goliaths of the industry in full battle, and the once popular image of cigarettes as a symbol of prestige is "gasping for breath." An important public health strategy in taking control of this contest has been the revelation that children were often the target of advertising campaigns. While considerable ground has been gained on the home front, it remains to be seen what levels of success will be reached outside the United States.

The finding reported by Mascola et al.<sup>1</sup> demonstrating much higher urinary cotinine levels in breast-fed infants of mothers who smoke than in bottle-fed infants of smoking mothers adds an important new element to the archives of the indirect effects of tobacco use. The study extends the reach of the toxic effects of tobacco to infants of non-smoking mothers when they live with others who smoke. The list of negative health effects of this exposure, especially for the breast-fed infants, is easy to imagine: upper respiratory infections, irritability, sleep disturbance, poor attendance at day care and school, academic underachievement, and the list goes on. Since tobacco use may itself be just one adverse factor in a pattern of environmental risks that include maternal

depression, use of other substances, and social stressors, the cumulative risk for infants may indeed be huge. Yet, the findings reported by McBride et al.<sup>2</sup> indicate that children of smokers do not use medical services at greater rates than children of nonsmokers. As the researchers note, this unexpected result needs replication. In doing so, it would be good not only to increase the size and diversity of samples but to include contacts with mental health, recreational, and school-based services as well.

Two papers focus on enforcement of legislation that bans the sale of tobacco to children. The work of Cummings et al.<sup>3</sup> adopts a randomized design in which counties in upstate New York were assigned to either active or passive enforcement procedures. The results indicate that a climate of taking the law seriously exists among retailers. How much of this is attributable to public attitudes as opposed to the threats of fines or legal suits is not clear. This lack of additional information is important, because these results in one part of this state do not hold for another, as evidenced in the report of Gemson et al.<sup>4</sup> Their work in central Harlem indicates that sale of tobacco to youth is very common among retailers and that active enforcement is needed to substantially reduce this practice. The message for health promoters is that legislation is indeed a needed component toward a complete health promotion strategy.

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*Editor's Note.* See related articles by Mascola et al. (p 893), McBride et al. (p 897), Cummings et al. (p 932), Gemson et al. (p 936), Bachman et al. (p 887), Sonenstein et al. (p 956), Simon et al. (p 960), Neumark-Sztainer et al. (p 952), Chou et al. (p 944), Ewart et al. (p 949), Koenig et al. (p 903), Perrin et al. (p 928), Bussing et al. (p 880), Geltman and Meyers (p 967), and Sonis (p 964) in this issue.

A second group of papers in this section explores the prevalence and modifiability of risk behaviors and lifestyle conditions. We learn from Bachman et al.<sup>5</sup> that the secular fluctuation in marijuana use in a national sample of high school students is subject more to shifting perceptions of harm and social tolerance than to other factors such as commitment to school and use of leisure time. Although not included in this study, such perceptions probably differ quite widely with regard to other drugs such as cocaine and hallucinogens. Thus, the suggestion is that the recent upturn in prevalence of marijuana use reflects a cultural phenomenon rather than changes in availability and cost of the drug or changes in individual-level risk factors. Interestingly, the trends in initiation of sexual activity and adoption of safe sex practices appear to be moving in the opposite direction, according to results from another national study of adolescents reported by Sonenstein et al.<sup>6</sup>

Analysis of a more dangerous behavior, possession of handguns, reveals that individual factors, such as drug use and distress, do contribute heavily, as reported by Simon et al.<sup>7</sup> The fact that this finding applies to females as well as males signals that the gender gap is closing even in this area long considered the result of male-specific proclivities. The work of Neumark-Sztainer et al.<sup>8</sup> indicates that a similar configuration of risk factors encompasses extreme efforts to lose weight among adolescents.

Chou et al.<sup>9</sup> provide important evidence that efforts to modify lifestyle risks can be successfully achieved. While questions remain as to the success of efforts to prevent the initiation of drug use, this study provides convincing results that programs using peer pressure and other social influences can reduce the use of substances among those already initiated. The aim to expand preventative and health promotion practices to adolescents is also endorsed by the small but notable study of Ewart et al.<sup>10</sup> One semester of aerobic exercises for a group of high-risk adolescent girls significantly reduced their blood pressure relative to those in a standard physical education class. This impressive result should stimulate efforts to determine whether such benefits extend to other areas of well-being, to incorporate such routines into the standard curriculum, and to examine how well training in these exercises becomes incorporated into healthier attitudes and lifestyles for young people.

Not to be missed in this special section is the single paper reporting research from a resource-poor country. The report by Koenig et al.<sup>11</sup> from Bangladesh shows that long-term immunity for neonatal tetanus is

transferred from mother to infant by two injections of toxoid. Immunity established before women become pregnant can thus serve to protect infants born at much later dates. So while new emphases are being directed to issues of lifestyle and behavioral change in contemporary approaches to child health, the much older problem of combating infectious diseases that have been major contributors to infant mortality around the world remains the subject of research that makes protecting larger populations all the more feasible.

A last group of papers covers issues related to financing and access to health services. Perrin et al.<sup>12</sup> show that growing rates of poverty among children, more than health problems or financial incentives, are responsible for a doubling in the number of children receiving Social Security income. This is another instance of poverty costing health care systems more than it is worth. In the only paper in this series with a focus on middle childhood, Bussing et al.<sup>13</sup> report on the high prevalence of attentional problems in children placed in special educational settings. The fact that only half the children with this problem receive any medical attention is cause for alarm, since referral to such services should increase the likelihood that problems that interfere with learning are addressed. Although this is expectable, it needs to be said that unmet needs for this condition are greatest for African Americans and Hispanics.

Given the current political climate surrounding the extension of rights of citizenship to those born outside the United States, the 2 papers on immigrant children in the health care system are timely. The work by Geltman and Meyers<sup>14</sup> indicates a willingness on the part of large numbers of pediatricians not to comply with laws mandating the reporting of suspected child abuse when such reports may threaten deportation of families. It is obviously important to expand such research to contrast physician attitudes in different regions of the nation and in different types of practice. The breach between their ethical stance and legal fiat would appear to be wide enough to require much more open debate than presently exists on this issue. Assimilation to American society, as indexed by the duration of the family's residence in the United States, is associated with increased access to medical care for adolescents. This finding, reported by Sonis,<sup>15</sup> adds a reassuring note to this collection of papers that some aspects of our systems of care and protection of children do still work.

As reflected in this cross section of papers on child health, where are we in 1998?

I would say that the first stage of child health promotion is very much in evidence. While the quality of the work lags behind the application of similar ideas and strategies in adult populations, we are now engaging the social, educational, and physical environments of children and adolescents in a way that goes beyond disease prevention. In this affluent society, it becomes possible to extend a child's right to protection and care to all junior citizens. Closing the gap that exists between African Americans, Hispanics, and Whites too is possible. In fact, integrating a rights approach, for example, as articulated in the United Nations Convention on the Rights of the Child, with health promotional strategies makes for a strong alliance toward charting the course for future research and public health applications. At the same time, it is of great importance not to overlook the need for international cooperation in continuing efforts to prevent those diseases that we do know how to control. □

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## Editorial: Prevention of Neonatal Tetanus

Neonatal tetanus caused an estimated 490 000 deaths in 1994; however, in developing countries, at least 730 000 deaths were prevented by protection of infants at birth through vaccination of their mothers or by clean delivery and umbilical cord care practices.<sup>1</sup> This represents considerable progress toward the year 2000 goal of reducing mortality from neonatal tetanus to a rate of less than 1 per 1000 live births and thereby eliminating it as a public health problem. Prevention at this level can probably be achieved by administering 2 properly spaced doses of tetanus toxoid to 80% of women of childbearing age. The follow-up study of Koenig et al.<sup>2</sup> provides important information that defines some of the parameters of the control program. Two doses of tetanus toxoid provided significant protection against neonatal tetanus for infants born to women vaccinated up to 13 years previously. A single dose showed some protection for at least 5 years.

Tetanus toxoid is a very effective immunogen that stimulates a protective response in virtually all immunocompetent subjects to whom it is administered. Studies in former military personnel have shown that up to 88% have protective antibody levels 15 years after vaccination.<sup>3</sup> That this protection can persist for a similar period for immunized women, even those from Bangladesh who may have had less than adequate nutrition, is reassuring.<sup>2</sup> The current tetanus toxoid schedule for women attending prenatal clinics in some developing countries calls for 3 doses during the first pregnancy and a single dose for each subsequent pregnancy. This schedule results in unnecessary vaccination that may lead to adverse reactions.<sup>4</sup> Excess vaccination may be inadvertent, because accurate immunization records often are not available. Better record keeping might reduce excess vaccination and allow resources to be concentrated on women who have not been vaccinated. Insufficient funds are cited as

one of the constraints upon elimination of neonatal tetanus.<sup>1</sup>

Another reason for avoiding excess vaccination with tetanus toxoid is the resulting protein-carrier-mediated suppression of the antibody response to antigens conjugated to tetanus toxoid. Mulholland et al.<sup>5</sup> found that women who had recently been immunized with tetanus toxoid had weaker responses to the capsular polysaccharide of *Haemophilus influenzae* type b that was conjugated to tetanus toxoid (PRP-T). PRP-T was the first of several new vaccines currently being tested that use tetanus toxoid as the protein carrier. Others include vaccines for pneumococcus and group B streptococcus that also may be useful for pregnant women.<sup>6</sup> Overuse of tetanus toxoid has the potential to diminish the effectiveness of these conjugate vaccines.

Immunization of pregnant women apparently does not suppress active antibody response of their infants immunized with the same vaccine.<sup>7,8</sup> In fact, some investigators have suggested that maternal immunization with tetanus toxoid may prime the fetus for a better immune response after birth.<sup>9,10</sup> For instance, in infants of mothers who received tetanus toxoid during pregnancy, in comparison with infants whose mothers were not vaccinated, Gill et al.<sup>9</sup> found slightly higher titers after the primary diphtheria-tetanus-pertussis series. Some of these infants had detectable specific IgM antibody in cord blood and increased blastogenic responses of peripheral blood mononuclear cells.

In a carefully controlled, randomized, double-blind trial, however, it could not be confirmed that either of these observations provided evidence of fetal priming.<sup>11</sup> Several studies have failed to show enhanced antibody responses following active immunization of the infant subsequent to maternal immunization.<sup>5,8,12,13</sup> Theoretically, priming might result from transmission from mother to fetus of anti-idiotypic antibodies.

(These are antibodies to epitopes of antibody molecules that are part of the natural feedback and control mechanism of the immune system.) Anti-idiotypic antibodies have the potential to mimic the antigen to which the original antibody was directed. Therefore, they represent the only possibility for fetal priming, because only IgG antibodies are transported across the placenta in a form that might be recognized by the fetal immune system.

Progress toward the goal of elimination of neonatal tetanus has important implications for the prevention of other infectious diseases in women and their children. Prenatal clinics represent an important point of access for effective public health interventions; each patient-medical clinic interaction should be used maximally. Prenatal health care visits represent an opportunity to provide protection for both the woman and her offspring at a vulnerable period in their lives. (Recent reports on neonatal tetanus do not mention puerperal tetanus, but some cases must occur among unimmunized women in the environments where neonatal tetanus is rampant.)

Influenza vaccine is another vaccine recommended routinely in the United States for women who will be in the second or third trimester of pregnancy during the influenza season.<sup>14</sup> This procedure should be considered in other countries in view of the current plans for influenza pandemic preparedness.<sup>15</sup> The best way to prepare for pandemic influenza is to institute controls for inter-pandemic influenza. New vaccines for other diseases—such as pertussis, pneumococci, respiratory syncytial virus, and group B streptococci—are being developed that should also be considered for maternal immunization.<sup>6</sup>

Contrary to prevailing attitudes, the entire burden for disease prevention by vac-

*Editor's Note.* See related article by Koenig et al. (p 903) in this issue.