

IMMUNIZATION, INFECTIONS AND THE SCHOOL'S ROLE IN VACCINATIONS

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The use of the schools as a site to immunize children and teens is re-emerging as a cost-effective strategy that has benefits for health and school performance. This article reviews some of the evidence, discusses experiences in Canada and other countries, and identifies some examples of good programs. One example is the use of the HPV vaccine to prevent cancer. All parents have the right to accessible, convenient and cost-effective health services for their children.

Immunization is clearly part of the traditional five functions of public health, which include:

- health promotion (to affect overall health and well-being)
- prevention (of specific diseases, injuries and problems)
- health protection (preventive and emergency services)
- health surveillance (keeping track of patterns of risk factors and disease to enable timely action)
- population health assessment (measuring, monitoring and reporting on the status of the health of communities)

Immunization is part of the custodial role of schools, one of the functions of public schooling which include academic/intellectual development, socialization, vocational preparation and the accreditation of basic skills for future studies or employment. As part of this custodial role, schools are often called upon to protect children or to support parents, disadvantaged communities and other agencies in areas such as school meals, child abuse and neglect, natural disasters and so on. The school-based polio vaccination program of the 1950s is an example of this role.

Immunizations are also a part of a comprehensive school health approach, as defined in the Consensus Statement¹ adopted by over 30 national health and education organizations.

Canadians often perceive school-based and school-linked immunization and vaccination services as something that occurs more in developing countries rather than Canada. Canadians also see these services as being more for younger children, before they enter school. However, as preventive health care costs increase, we realize that many children require catch-up from missed vaccinations. Vaccines can be administered in response to outbreaks, and as new vaccines are developed, more consideration of the evidence and cost-effectiveness described herein is needed.

WITH INCREASINGLY TRANSIENT FAMILIES AND DECREASED ACCESS TO FAMILY PHYSICIANS, MANY CHILDREN ARE NOT BEING VACCINATED IN THEIR PRESCHOOL YEARS.

The Educational and Health Reasons for Immunization

There is little argument about the health benefits of immunizations and vaccines. This form of primary prevention is the cornerstone of civilized societies and of public health programs. However, there are also gains to be made in health care costs, and in school attendance, both of which save money for society in general.

There are several comparative and other studies showing that immunization through schools is more cost-effective than other alternatives. A Quebec-based study (Guay et al, 2003²) compared school-based immunization programs to community-based immunization programs. With community programs, the vaccination coverage fell to 73%, compared with over 90% in the schools. Societal costs were \$63 per student vaccinated in the CBP, and less than \$40 in the SBPs. A similar cost-effectiveness study in Denver (Deuson et al, 1999³) showed that school-based vaccinations cost \$31 per dose in schools compared to \$68 direct costs and \$118 when the time lost from work for parents was considered. A cost-benefit study of a similar program in British Columbia (Krahn et al, 1998⁴) showed that vaccinating students cost \$44, with a net saving of \$75 per person.

Catch Up and Other Vaccines for School-Aged Children

With increasingly transient families and decreased access to family physicians, many children are not being vaccinated in their preschool years. Countries like England and the United States are organizing initiatives to bring these children up-

1 www.safehealthyschools.org/CSH_Consensus_Statement2007.pdf

2 www.ncbi.nlm.nih.gov/pubmed/12583682

3 www.ncbi.nlm.nih.gov/pubmed/10553395?ordinalpos=5&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_DefaultReportPanel.Pubmed_RVDocSum

4 www.ncbi.nlm.nih.gov/pubmed/9807529?ordinalpos=10&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_DefaultReportPanel.Pubmed_RVDocSum

to-date. Since 2005, three new vaccines have been added to the list of recommended immunizations in the United States. Measles, mumps, rubella, and hepatitis B vaccine coverage among adolescents are among these re-emerging health concerns.

The American Academy of Pediatrics⁵ suggests that immunization for outbreaks of influenza among school-aged children should be considered. Community studies indicate that school-aged children have had the highest rates of influenza infection, with annual attack rates as high as 42%. During various annual influenza

seasons, rates of outpatient visits attributable to influenza vary from 6 to 29 per 100 children.

Ways to Improve Immunization Rates

There are a number of ways to increase the participation rates in immunization programs. These include patient reminders (calls to parents and teens), and modifying provider intentions and systems interventions (such as laws requiring proof of vaccinations for elementary or junior high school entry). A review undertaken by the Centers for Disease Control (1998)⁶ found that a vaccination requirement for entry into middle school can be an effective measure for increasing immunization rates.

In Response to Outbreaks

Vaccinations and immunization strategies are also used effectively to control outbreaks or re-emerging diseases. Scheifle (1998)⁷ describes the different but effective approaches to addressing increased incidence of Hepatitis B in Canada and the United States. The United States added hepatitis B to its universal infant immunization schedule, and Canada implemented hepatitis B immunization programs for pre-adolescents (9 through 13 years of age).

Understanding School Responses to Immunization

School practices make a difference in raising immunization rates. Goldstein et al (2001)⁸ reported that socioeconomic factors were the most important predictors of student participation in this school-based immunization program. Participation was significantly lower among students in schools with a high proportion of students receiving free or reduced-price school lunch and with low test scores. In a similar study, Tung &

Middleman (2005)⁹ noted an increase in percent return of signed consent/refusal forms was more likely when teachers helped in publicity/promotion and in collecting the forms.

Educational and Other Tools/Programs

Canadian Resources

The Canadian Coalition for Immunization Awareness and Promotion¹⁰ has several resources available for use by school health professionals. These include downloadable posters suitable for children and adolescents, discussions of questions and misconceptions, personal stories from parents, organizations and campaigns, and public opinion research (including “Childhood Vaccinations: Canada’s largest ever survey of Canadian parents on their attitudes toward childhood vaccinations”).

The Society of Obstetricians and Gynaecologists of Canada (SOGC) has created an HPV toolkit (www.hpvinfos.ca). The HPV toolkit includes clinical guidelines and summary statements, self-tests to assess HPV knowledge, professional resources, fact sheets, presentations, lesson plans, tips for talking to youth, adults and parents, tips for dealing with HPV vaccination controversy, games, interviews, posters promoting HPV prevention, and more. For teachers, SOGC has created several resources including free PDF and PowerPoint slide presentations as a resource for teaching sexual health in the classroom.

International Resources

The American School Health Association developed a toolkit (Give It A Shot! Toolkit for Nurses and Other Immunization Champions Working with Secondary Schools¹¹) for school/public health nurses that includes a manual, current information on adolescent immunizations, tips on incorporating immunization messages into your work, a CD that contains generic forms and handouts, three colorful posters to promote awareness, a DVD featuring a parent-friendly video entitled “Vaccines: Separating Fact from Fear”, and a youth-friendly video entitled “The Case of the Missing Shots”.

5 <http://pediatrics.aappublications.org/cgi/content/full/121/4/e1016>

6 [www.ncbi.nlm.nih.gov/pubmed/9746399?ordinalpos=1&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_DiscoveryPanel.Pubmed_Discovery_RA&linkpos=1&log\\$=relatedarticles&logdbfrom=pubmed](http://www.ncbi.nlm.nih.gov/pubmed/9746399?ordinalpos=1&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_DiscoveryPanel.Pubmed_Discovery_RA&linkpos=1&log$=relatedarticles&logdbfrom=pubmed)

7 [www.ncbi.nlm.nih.gov/pubmed/9688098?ordinalpos=1&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_DiscoveryPanel.Pubmed_Discovery_RA&linkpos=4&log\\$=relatedreviews&logdbfrom=pubmed](http://www.ncbi.nlm.nih.gov/pubmed/9688098?ordinalpos=1&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_DiscoveryPanel.Pubmed_Discovery_RA&linkpos=4&log$=relatedreviews&logdbfrom=pubmed)

8 www.ncbi.nlm.nih.gov/pubmed/11393930

9 [www.ncbi.nlm.nih.gov/pubmed/15963908?ordinalpos=1&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_DiscoveryPanel.Pubmed_Discovery_RA&linkpos=1&log\\$=relatedarticles&logdbfrom=pubmed](http://www.ncbi.nlm.nih.gov/pubmed/15963908?ordinalpos=1&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_DiscoveryPanel.Pubmed_Discovery_RA&linkpos=1&log$=relatedarticles&logdbfrom=pubmed)

10 www.immunize.cpha.ca/en/default.aspx

11 www.ashaweb.org/files/public/Give_It_A_Shot!_Toolkit_2nd_edition.pdf