

VIEWPOINTS

Poliomyelitis: The Ghastly Continuation of a Global Public Health Menace

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Pharmacy educators in the academy have provided students and future practitioners with needed, necessary skills in many areas of practice; those that have provided education and training with immunizations have helped both professionals and patients. The importance of immunization education and incorporation into our curricula, and subsequent changes in state board of pharmacy and medical board regulations in states, have altered the landscape and scope of pharmacy practice in the United States. Instruction and administration training has been implemented which encompasses vaccinations such as: diphtheria, tetanus, and pertussis vaccines (DTP); hepatitis A and B vaccines; human papilloma virus vaccine; measles, mumps, and rubella vaccine (MMR); meningococcal vaccine; influenza vaccines (including H1N1); live, attenuated influenza vaccine; oral polio vaccine (OPV) and inactivated polio vaccine (IPV); pneumococcal vaccine (pneumonia); rotavirus; shingles-zoster vaccine; tetanus and diphtheria vaccine (Td); tetanus and diphtheria toxoid (Td); varicella vaccine; and perhaps others. These are major success stories with major pharmacy associations cooperating in the United States, and for which many can share the glory and observe the positive impact upon patients and caregivers. However, as is the case in so many facets of practice, there is a potential crisis lurking in the distance. A specter is just out of sight that just simply will not go away. That recurring intruder is poliomyelitis.

Poliomyelitis (polio) has never really left us. Despite dramatic success stories recanting how the scourge of polio has been tempered if not defeated over a 50-year period, globally polio remains a major cause for concern. Despite World Health Organization (WHO) efforts internationally, there remain areas tragically still at risk.¹

Modlin² notes the trouble with continuing reservoirs of naturally occurring (wild type) poliomyelitis. Modlin² highlights 4 countries with poliomyelitis that is resistant to control:

- Pakistan and Afghanistan, because of war and international conflict;
- India, due to overwhelming force of infection and high rates of failure of oral poliovirus vaccine; (OPV) that has been linked with population overcrowding, continuing poor sanitation, and resultant chronic diarrheal disease; and
- Nigeria, due to problems attributable to the lack of a public health infrastructure.

Modlin² also suggests that a lack of political will resulted in very low routine immunization rates and ineffective supplemental immunization activities in Nigeria. Ceasing hostilities to allow for compassionate administration of care, including preventive efforts such as polio vaccinations is an option, but unfortunately may be unrealistic.³

Surprisingly, there have been 2 cases of polio reported in the US since 2005.⁴ Both of these cases were the result of parents declining vaccinations for children due to religious reasons. In addition, neither the Ukraine nor Georgia has reached the 90% population threshold necessary for “herd immunity” for suppression and protection.⁵ And in North America, there are regions of Canada with less than 90% rates of vaccination.⁵ Collier notes that an outbreak in Tajikistan is a cruel “. . . reminder to the rest of the world that the deadly illness is only a plane trip away.”^{6(p1)}

Jenkins et al have highlighted the impact of circulating vaccine-derived poliovirus (cVDPV) upon poliomyelitis outbreaks.⁷ They note that the attack rate and severity of disease associated with the recent cVDPV identified in Nigeria are similar to those associated with wild polio virus (WPV). cVDPV is a rare strain of poliomyelitis that is genetically changed from the original strain that is contained in oral polio vaccine (OPV). The emergence of the cVDPV strain is troublesome for many reasons, but it is also avoidable. Poliomyelitis acquired via cVDPV is a direct result of the under immunization, or lack of immunization, of children. Also, it has long been held that a population fully immunized with oral polio vaccine would not be susceptible to cVDPV outbreaks.

Economic and administration of dose concerns may be addressed via differing modes of polio vaccine formulation and administration.⁸ Considering the impact of

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vaccine cost, Mohammed et al found that as a cost savings effort, intradermal administration of a fractional-dose of inactivated poliovirus vaccine could serve as a dose-sparing strategy when used in a primary routine vaccination schedule in which doses are administered at 2, 4, and 6 months of age. Vaccine contamination is a factor with polio vaccines, as is the case with other agents as well.⁹

Public health campaigns in the most populous regions of the world (eg, China) have shown promise in impacting polio, but much remains to be done. China has focused on 3 impacts to positively affect polio¹⁰:

- (1) Efforts to stem entry and transmission of WPV from surrounding countries,
- (2) Detection and stoppage of cVDPV, and
- (3) Efforts to improve care provider compensation.¹⁰

Global efforts need global support and sharing of information to be most successful in once more conquering polio. Current and continuing vigilance and the stressing of the importance of complete rounds of vaccination need to be reinforced everywhere. Education and curricular focus on polio needs to be enhanced and always present in associated coursework and training. Outreach efforts locally and globally stressing the importance of vaccinations, and the consequences of absence of vaccinations or incomplete rounds of administration of vaccines needs focused attention. Finally, even though distant memories attain less importance as time progresses, lessons from

the past need to be repeated, and constantly reinforced. Lives and quality of life remain in the balance; some parts of the past should never be forgotten to prevent calamities in the present and future.

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