

### **Vaccine derived poliovirus: current knowledge**

(pp. 16–23)

The major threat to worldwide polio eradication is wild poliovirus, localized to a few reservoirs in Africa and Asia. Elsewhere, the chief threat comes from the continued use of oral poliovirus vaccine (OPV) and the associated risk of circulating vaccine-derived polioviruses (cVDPV). Kew et al identify the lessons learnt from recent and historical outbreaks of cVDPVs. They highlight insufficient population immunity as the principal risk factor: declining vaccine coverage leads to immunity gaps, offering an opportunity for an outbreak of cVDPV. Use of OPV should therefore continue in polio-free countries until wild poliovirus circulation ceases, after which a carefully coordinated cessation of the use of OPV is needed, accompanied by continuing field and laboratory surveillance.

### **How close is global polio-free certification?**

(pp. 24–30)

Smith et al. describe the development and current status of the certification process for global polio eradication, the lessons learnt and the remaining challenges for achieving global certification and for the post-eradication era. They highlight the need for even closer coordination of certification activities between the Regional Certification Commissions. Additionally, surveillance systems for cases of acute flaccid paralysis must be strengthened in recently and currently endemic countries. Other challenges include: verification of laboratory containment; development of an appropriate mechanism to confirm the absence of circulating vaccine-derived polioviruses in the future; and the maintenance of polio-free status in certified regions until global certification.

### **Post-certification: oral poliovirus vaccine or inactivated poliovirus vaccine?**

(pp. 31–38)

Two critical decisions are needed to determine the role of routine vaccination against polio in the post-certification era say Sutter et al: should routine immunization with the live attenuated oral poliovirus vaccine (OPV) continue

or discontinue; if the latter, is inactivated poliovirus vaccine (IPV) required? They review the key issues associated with several potential vaccine scenarios: stop all polio vaccination; continue current vaccination policies; discontinue use of OPV but continue IPV universally; or discontinue use of OPV but continue IPV in selected countries. They conclude that whilst discontinuation of all polio vaccination is the least costly, it represents the greatest risk of an emergence of circulating vaccine-derived polioviruses. Further research is urgently needed, particularly in relation to IPV immunogenicity, before an optimal scenario can be chosen.

### **Risk framework to underpin international post-certification policy**

(pp. 40–46)

According to current international consensus, the risks of paralytic poliomyelitis in the post-certification era fall into two categories: those associated with the continued use of oral poliovirus vaccine (OPV) and those associated with the improper handling of wild polioviruses in the future. Aylward et al argue that a common understanding of these risks — of the frequency and potential burden of diseases associated with each — should guide post-certification policy-making. The major risks contained in the two categories will change substantially over time due to future containment of wild poliovirus stocks, surveillance, immunization policy decisions at the international level, their implementation at the national level and the development of tools for risk mitigation.

### **More information needed before countries can cease polio vaccination**

(pp. 47–52)

Countries need more evidence showing that it will be safe to cease polio vaccination — even after the eradication of wild poliovirus has been certified. A much needed comprehensive polio outbreak control plan for the post-certification era remains elusive due to some important knowledge gaps. For example, experience of discontinuing the use of oral polio vaccine (OPV) in crowded

conditions with poor sanitation is absent; there is also no evidence of the efficacy of inactivated poliovirus vaccine (IPV) in similar environments. There are outstanding issues over the management and location and even content of a vaccine stockpile for post-certification outbreaks.

### **Which post-polio certification immunization policy is the most cost-effective?**

(pp. 9–15)

Cessation of the use of oral poliovirus vaccine (OPV) with optional inactivated poliovirus vaccine (IPV) is the least costly of the 3 global post-polio certification policy options currently under consideration. Sangrujee et al estimated the financial costs of each immunization policy, the number of vaccine-associated paralytic polio cases and the global costs of maintaining an outbreak response capacity. OPV cessation with universal IPV was the most costly but had the least number of vaccine-associated paralytic polio cases whereas the third option — continued use of OPV — resulted in the highest number of such cases. However, the results of their analysis are sensitive to changes in vaccine cost.

### **Poliovirus excretion rare in people with immune deficiency disorders**

(pp. 3–8)

Chronic poliovirus excretion is rare among people known to have B-cell immune deficiency disorders. A search for chronic poliovirus excretors among 306 persons known to have immunoglobulin G deficiency in the United States, Mexico, Brazil and the United Kingdom and among 40 people with immunoglobulin A deficiency in the United States. After culturing polioviruses from participants' stool samples, they found no individuals with long-term excretion of polioviruses. The majority of participants had received oral poliovirus vaccine and almost all had been exposed to household contacts who had also received the vaccine. Most individuals with B-cell deficiency disorders who survive early childhood appear to eliminate polio vaccine derived viruses. ■