LABORATORY CONTAINMENT OF WILD POLIOVIRUSES

Now that circulation of indigenous wild poliovirus in the Western Pacific Region has ceased, the only known remaining sources of wild poliovirus are in the Region's laboratories. Laboratories may be storing specimens from known poliomyelitis cases or storing other materials that may be infected with wild poliovirus. Therefore, the task of poliomyelitis eradication will not be complete until all potential sources of polioviruses, including laboratory sources, are properly contained. The goal of containment is either to store all possible infectious materials at specified bio-security levels, or to have these materials destroyed.

The probability of a laboratory-associated poliovirus infection is small, but the consequences of an infection grow greater with time. An accidental reintroduction of wild polioviruses from the laboratory into the community after cessation of transmission presents a global threat to poliomyelitis eradication.

This document is provided to update the Regional Committee on the role of laboratory containment in the certification process, the current status of containment in the Region and the actions that will be required after the Region is certified as poliomyelitis-free. The Committee is asked to consider the issue of laboratory containment when it reviews eradication of poliomyelitis in the Region under agenda item 11.
1. CONTAINMENT AS A PART OF THE CERTIFICATION PROCESS

The containment of wild polioviruses is not a criterion of certification, but a requirement recommended by the global and regional commissions. In the certification process, containment standards are therefore similar in nature to surveillance standards.

2. THE REGIONAL ACTION PLAN FOR LABORATORY CONTAINMENT OF WILD POLIOVIRUSES

In 1999, the Regional Office developed a regional plan of action, based on the WHO Global Action Plan for Laboratory Containment of Wild Poliovirus Infectious and Potentially Infectious Materials. The regional plan specifies three phases and associated activities, which are linked to the major regional and global eradication objectives.

Phase I: Pre-certification of regional poliomyelitis-free status

Activity: Safe handling of wild poliovirus infectious and potentially infectious materials at biosafety level 2 polio (BSL-2/polio)

This phase covers the period when wild poliovirus is no longer circulating in the Region, and preparations are being made for regional certification of poliomyelitis-free status. Two tasks are critical to this phase:

- Nations should produce an inventory of laboratories that have wild poliovirus infectious or potentially infectious materials.
- Laboratories should institute biosafety level 2 (BSL-2/polio) procedures for safe handling of all such infectious or potentially infectious materials and decide what will happen to those materials when Phase II begins.
Regional requirements for the sixth meeting of the Regional Certification Commission, 27–28 October 2000

At its fourth meeting in August 1999, the Regional Certification Commission recommended that substantial progress towards completion of Phase I of the Regional Action Plan for Laboratory Containment should be attained for regional certification.

At its fifth meeting in August 2000, the Commission reviewed the progress that had been made on containment, and recommended that all countries and areas should provide a plan of action for laboratory containment of wild poliovirus infectious and potentially infectious materials, including a progress report and timetable for the completion of Phase I.

Progress in containment by August 2000

All countries and areas had developed a national plan of action and identified a responsible body for the containment process. Six countries had completed, or nearly completed, their national inventory. All other countries had started to establish lists of laboratories and institutions to be searched for wild poliovirus infectious and potentially infectious materials.

Conclusions

Substantial progress has been made towards Phase I of containment in the last 12 months. All countries and areas are following up on the recommendations of the Regional Certification Commission, and are expected to fulfil the requirements of the Commission in time for its sixth meeting on 27–28 October 2000.

Future plans

Work to complete Phase I, especially in larger countries that have many laboratories, will continue after the Region has been declared poliomyelitis-free. Progress will be reviewed by the Regional Certification Commission.

Once Phase I is completed, countries should move to Phase II and eventually Phase III, as presented in the regional plan of action, summarized below.
Phase II: Pre-certification of global poliomyelitis eradication

Activity: High containment of wild poliovirus infectious and potentially infectious materials (BSL-3/polio)

Phase II will begin globally one year after detection of the last wild poliovirus anywhere in the world, at which time the probability is high that all human transmission will have ceased. At that time all laboratories possessing wild poliovirus infectious materials or potentially infectious materials must select one or more of the following options:

- implement containment procedures (BSL-3/polio);
- transfer wild poliovirus infectious and potentially infectious materials to WHO-designated repositories; and/or
- render such materials non-infectious, or destroy them, under appropriate conditions.

All Phase II bio-safety actions are to be implemented and documented as complete before global certification of poliomyelitis eradication can be considered.

Phase III: Post-OPV immunization

Activity: Maximum containment (BSL-4) of wild poliovirus infectious and potentially infectious materials and high containment (BSL-3/polio) of oral poliovirus vaccine (OPV) and OPV-derived viruses

Phase III, post-OPV immunization, will begin with the worldwide cessation of OPV administration and the subsequent rapid increase in non-immune susceptible children. The bio-safety requirements for wild poliovirus infectious and potentially infectious materials will increase from BSL-3/polio to BSL-4. Bio-safety requirements for OPV and OPV-derived viruses will increase from BSL-2/polio to BSL-3/polio to prevent reintroduction and theoretical circulation of these viruses in unimmunized populations. Procedures will be developed to control or destroy unused OPV in clinics, immunization centres, physicians’ offices, and other sites.