

STRATEGIC OBJECTIVES

3.2 SURVEILLANCE AND CERTIFICATION OF GLOBAL POLIO ERADICATION

Confirming that transmission of wild poliovirus is stopped depends on solid surveillance and is followed by certification for polio-free regions that have maintained the necessary levels of surveillance. Recognizing the delays in detecting transmission of poliovirus in some areas in 2003-04, the surveillance target for acute flaccid paralysis (AFP) detection rates* has been doubled since 2005 in high-risk areas. To this is added the strength of new laboratory procedures that halve the confirmation time for poliovirus.

■ MILESTONES 2006

MILESTONE 1: PERCENTAGE OF NON-CERTIFIED COUNTRIES WITH CERTIFICATION-STANDARD SURVEILLANCE: 100%.

STATUS: PARTIALLY ACHIEVED — 97% of non-certified countries have certification-standard surveillance (the exceptions are Algeria, Bhutan, Djibouti, East Timor, Guinea Bissau and Lebanon).

MILESTONE 2: PERCENTAGE OF AFP SPECIMENS PROCESSED IN A WHO-ACCREDITED LABORATORY 100%.

STATUS: ACHIEVED — All AFP specimens were processed in a WHO-accredited laboratory.

MILESTONE 3: PERCENTAGE OF COUNTRIES COMPLETING PHASE I LABORATORY BIO-CONTAINMENT PHASE: 100%.

STATUS: PARTIALLY ACHIEVED — 75% of polio-free countries have completed Phase I activities, including all countries of the WHO European Region.

MILESTONE 4: PERCENTAGE OF COUNTRIES SUBMITTING 'FINAL' CERTIFICATION DOCUMENTATION: 85%.

STATUS: PARTIALLY ACHIEVED — 80% of eligible countries submitted final documentation for certification.

*Certification-standard surveillance is defined as the ability to detect at least one case of non-polio AFP for every 100,000 children under 15 years of age, to collect two adequate stool specimens from at least 80% of cases of acute flaccid paralysis and to process all specimens at a WHO accredited laboratory.

AFP SURVEILLANCE SENSITIVITY CONTINUES TO CLIMB

The very high sensitivity and reliability of AFP surveillance was sustained and even further improved in 2006. All WHO regions, including those already certified as polio-free (the region of the Americas and the Western Pacific and European Regions), maintained AFP surveillance at or substantially above ‘certification quality’ (see Table 1).

Continued sensitive AFP surveillance in polio-free countries is critical in order to protect countries from importations of poliovirus and to enable swift outbreak response if necessary. The Regional and National Polio Certification Commissions assist countries and regions striving to maintain or achieve polio-free status.

AFP surveillance quality in all three endemic regions, already well above certification standards, further increased in 2006. The total number of non-polio AFP cases reported from the African (AFR), Eastern Mediterranean (EMR) and South-East Asian (SEAR) Regions increased from 52,062 in 2005 to 57,849 in 2006, mainly due to heightened surveillance and resultant increases in AFP reporting in the four large remaining endemic countries in those regions: Afghanistan, India, Nigeria and Pakistan. The sheer increase in AFP cases reported in 2006 in these regions led to overall non-polio AFP rates of 3 or more per 100,000 – as the vast majority of AFP cases turn out to be caused by conditions other than polio after stool analysis. All three regions also recorded increases in the second important surveillance quality indicator, the percentage of AFP cases with collection of adequate stool specimens.

AFP surveillance quality in all three endemic regions, already well above certification standards, further increased in 2006.

Table 1: Quality of AFP reporting by WHO Region in 2005 and 2006¹

WHO Region	Reported AFP cases		Non-polio AFP rate		% AFP with adequate specimens	
	2005	2006	2005	2006	2005	2006
African Region	11 683	12 478	3.3	4.0	86	89
Americas	2 213	2 154	1.3	1.1	80	79
Eastern Mediterranean Region	8 849	8 740	3.7	3.9	88	89
European Region	1 479	1 550	1.1	1	82	82
South-East Asian Region	31 530	36 631	5.4	5.9	82	83
Western Pacific Region	6 680	6 873	1.7	1.7	88	88
Global total	62 434	68 426	3.3	3.6	84	85

¹2006 data as of 17 April, 2007.

A country-by-country analysis of AFP surveillance quality shows improvements in the great majority. The proportion of countries which reached a level of AFP reporting of 2 or more per 100,000 in the two endemic regions with the greatest disease burden increased from 62% to 75% of countries in AFR and from 54% to 63% of countries in SEAR.

A limited number of countries in each endemic region did not reach certification quality AFP surveillance. These include Algeria and Guinea Bissau in AFR, Bhutan and East Timor in SEAR, and Djibouti and Lebanon in EMR. A few other countries and territories in EMR achieved AFP indicators just below the 'certification cut-off' and are considered to have maintained certification-quality AFP surveillance: Morocco, United Arab Emirates, Lebanon, and the West Bank and Gaza Strip.

LAB NETWORK CONFIRMS VIRUS TWICE AS FAST

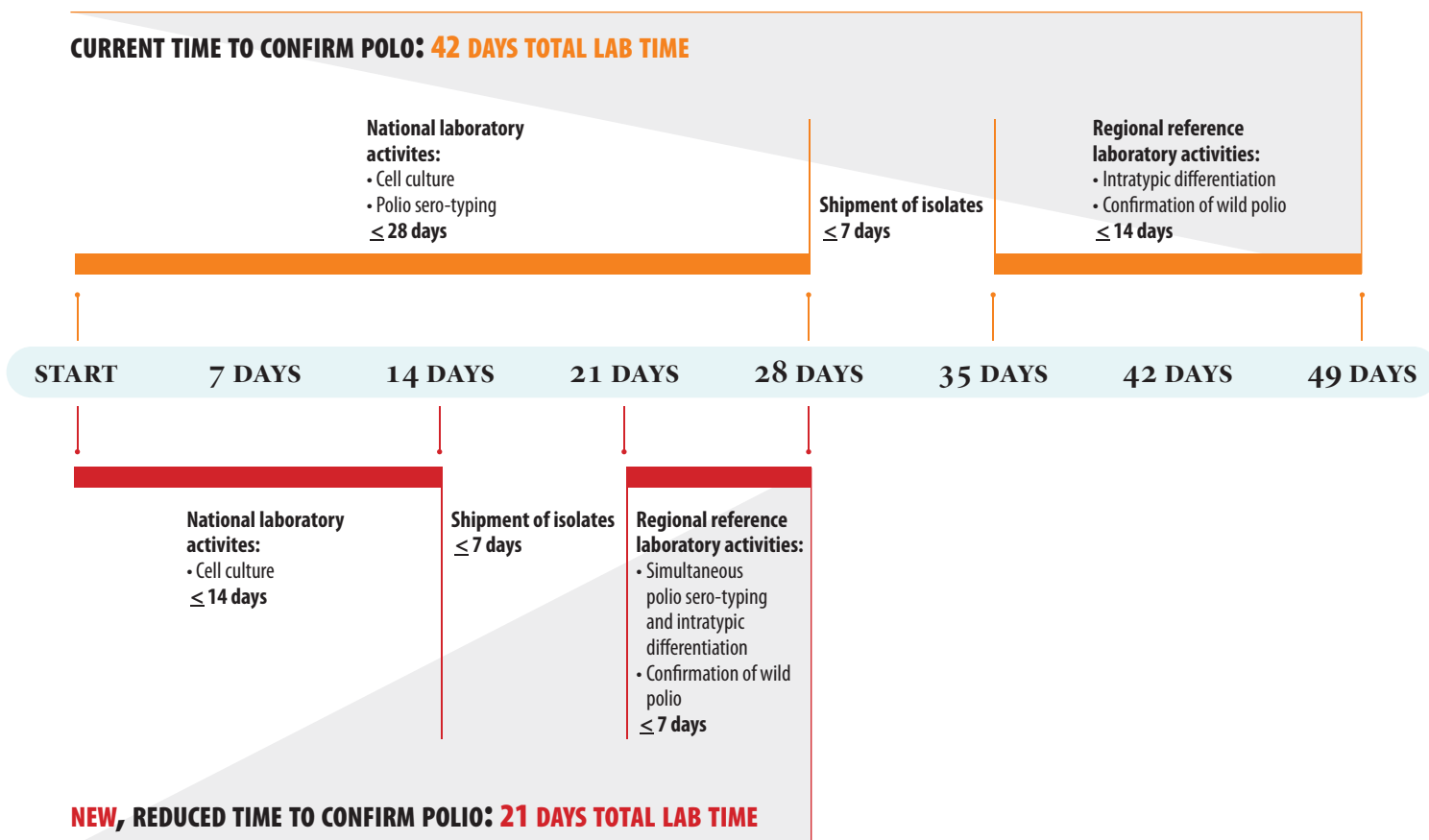
Laboratory results are used to confirm the presence of poliovirus, to plan immunization responses and to monitor progress towards achievement of the eradication goal. Rapid and accurate laboratory results are paramount to these goals. A global network of 145 laboratories continues to support AFP surveillance. The network's quality assurance programme incorporates a WHO-administered accreditation program involving annual (usually on-site) evaluation of facilities and procedures, results of proficiency tests, timeliness and accuracy of results. Ninety seven per cent of laboratories were fully accredited in 2006, and all samples from AFP cases were tested in accredited laboratories with arrangements for parallel testing of samples from poorly performing laboratories where necessary.

The laboratory network's workload in 2006 was approximately 125,000 faecal samples from 63,000 AFP cases and 8,600 non-AFP samples. The workload for investigated AFP cases was 25% higher than that of 2005. Wild polioviruses were isolated from AFP cases in 16 countries in 2006.

Genetic characterization of isolates showed that indigenous viruses were transmitted in four countries (Afghanistan, India, Nigeria and Pakistan). Five countries had continued transmission of imported viruses introduced in 2005 (Angola, Ethiopia, Indonesia, Somalia and Yemen), while other countries had new importations (Bangladesh, Cameroon, Chad, Namibia, Nepal, Niger, Kenya, DR Congo). Viruses in five countries (Angola, Bangladesh, DR Congo, Namibia and Nepal) were genetically linked to India viruses, while all other importations linked directly or indirectly (via transmission in intermediate countries) to Nigeria.

In 2006 the laboratory network evaluated, and subsequently adopted, a new testing strategy that reduces poliovirus confirmation time within laboratories by 50% (from 42 days using the traditional approach, to 21 days) without compromising poliovirus detection sensitivity. The new approach involves use of technologies that are already available within the network but in a different algorithm (i.e. sequence of testing). The strategy was evaluated in reference laboratories in Atlanta in the USA, Islamabad in Pakistan and Mumbai in India. Approximately 5,200 faecal samples, including 900 poliovirus positive samples, were tested during the field evaluation. It is estimated that the new strategy will increase cell culture costs by 25% and intratypic differentiation (ITD) costs by 100%.

The key to achieving faster results will be testing of samples in laboratories with capacity for both virus isolation in cell cultures and intratypic differentiation (of viruses as wild or vaccine like) using polymerase chain reaction (PCR) and Enzyme Linked Immunosorbent Assay (ELISA). The network has established a goal of testing at least 75% of faecal samples from polio endemic regions in laboratories with such capacities by December 2007. This will require upgrading of 11 existing national laboratories to perform ITD tests with implications for investing in capital equipment, reagents and staff training. Staff training has already begun. An ITD training workshop was held in Uganda in November 2006 for participants from eight network laboratories. Additionally staff of four existing ITD laboratories of South East Asia were oriented on the requirements of the new test strategy in April 2006.



In 2006 the laboratory network evaluated, and subsequently adopted, a new testing strategy that reduces poliovirus confirmation time within laboratories by 50%.

The network suffered a serious setback in 2006 when fire destroyed the sequence unit at the global specialized laboratory in Mumbai, India, and caused damage to the cell culture unit and office areas within the facility. The impact included: loss of equipment; closure of the laboratory for cleaning and renovation; re-directing of over 10,000 faecal samples and 6,000 polio isolates to 2 other network laboratories (situated in Lucknow and Chennai, India) for testing; loss of 15 trained staff who obtained jobs elsewhere; suspension of testing of sewage samples collected in Mumbai; suspension of Mycoplasma testing of cell cultures used in 16 laboratories in South-East Asia; and long delays in obtaining sequence data on polioviruses from India. At year-end, sequencing was being performed in Mumbai at a non-network laboratory that generously offered part-time access to its equipment. The Mumbai polio laboratory is expected to become fully functional by mid-2007 following completion of renovation works.



PHOTO © WHO/F. PALADIN

Participants from eight polio network laboratories are trained in Uganda in November 2006, on use of the new protocol which halves the time required to confirm the presence of poliovirus.

NOTABLE PROGRESS ON CONTAINMENT PREPARATIONS FOR POLIOVIRUS

Laboratory containment remains an integral part of polio eradication activities in all six WHO Regions. In 2006, regional and sub-regional meetings on laboratory containment were held to either monitor progress with Phase I implementation or review documentation from countries reporting completion of the work.

Notable progress towards completion of Phase I was reported from China, central America, and eastern and southern Africa. China has successfully completed a thorough survey of all facilities falling under the jurisdiction of the Ministry of Health, with plans to complete the survey of remaining facilities in 2007. Similarly, Mexico reported expanding its initial survey of facilities to include an additional 50,000 laboratories throughout the country. In southern and eastern Africa, all

polio-free countries either submitted a report on the completion of the activities to the Regional Certification Commission at their meeting in 2006 or report that the process is ongoing.

In WHO regions with a large number of countries which previously completed the Phase I activities, work continues to ensure that complete documentation on the process is reviewed by Regional Certification Commissions (RCCs). EMRO conducted such a review for the 16 countries which reported completion of Phase I. Countries were requested to submit standardized information which was first reviewed by WHO and subsequently by independent experts. The results will be made available to the RCC at its meeting in 2007.

The Phase I laboratory containment activities work towards the objective of identifying facilities with poliovirus materials and raising awareness of the need for containment of polioviruses once eradication is achieved. To date, over 75% of all polio-free countries have completed Phase I activities, including all countries of the WHO European Region.

Over 75% of all polio-free countries have completed Phase I containment activities and established inventories of poliovirus stocks.

INCREASE IN NUMBER OF COUNTRIES SUBMITTING FINAL CERTIFICATION DOCUMENTS

National Polio Certification Committees (NCCs) and Regional Certification Commissions (RCCs) in endemic regions continued to scrutinize in detail national documentation to show polio-free status submitted by eligible* countries. The number of eligible countries for which RCCs accepted final certification documentation increased from 10 to 14 in AFR (of 46 Member States), and from 6 to 8 in SEAR (of 11 Member States); it remained steady at 15 of 22 Member States in EMR because several countries, including Sudan, were re-infected after they had already successfully submitted final certification documentation. The percentage of total WHO Member States which successfully submitted final certification documentation increased slightly from 78% in 2005 to 80% in 2006.

*Eligible countries are those where no wild poliovirus has been found for at least three years, in the presence of certification quality surveillance. Countries can file documentation but cannot receive polio-free certification, which can only be conferred on a WHO Region as a whole.

Progress towards Phase I of Global Containment

