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Report on the

**Seventh meeting of the Technical Advisory  
Group (TAG) on Poliomyelitis Eradication  
in Egypt**

Cairo, Egypt  
16–17 October 2004



World Health Organization  
Regional Office for the Eastern Mediterranean  
Cairo  
2005

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## EXECUTIVE SUMMARY

The Technical Advisory Group on Poliomyelitis Eradication in Egypt (TAG) noted the continued marked improvements in the quality of supplemental immunization and AFP surveillance activities, suggesting a further decrease in the intensity of wild poliovirus transmission in Egypt. Most importantly, there now appear to be just two reservoirs of poliovirus in Egypt: Minya/Assiut and Cairo/Giza.

Despite the major improvements in the quality of supplemental immunization activities, the ongoing low level transmission in Egypt may be due to several factors.

There may be an immunity gap in very young children due to a combination of the late age of the routine immunization contacts (2, 4, 6 months) and the possibility of missing some children aged less than 1 year.

Minya/Assiut is a special concern as there are 3 chains of transmission in that area, while coverage and surveillance data show high levels of performance.

- In Cairo/Giza, the continued transmission is clearly due to the relatively low percent age of children, until very recently, with 6 or more OPV doses (especially in Giza).

The reasons for the low number of clinical polio cases in 2004 are unclear, but may reflect the increasingly high level of population immunity. The large gains in AFP surveillance sensitivity in 2003 and 2004 (with a doubling of AFP rates in key reservoirs) suggests that paralytic cases could have been missed in previous years.

Overall, because of a combination of factors, most of which are immutable (e.g. high population density and movement), Egypt constitutes a very special challenge for polio eradication, probably matched only by the highly populated parts of India. Consequently, the rapid interruption of transmission in Egypt has global importance.

### Recommendations

The TAG recommends that the strong progress towards polio eradication in Egypt be accelerated through:

- preferential attention given to reaching very young children during supplemental immunization activities and greater attention to defaulters.
- continuous, on-the-ground technical assistance in high-risk areas with suboptimal supplemental immunization performance (especially urban slums of Cairo, Giza, Minya, Assiut).
- four rounds of nationwide polio immunization between January and May 2005.
- use of monovalent OPV type 1 for all supplementary immunization activities, from as early as possible in 2005.

## 1. INTRODUCTION

The Technical Advisory Group on Poliomyelitis Eradication in Egypt (TAG) held its seventh meeting in Cairo, Egypt on 16 and 17 October 2004. It was attended by members of the TAG, officials from the Ministry of Health and Population and representatives from the global polio eradication partners. The programme and list of participants are attached as Annexes 1 and 2. Dr Nick Ward chaired the meeting. He welcomed the participants and pointed out that the meeting was being convened during a period of particular challenges for the national eradication programme as wild poliovirus was again being detected through environmental surveillance in the second half of 2004 in the presence of well-documented improvements in the quality of polio immunization campaigns since mid-2003.

Dr Magda Rakha, First Undersecretary for Preventive Affairs and Primary Health Care opened the meeting on behalf of H.E. Dr Mohammed Awad Afifi Tag-El-Din, Minister of Health and Population of Egypt. She reaffirmed the very high priority that the Government of Egypt was giving to polio eradication, as exemplified by the patronage of Her Excellency Mrs Suzanne Mubarak, First Lady of Egypt.

Dr Hussein A. Gezairy, WHO Regional Director for the Eastern Mediterranean, praised the Government of Egypt's ongoing commitment to polio eradication, but noted for TAG participants that such support could not be continued indefinitely. Consequently, the Regional Director requested the TAG to recognize and address frankly the apparently incompatible developments in the programme since mid-2003, with forthright recommendations for rapidly interrupting transmission.

Dr Nasr El Sayed, Undersecretary for Preventive Affairs, began the meeting with a report on the status of implementation of the recommendations of the sixth TAG meeting in which he detailed the exemplary work of the Ministry Health and Population in responding to all the recommendations.

The TAG was highly impressed with the commitment of the Minister of Health and Population and the staff of the Ministry and with the priority given to achieving the target of poliomyelitis eradication in the very near future.

## 2. CURRENT EPIDEMIOLOGICAL SITUATION

In evaluating the epidemiological situation, the TAG noted the markedly improved AFP surveillance in 2004. However, conclusions were severely limited by the virtual absence of environmental surveillance for an 8-month period from late 2003 through June 2004.

Most importantly, there appear to be two remaining reservoirs of type 1 wild poliovirus in the country, with 4 viruses detected in Cairo/Giza (all environmental samples) and 8 in Minya/Assiut (1 AFP case, 2 contacts, 5 environmental samples) to date in 2004. The genetic relationships among these viruses raise particular concerns about the population immunity

estimates for Minya/Assiut, where 3 separate chains of transmission of one virus cluster were detected (versus 1 chain of transmission in Cairo/Giza).

Despite the difficulty in gauging the amount of real progress in interrupting wild poliovirus transmission in 2004, the TAG was encouraged to observe that only 2 clusters of type 1 wild poliovirus had been detected to date (cluster H in Minya/Assiut and cluster E in Cairo/Giza) as opposed to 3 in 2003. In addition, the geographic extent of cluster H virus may have been markedly reduced in 2004. Although only 2.5% of environmental specimens have tested positive for wild poliovirus to date in 2004, these data are difficult to interpret given the problems with environmental surveillance sensitivity in the first half of the year (see Report of the sixth TAG).

The TAG noted that the available epidemiological data continue to suggest that transmission in the reservoir areas is occurring primarily among very young children: 13/14 of the polio cases with onset since 2001 were among children aged less than 28 months; 5/14 cases were aged < 9 months.

The TAG is most sympathetic to the increasing impatience at the time needed to interrupt transmission in Egypt, but reminded meeting participants that high quality eradication activities have been in place only after September 2002, since which time the number of children reached during NIDs has increased by a striking 20%.

In summary, despite the limited environmental surveillance data in 2004, the TAG concludes, based in large part on the encouraging supplementary immunization performance data, that there continues to be strong progress toward polio eradication in Egypt. The continued, low-level transmission of poliovirus in the country is not due to major programmatic errors or deficiencies, but rather the exceptional conditions found in Egypt which result in extremely efficient transmission of polio and other enteroviruses. These conditions include the tropical climate, large population, very high population density, high population mobility and suboptimal sanitation/hygiene.

In greater Cairo the reasons for the ongoing, though low level poliovirus transmission are clearly due to the relatively low proportion of children with 6 or more OPV doses until very recently, especially in Giza. In Minya/Assiut, the contradictory coverage and surveillance data raise important doubts as to the veracity of some reported data. However, the very high rates of diarrhoeal disease in those governorates may be compromising OPV efficacy, requiring a much higher number of doses to achieve intestinal mucosal immunity. The TAG believes that the very low number of paralytic cases that are now occurring is another indicator of the progress which is being made in "hyper-immunizing" the population.

The TAG would especially like to highlight that because of the factors outlined above, many of which are immutable, Egypt, like India, poses a special challenge for interrupting polio transmission. Consequently, the rapid achievement of this goal in Egypt is of extremely high importance to the entire global eradication initiative.

## Recommendations

1. Wild poliovirus transmission in Egypt appears to be restricted to two reservoir areas, Minya/Assiut and Cairo/Giza, which should be the focus of efforts to further enhance the quality of supplementary immunization activities. Particular attention should be given to the "high risk" districts which have now been clearly identified within these areas (see specific recommendations below). Minya/Assiut requires special investigation and oversight because of the continued appearance of the poliovirus while reported immunization coverage is very high.

### 3. SUPPLEMENTARY IMMUNIZATION QUALITY AND COMMUNICATIONS

The TAG was impressed with the attention that the Ministry of Health and Population and its partners had given to markedly improving the quality of supplemental immunization activities in 2004. New initiatives in the areas of microplanning, supervision, tally sheets, defaulter tracing and social mobilization appear to have contributed substantially to these gains. Data from a wide variety of supplementary immunization monitoring tools and activities all suggest that high coverage is now being achieved in most districts of most governorates.

The TAG stressed the importance of the trends in the number of children immunized in explaining the observed epidemiology of polio in Egypt. Although the number of children under 5 years who were immunized during NIDs has increased by almost 20% between September 2002 and October 2004 (from 9.3 million to 11.1 million), the current coverage levels have only been achieved as recently as December 2003. Even more importantly, much of that gain was among very young children, as the number aged less than 1 year who were immunized during NIDs had increased by 34% during the same period (from 1.67 million to 2.23 million). In Cairo and Giza, a 65% increase was reported in the number of immunized children aged less than 1 year, just since December 2003.

The gains in the number of children immunized were consistent with the trends in the quantitative supplementary immunization performance indicator data collected by independent monitors. For example, since October 2002 the proportion of vaccination teams moving from house-to-house had increased from over 80% to 95%, the proportion of teams with at least one trained vaccinator had increased from 76% to 94%, and the proportion of marked houses had increased from less than 65% to 83%. Independent monitoring data did show, however, marked decline in the proportion of the population that was aware of an NID the day before the event (e.g. the proportion with "no information" in advance had increased from 5% to 26%; of note, this correlated with a 50% decline in the frequency of television spots during the same period).

The TAG noted with appreciation the detailed review of social mobilization and communication activities. It noted in particular the attention that had been given to fully implementing the recommendations of the June 2004 International Consultation on Polio Communications (Delhi) in the areas of profiling missed children, tailoring interventions in

high risk areas, and sustaining the role of mass media and television. The baseline survey on "missed children", though made on a small number of children, confirmed that those at highest risk were young (37% < 1 year), urban (66%) and from poor households (90%).

Despite the impressive gains in the number of children immunized, the TAG was concerned that only 20% of all children immunized were aged less than 1 year, suggesting that the remaining gap in coverage was among very young children. The TAG was concerned with the somewhat erratic trends in the numbers of children immunized in Minya and Assiut in the summer campaigns, which suggest that the overall number immunized have declined since April. The TAG also noted that the systematic collection and analysis of supplementary immunization performance data now permitted accurate identification of districts at highest risk of poor coverage and that this data is being used to target improvements particularly in Cairo and Giza governorates.

### Recommendations

1. The highest priority should be to increase supplemental immunization coverage of very young children (i.e. < 24 months). Particular attention should be given to:
  - alerting vaccinators to the need to preferentially reach these children and to adapt their strategies accordingly, especially through house-to-house searches for young children; and
  - ensuring supervisors carefully evaluate coverage among children aged less than 1 year which should comprise over 20% of those immunized. As well greater attention should be given to defaulters.
2. The districts at very high risk for continued poor immunization campaign performance, particularly those dense urban slum areas in the reservoir governorates, must be guaranteed continuous technical support to improve supplementary immunization quality until such time as transmission is interrupted. Strategies for providing such technical support include the temporary redeployment of high performing staff from other governorates and the provision of international consultants. This support should focus on regular re-microplanning, better mapping for teams (especially for border areas between high risk districts) and logistics support. This ongoing technical support should be combined with guaranteed high quality close supervision in these high risk areas.
3. Given the ongoing discrepancy between reported supplementary immunization coverage data and poliovirus transmission in Minya/Assiut, limited serosurveys should be designed and conducted by end-January 2005 in these areas to verify the level of population immunity among young children. Similar serosurveys may then be considered for other areas of particular geographical concern. An expanded age group should be considered for these surveys to address ongoing question as to the potential role that older children might be playing in sustaining transmission in Egypt.
4. The priorities for strengthening social mobilization were endorsed, particularly the efforts to:



4. The priorities for strengthening social mobilization were endorsed, particularly the efforts to:
  - systematically engage the Ministry of Information and Ministry of *Awkaf* at the governorate level;
  - double the frequency of mass media airing of polio television and radio spots (as compared with September 2004);
  - sustain the targeted community preparation work in highest risk districts and;
  - align mass media messages with emerging community questions/concerns.
5. Given the extraordinary efforts that will be required to eliminate polio, the visible patronage of Her Excellency the First Lady in the inauguration of supplementary immunization activities will be very important to the ultimate success of this programme.

#### 4. SUPPLEMENTARY IMMUNIZATION STRATEGY: JANUARY–JUNE 2005

In considering potential supplementary immunization strategies for the period January through June 2005, the TAG carefully reviewed the lessons learned during 2003–2004 in Egypt and other areas of extremely efficient poliovirus transmission such as Mumbai, India.

The TAG noted data from Mumbai, as well as greater Cairo, clearly demonstrate that “subclinical” poliovirus transmission can continue for several months after detection of a clinical case. The TAG also observed that previous immunization campaign recommendations a gap of 3–4 months between rounds in reservoir areas as allowed by, proved insufficient to interrupt transmission given the now well recognized, highly efficient transmission in these areas. The routine immunization schedule in Egypt may contribute to this phenomena because with OPV doses until recently administered at only 2, 4 and 6 months of age, a child could be over 6 months old before he or she had received sufficient doses of OPV. By contrast, in other densely populated countries which have interrupted transmission, such as Bangladesh, a child would have received 4 doses of OPV through routine immunization by the age of 3.5 months. This immunity gap could be reduced in Egypt if it is ensured that the first OPV dose is given within 7 days of birth.

The TAG reviewed with interest the September 2004 deliberations of the ad hoc Advisory Committee on Polio Eradication (AACPE), which recommended that WHO accelerate the development and licensing of monovalent type 1 OPV for use as a key tool in the last phase of polio eradication. The AACPE was especially interested in exploiting the superiority of mOPV1 to rapidly seroconvert and boost intestinal immunity in young children as compared with trivalent OPV. The AACPE recommended that particular consideration be given to the early use of mOPV1 during immunization activities in Egypt, given that neither type 2 nor type 3 wild type poliovirus had been detected in the country for over 4 years and that high routine immunization coverage would continue with trivalent OPV.

The TAG's recommendations on immunization campaigns for January–June 2005 reflect the recent AACPE deliberations, the routine immunization schedule in Egypt, the very high population density and need to achieve extremely high levels of intestinal immunity in early 2005 to stop wild poliovirus transmission.

### **Recommendations**

1. Four rounds of supplementary immunization should be conducted during January–May 2005 to fully exploit the low transmission season for polioviruses, maximize intestinal immunity in the population, and optimize the possibility of interrupting wild polio transmission. Given the recent gaps in surveillance, and the premature geographical targeting of previous campaigns, these rounds should be conducted nationwide. Depending on the sensitivity of surveillance and extent of virus transmission by early 2005, it may be possible to focus the latter 2 rounds on the 2 major reservoir areas of Minya/Assiut and Cairo/Giza.
2. Two rounds of nationwide supplementary polio immunization should be planned for the third quarter of 2005.
3. Recognizing the superior capacity of monovalent OPV type 1 to induce intestinal immunity and seroconvert young children, NODCAR and WHO should collaborate with WHO-prequalified manufacturers to ensure the earliest possible availability of this vaccine for use in as many immunization rounds as possible in the country in 2005, ideally from January. In the course of this work, the potential for using mOPV1 for the birth dose should also be explored. Concurrent with the work to license mOPV1, the operational and communications issues relevant to its introduction and use in immunization must be addressed by the Ministry of Health and Population and partners.

### **5. AFP AND ENVIRONMENTAL SURVEILLANCE**

The TAG noted the marked improvements in the sensitivity of AFP surveillance, as the national annualized AFP rate has increased from 2.48 in 2003 to 3.00 in 2004. The number of reported AFP cases has increased by 35% between January and September of each year (i.e. from 460 in 2003, to 622 in 2004). Particularly encouraging were the improvements in the governorates of greater Cairo where the rates in Cairo and Giza had increased from 1.69 and 1.18 to 2.74 and 3.06, respectively. The AFP rates were over 3.5 in the governorates of Minya and Assiut, which form the other recognized poliovirus reservoir in Egypt.

These improvements in AFP detection rates reflect the implementation of many of the recommendations from previous TAG meetings and the 2004 surveillance review. Particularly important has been the progress in ensuring designated, full-time surveillance staff in key governorates; monthly, standardized supervisory visits from the central level; regular meetings with governorate and district staff; and closer collaboration with the Egyptian Society of Paediatrics. The TAG did note, however, that some recommendations were yet to be fully implemented, particularly in the engagement of university and military hospitals, and deployment of technical support.

The TAG was extremely impressed with the seriousness with which the Ministry of Health and Population, VACSERA, KTL/Finland and other partners had rapidly addressed the extremely alarming decline in the sensitivity of environmental surveillance that had been reported to the sixth TAG meeting. In reviewing the environmental data, however, the TAG pointed out that only in August 2004 did the nonpolio enterovirus (NPEV) detection rate again exceed 90%, after a full 11 months below that level.

The TAG noted that despite the substantial increase in laboratory workload in 2004, due to the increase in AFP case detection and systematic collection of contact samples, the performance of VACSERA remained high, providing excellent, timely data to the national eradication programme managers. Although the number of stool specimens processed in 2004 (1175) is already approaching the number processed in all of 2003 (1220), 99% of culture results have been reported within 28 days.

### **Recommendations**

1. Learning from the alarming gap in environmental surveillance sensitivity between mid-2003 and mid-2004, all aspects of AFP and environmental surveillance for each geographical area must be carefully scrutinized on a monthly basis to detect early indications of performance deterioration and allow rapid remedial action. For example, trends in the isolation of Sabin viruses from AFP cases should be analysed by governorate to identify and investigate potential problems with the reverse cold chain or other aspects of the surveillance programme.
2. To ensure that no potential sources of wild poliovirus are overlooked during this critical period, existing surveillance activities should be supplemented by the collection of stool specimens from all individuals with severe, primary immunodeficiency syndromes (e.g. requiring regular IVIG therapy). Any individual found to be excreting a wild or vaccine-derived poliovirus should have follow-up specimens collected monthly until negative for at least 2 consecutive months.
3. The TAG endorsed the Ministry of Health and Population's priorities for the further strengthening of AFP surveillance, particularly: a) ensuring real engagement of the major university and military hospitals; b) increasing supervision from the central level; c) continuing regular meetings and feedback with district and governorate officials; and d) further refining the "hot case" concept.

### **ACKNOWLEDGEMENTS**

The TAG would like to acknowledge the excellent work of the Ministry of Health and Population of Egypt which facilitated the deliberations of the meeting. The TAG noted with satisfaction the strong and continued inputs of various partners in polio eradication activities particularly Rotary International, UNICEF, USAID, WHO and Government of Japan and the active role played by the Interagency Coordination Committee for polio eradication in Egypt.

**Annex 1**

**PROGRAMME**

**Saturday, 16 October 2004**

- 09:30–10:00 Registration
- 10:00–10:30 Opening session  
Address by H.E. Dr Mohammed A. Tag-El-Din, Minister of Health and Population  
Address by Dr Hussein A. Gezairy, Regional Director WHO/EMRO  
Objectives and Meeting Agenda, Chairman of the TAG
- 10:30–11:00 Status of the implementation of recommendations of sixth TAG Meeting, Dr N. El Sayed, Ministry of Health and Population
- 11:00–11:15 Discussion
- 11:15–11:30 Epidemiology of polio virus in Egypt, Dr Samir El Jorf, WHO/Egypt
- 11:30–11:45 Evaluation of June–July mop-up and September NID, Dr I. Barakat, Ministry of Health and Population
- 11:45–12:00 Reports of independent observers, Dr A. Elkasabany, WHO/EMRO
- 12:00–12:30 Progress in campaign quality (independent monitors), Dr M.H. Wahdan, WHO/EMRO
- 12:30–12:45 Potential operational research to verify reported performance, Dr Roland Sutter, WHO/HQ
- 12:45–13:00 Social mobilization activities/plans, Dr S. Hegazy, UNICEF/Egypt, Dr Farag El Kamel, UNICEF/Egypt
- 13:00–13:30 Discussion
- 13:30–13:45 Surveillance data and indicators, Dr I. Moussa, Ministry of Health and Population
- 13:45–14:15 Virological surveillance (AFP–environmental), Dr Laila Bassiouni/VACSERA, Dr Olen Kew, CDC/Atlanta
- 14:15–15:00 Discussion
- 15:00–15:15 Plans for supplemental immunization activities, Dr N. El Sayed, Ministry of Health of Population
- 15:15–15:30 Questions to the TAG, Dr Samir El Jorf, WHO/Egypt
- 15:30–16:15 Discussion
- 16:15–17:45 Closed meeting of the TAG Members

**Sunday, 17 October 2004**

- 09:30–09:45 AACP recommendations on mOPV1, Dr Bruce Aylward, WHO/HQ
- 09:45–10:00 Discussion
- 10:00–11:30 Closed Meeting of the TAG members
- 11:30–12:30 Presentation of the report and closing session

Debriefing with H.E. the Minister of Health and Population

**Annex 2**

**LIST OF PARTICIPANTS**

**Members of the Technical Advisory Group**

Dr Ali Jaafar Mohammed Suliman  
Director General of Health Affairs  
Ministry of Health  
Muscat  
OMAN

Dr Nicholas Ward  
Stowford Meadow  
Langtree-Torrington  
Devon  
UNITED KINGDOM

Dr Howard Gary  
Epidemiologist  
Centers for Disease Control and Prevention  
Atlanta  
UNITED STATES OF AMERICA

Dr Olen Kew  
Team Leader Molecular Virology Section  
Centers for Disease Control and Prevention  
National Center for Infectious Diseases  
Atlanta  
UNITED STATES OF AMERICA

Dr Bruce Aylward  
Coordinator, Polio Eradication Programme  
WHO/HQ  
Geneva  
SWITZERLAND

Dr Isao Arita  
Chairman  
Agency of Cooperation in International Health  
Kumamoto  
JAPAN

Dr Yagob Y. Al Mazrou\*  
Chairman of the TAG  
Assistant Deputy Minister for Preventive Medicine  
Ministry of Health  
Riyadh  
SAUDI ARABIA

Dr Ciro A. de Quadros\*  
Director, International Programs  
Sabin Vaccine Institute  
Washington DC  
UNITED STATES OF AMERICA

Dr Stephen L. Cochi\*  
Deputy Director  
National Immunization Program  
Centers for Disease Control and Prevention (CDC)  
Atlanta  
UNITED STATES OF AMERICA

Dr Mohamed Helmy Wahdan  
Special Adviser to the Regional Director for Poliomyelitis Eradication Programme  
WHO/EMRO  
Cairo  
EGYPT

Dr Faten Kamel  
Medical Officer, Poliomyelitis Eradication Programme  
WHO/EMRO  
Cairo  
EGYPT

Dr Hamdy El Sayed  
Chairman, Egyptian Medical Syndicate  
Cairo  
EGYPT

---

\* Unable to attend

Dr Osama Raslan  
Secretary General, Egyptian Medical Syndicate  
Cairo  
EGYPT

Dr Salah El Din Madkour  
Chairman, National Certification Committee  
Cairo  
EGYPT

**Country representatives**

**EGYPT**

Dr Magda Rakha  
First Undersecretary for Preventive Affairs and Primary Health Care  
Ministry of Health and Population

Dr Nasr El Sayed  
Under-Secretary for Preventive Affairs  
Ministry for Health and Population

Dr Esmat Mansour  
First Under-Secretary for Primary Health Care  
Ministry of Health and Population

Dr Ibrahim Barakat  
EPI Executive Director  
Ministry of Health and Population

Dr Ibrahim Moussa  
Surveillance Officer  
Ministry of Health and Population

Dr Laila Bassiouni  
Principal Investigator  
VACSERA

Dr Iman Al Maamoun  
Head of Polio Laboratory  
VACSERA

Dr Camelia El Fouly  
Chairman of NODCAR

Dr Madiha Omer  
Director National Regularity Authority  
NODCAR

**Observers**

Dr Ibrahim Mahmoud  
EPI  
Ministry of Health and Population  
Cairo

Dr Sami Allam  
EPI  
Ministry of Health and Population  
Cairo

Dr Mohamed Sibak  
EPI  
Ministry of Health and Population  
Cairo

Dr Gamal Abdallah  
EPI  
Ministry of Health and Population  
Cairo

Dr Moharam Abdelrahman  
EPI  
Ministry of Health and Population  
Cairo

Dr Mostafa Abd El Salam  
EPI  
Ministry of Health and Population  
Cairo

Dr Abd El Samiee El Halwani  
CDC  
Ministry of Health and Population  
Cairo

Dr Ahmed Khedr  
EPI  
Ministry of Health and Population  
Cairo

Dr Amr Al Kholy  
CDC  
Ministry of Health and Population  
Cairo



**Dr Mounir Abdallah**  
CDC  
Ministry of Health and Population  
Cairo

**Dr Amr Kandil**  
CDC  
Ministry of Health and Population  
Cairo

**Dr Ihab Salah**  
CDC  
Ministry of Health and Population  
Cairo

**Other organizations**

**United Nations Children's Fund (UNICEF)**  
Dr Maria Otelia Costales  
Senior Health Advisor, Global Polio Eradication Programme  
UNICEF Headquarters  
New York

**Dr Mahendra Sheth**  
Regional Health Advisor  
UNICEF Middle East and North Africa Regional Office  
Amman

**Mr David Bassiouni**  
UNICEF Representative  
Cairo

**Mr Rajen Sharma**  
ILD Officer  
Cairo

**Mr Magdy El-Sanady**  
Health and Nutrition Programme Officer  
Cairo

**Dr Sahar Hegazi**  
Programme Communication Officer  
Cairo

Dr Essam Adel Allam  
Assistant Project Officer  
Cairo

Dr Farag El Kamel  
Senior Communication Advisor  
Cairo

**Rotary International**  
General Mounir Sabet  
District Governor 2450  
Cairo

Mr Kenneth E. Collins  
Past Rotary International Director  
Mt. Claremont, Australia

Professor Diaa Seif El Din  
Chairman, PolioPlus Committee  
Cairo

Dr Mounir Ezzedin  
Member, PolioPlus Committee  
Cairo

Mr Salem Mashhour  
Former District Governor  
Cairo

Dr Amr Abbassy  
Member, Egypt National PolioPlus Committee and Professor of Paediatrics  
Alexandria

**United States Agency for International Development (USAID)**  
Dr Emad Yanni  
Acting, Healthy Mother/Healthy Child  
USAID Cairo

**Centers for Disease Control and Prevention (CDC)**  
Dr Hamid Jafari  
Director of Polio Eradication Branch  
Global Immunization Division  
Atlanta, United States of America

**Government of Japan**

Mr Tetsushi Shimono

Second Secretary

Japanese Embassy

Cairo

**WHO Secretariat**

Dr Hussein Gezairy, Regional Director, WHO/EMRO

Dr Zuhair Hallaj, Acting WHO Representative, WHO/Egypt

Dr Mary Agoos, Medical Officer, Poliomyelitis Eradication Programme, WHO/EMRO

Dr Humayun Asghar, Virologist, Poliomyelitis Eradication Programme, WHO/EMRO

Dr Hala Safwat, Technical Officer, Poliomyelitis Eradication Programme, WHO/EMRO

Dr Abdalla Elkasabany, Short-Term Professional, Poliomyelitis Eradication Programme, WHO/EMRO

Dr Roland Sutter, Medical Officer Vaccines and Biologicals, WHO/HQ

Dr Kaushik Banerjee, Medical Officer Vaccines and Biologicals, WHO/HQ

Dr David J. Wood, Medical Officer Vaccines and Biologicals, WHO/HQ

Dr Jaqueline Fournier-Caruana, Medical Officer Vaccines and Biologicals, WHO/HQ

Dr Samir Al-Jorf, Short-Term Consultant, WHO/EMRO

Dr Abdel Khaliq Mohamed Farid Awad, National Medical Officer, WHO/EMRO

Dr M. Said El Sharkawy, National Medical Officer, WHO/EMRO

Mrs Nagla Dessouki, Administrative Assistant, Poliomyelitis Eradication Programme, WHO/EMRO

Ms Youmna Khalil, Secretary, Poliomyelitis Eradication Programme, WHO/EMRO

Ms Christina Kuenast, Secretary, Poliomyelitis Eradication Programme, WHO/EMRO

Mr Adam Abou Bakr, Audio-Video Administrator, Administrative Unit, WHO/EMRO

Ms Fatma Abdelmegeed, Helpdesk Assistant, Information System Management, WHO/EMRO