The World Health Organization has managed cooperation with its Member States and provided technical support in the field of vaccine-preventable diseases since 1975. In 2003, the office carrying out this function was renamed the WHO Department of Immunization, Vaccines and Biologicals.

The Department’s goal is the achievement of a world in which all people at risk are protected against vaccine-preventable diseases. Work towards this goal can be visualized as occurring along a continuum. The range of activities spans from research, development and evaluation of vaccines to implementation and evaluation of immunization programmes in countries.

WHO facilitates and coordinates research and development on new vaccines and immunization-related technologies for viral, bacterial and parasitic diseases. Existing life-saving vaccines are further improved and new vaccines targeted at public health crises, such as HIV/AIDS and SARS, are discovered and tested (Initiative for Vaccine Research).

The quality and safety of vaccines and other biological medicines is ensured through the development and establishment of global norms and standards (Quality Assurance and Safety of Biologicals).

The evaluation of the impact of vaccine-preventable diseases informs decisions to introduce new vaccines. Optimal strategies and activities for reducing morbidity and mortality through the use of vaccines are implemented (Vaccine Assessment and Monitoring).

Efforts are directed towards reducing financial and technical barriers to the introduction of new and established vaccines and immunization-related technologies (Access to Technologies).

Under the guidance of its Member States, WHO, in conjunction with outside world experts, develops and promotes policies and strategies to maximize the use and delivery of vaccines of public health importance. Countries are supported so that they acquire the technical and managerial skills, competence and infrastructure needed to achieve disease control and/or elimination and eradication objectives (Expanded Programme on Immunization).

Immunization, Vaccines and Biologicals

World Health Organization
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## Abbreviations

<table>
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<tr>
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<th>Description</th>
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<tbody>
<tr>
<td>AD</td>
<td>auto-disable (syringe)</td>
</tr>
<tr>
<td>AEFI</td>
<td>adverse events following immunization</td>
</tr>
<tr>
<td>AFRO</td>
<td>WHO Regional Office for Africa</td>
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<tr>
<td>ARC</td>
<td>American Red Cross</td>
</tr>
<tr>
<td>CDC</td>
<td>Centers for Disease Control and Prevention (USA)</td>
</tr>
<tr>
<td>CIDA</td>
<td>Canadian International Development Agency</td>
</tr>
<tr>
<td>CIP</td>
<td>coverage improvement plan</td>
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<tr>
<td>DTP3</td>
<td>diphtheria–tetanus–pertussis vaccine, third dose/complete schedule with three doses</td>
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<tr>
<td>EPI</td>
<td>Expanded Programme on Immunization</td>
</tr>
<tr>
<td>FSP</td>
<td>financial sustainability plan</td>
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<tr>
<td>GAVI</td>
<td>Global Alliance for Vaccines and Immunization</td>
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<tr>
<td>GMAP</td>
<td>Global Measles Advisory Panel</td>
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<tr>
<td>IASIT</td>
<td>International Association of Safe Injection Technology</td>
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<tr>
<td>ICC</td>
<td>interagency coordinating committees</td>
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<tr>
<td>IDS</td>
<td>integrated disease surveillance</td>
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<tr>
<td>IEC</td>
<td>Information Education Communication</td>
</tr>
<tr>
<td>IFRC</td>
<td>International Federation of Red Cross and Red Crescent Societies</td>
</tr>
<tr>
<td>IMCI</td>
<td>integrated management of childhood illness</td>
</tr>
<tr>
<td>ITN</td>
<td>insecticide-treated bed nets</td>
</tr>
<tr>
<td>MNT</td>
<td>maternal and neonatal tetanus</td>
</tr>
<tr>
<td>RED</td>
<td>Reaching Every District (immunization strategy)</td>
</tr>
<tr>
<td>SASDE</td>
<td><em>Stratégie Accélérée de la Survie et du Développement de l’Enfant</em></td>
</tr>
<tr>
<td>SIA</td>
<td>supplementary immunization activity/activities</td>
</tr>
<tr>
<td>SOS</td>
<td>Sustainable Outreach Services</td>
</tr>
<tr>
<td>UNF</td>
<td>United Nations Foundation</td>
</tr>
<tr>
<td>UNHCR</td>
<td>United Nations High Commission for Refugees</td>
</tr>
<tr>
<td>UNICEF</td>
<td>United Nations Children’s Fund</td>
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The WHO/UNICEF Global Meeting for Sustainable Measles Mortality Reduction and Immunization Systems Strengthening was held from 15–17 October 2003 in Cape Town, Republic of South Africa. The first two days of the meeting were focused on technical issues and updated delegates on the overall progress being made towards sustainably reducing measles deaths in affected countries. The final day of the meeting focused on partnership, communication and advocacy issues during the Global Measles Forum.

The ad hoc Global Measles Advisory Panel (GMAP) held a concurrent meeting in conjunction with the global meeting. The GMAP’s foremost task was to make specific recommendations to the Director of the Department of Immunization, Vaccines and Biologicals, concerning strategic and technical issues relating to achievement of the 2005 measles mortality reduction goal.

Over 230 participants and observers including Ms Carol Bellamy, the Executive Director of UNICEF, Dr Ebrahim Samba, the Regional Director of WHO for Africa, Mrs Joy Phumaphi, Assistant Director-General of WHO, as well as senior ministry of health representatives from 52 Member States, including 41 of the 45 priority countries, took part in the meeting. Representatives from international and national organizations, such as the governments of Finland and Ireland, the American Red Cross (ARC), the Australian Agency for International Development (AusAID), the United States Centers for Disease Control and Prevention (CDC), the Canadian International Development Agency (CIDA), the Canadian Public Health Association (CPHA), the International Federation of Red Cross and Red Crescent Societies (IFRC), the Japan International Cooperation Agency (JICA), the United Nations Foundation (UNF), the United Nations High Commission for Refugees (UNHCR), the United States Agency for International Development (USAID) and staff from WHO and UNICEF country and regional offices and headquarters attended.

Presentations and discussions were held during the meeting and covered four main areas: progress to date in measles mortality reduction; lessons learned in implementing recommended strategies; the status of both present and future financial, equipment and human resources; and the role of partnerships in achieving and sustaining the measles mortality reduction goal. Remarkable progress in global measles mortality reduction efforts has been made; the programme is on track to achieve at least a 50% reduction in measles mortality deaths by the end of 2005.

Figure I focuses on the 45 countries prioritized for measles mortality reduction efforts. These countries accounted for nearly 95% of global measles deaths in 1999. This map shows the progress made in these countries by providing children with a second opportunity for measles immunization.
Figure I: Measles mortality reduction in 45 UNICEF/WHO priority countries, 2003

Figure II: Progress towards the 2005 global measles mortality goal

Figure II shows WHO estimates of the progress to date towards achieving the 2005 measles mortality reduction target.

Figure II: Progress towards the 2005 global measles mortality goal
Despite the significant progress made in reducing measles deaths, there were still an estimated 614 000 deaths from measles in 2002. All such deaths can be prevented; the single leading reason for the continuing high global burden of measles is the underutilization of currently available, safe, effective and relatively inexpensive measles vaccine. The consensus was that the WHO/UNICEF-recommended comprehensive strategy for sustainable measles mortality reduction was appropriate and effective and that this strategy will be most effective when it is fully implemented in the priority countries.

As was clearly demonstrated from the experience of many countries, it is possible to deliver other priority public health interventions such as vitamin A, mebendazole and insecticide-treated bed nets during large-scale measles supplementary immunization activities (SIA). There was consensus that these coordinated efforts should continue and be expanded.

There was also general agreement that measles mortality reduction activities can be used as an opportunity to help strengthen immunization services through: refresher training of health care workers; improved monitoring and supervision; promotion of injection safety; better planning at the health centre and district levels for routine immunization and supplemental immunization activities; enhanced communication activities; and refurbishment of the cold chain and other immunization infrastructure.

Most of the reduction in measles deaths – 170 000 annually (67% of the cumulative global reduction) – has occurred in Africa. Much of this success can be attributed to the support that the Africa Measles Partnership has provided to priority countries in Africa. Major partners include: ARC, CDC, CIDA, IFRC, UNF, UNICEF and WHO. There was consensus that the other regions could benefit from similar partnerships, especially the Eastern Mediterranean, South-East Asia and Western Pacific regions.

There has been much progress in assuring the ongoing availability of measles vaccine and auto-disable (AD) syringes since 2001. For 2003 to 2006, the availability of measles vaccine acquired through UNICEF for routine immunization and supplementary immunization activities is assured and the price is relatively stable. The supply of auto-disable syringes and safety boxes is also considered good.

The challenge to mobilize sufficient resources to fully implement the recommended strategies in the 45 priority countries remains. Continued strong political commitment from countries and their partners is necessary in order to mobilize the estimated US$ 141 million needed annually for sustainable measles mortality reduction activities during the period 2004–2008. Planning for financial sustainability must be an integral component of every national plan for sustainable measles mortality reduction.

The meeting concluded with the launch of the Global Measles Forum, which brought together affected countries and their partners to discuss ongoing collaboration aimed at achieving and surpassing the 2005 measles mortality reduction goal. Participants promised their full support for the strategies outlined in WHO/UNICEF Measles Mortality Reduction and Regional Elimination: Strategic Plan 2001–2005. They fully supported the formation of regional partnerships to advocate for and implement measles mortality reduction strategies. The meeting closed with unanimous acclamation for the Cape Town Declaration on sustainable measles mortality reduction (see Annex).
Introduction

In March 2001, UNICEF and WHO jointly released the document *Measles Mortality Reduction and Regional Elimination: Strategic Plan 2001–2005*. The prime objective of the plan was to reduce the number of global measles deaths by half by the end of 2005 compared to the total number of deaths in 1999.

The strategies recommended to achieve this goal were as follows:

- Provide the first dose of measles vaccine to successive cohorts of infants.
- Ensure that all children receive a second opportunity for measles immunization.
- Enhance measles surveillance with integration of epidemiological and laboratory information.
- Improve the clinical management of every measles case.

The release of the joint strategic plan helped to reinvigorate global, regional and national efforts to reduce measles mortality. Two years later, on 28 May 2003, the Fifty-sixth World Health Assembly (WHA) unanimously passed a resolution urging all Member States to adopt the plan, to provide the necessary financial support and to use the strategic approach of reducing global measles mortality as a tool for strengthening national immunization programmes. Furthermore, the WHA requested that the WHO Director-General work with Member States to strengthen immunization programmes and to strengthen partnerships at the global, regional and subregional levels. Strengthening partnerships with UNICEF and other international bodies, nongovernmental organizations (NGOs) and the private sector was a means to mobilizing additional resources needed to fully implement the WHO/UNICEF strategies.

WHO and UNICEF selected 45 priority countries for enhanced measles mortality reduction activities. Together, these countries accounted for nearly 95% of the global measles mortality burden in 1999.

2003 marked the mid-point of the five-year time frame to reduce global measles mortality by half; WHO and UNICEF felt that it was important to convene a global meeting to assess progress being made towards achieving the 2005 goal, as well as to help to build consensus and develop concrete plans for the near and medium-term futures. The meeting focused on the efforts and progress being made in the 45 priority countries.
Objectives of the meeting

There were three primary objectives of the meeting:

• to review progress towards achieving a 50% reduction in measles mortality by 2005 and determine the strategic issues, operational priorities and financial resources required to achieve this goal;

• to establish consensus on the strategies to sustain (and further reduce) measles mortality by improving access to immunization services and conducting periodic campaigns when necessary; and

• to engage new partners and strengthen communication and advocacy efforts for sustainable measles mortality reduction.
Session one:
How far have we come?
How far to go?

Global goals and strategy for sustainable measles mortality reduction

Bradley Hersh, WHO HQ, Geneva

- There are currently an estimated 2000 measles deaths per day occurring among children worldwide, with most of the burden in the WHO African Region (AFR). Measles deaths are not distributed equally throughout the world. The highest mortality is found in the poorest countries, and 98% of all measles deaths occur in countries that are eligible for support from the Global Alliance for Vaccines and Immunization (GAVI).
- In May 2003, the World Health Assembly endorsed the goal of reducing measles mortality by half by the end of the year 2005.
- A safe, effective and affordable vaccine exists, as do well-defined strategies for sustainable measles mortality reduction. The strategy for sustainable measles mortality reduction consists of four components.
  - Achieve high routine measles vaccination coverage (90%) in every district.
  - Provide all children with a second opportunity for measles immunization through supplementary immunization activities (SIA): a “one-time-only” catch-up campaign, and periodic follow-up campaigns, thus combining SIA with other priority health interventions. Alternatively, the second opportunity for measles immunization may be provided through routine immunization services, if a high proportion of children can be reached.
  - Develop and implement a strong surveillance system.
  - Improve measles case management, including vitamin A supplementation.

- Providing all children with a second opportunity for immunization is an integral part of the comprehensive strategy for sustainable measles mortality reduction. However, the duration of impact of campaigns will be limited, unless there is a strong routine immunization programme to prevent the accumulation of susceptible children. It should thus be clear to countries and partners that both strong routine immunization and well-planned campaigns are necessary in a combined approach to sustainably reduce measles deaths.
Progress towards reaching the 2005 measles mortality reduction goal

Edward Hoekstra, UNICEF HQ, New York

- WHO and UNICEF have targeted 45 priority countries for measles mortality reduction. These countries account for almost 95% of all measles deaths. All but one of the priority countries are eligible for GAVI support. These countries, all of which had a 1-dose measles strategy in 2000, are all moving forward to implement strategies such as SIA to provide all children with a second opportunity for measles immunization.

- By the end of 2003, 29 of 45 countries will have started providing children with a second opportunity for measles immunization. By 2005, all priority countries will have provided children with a second opportunity.

- From 1999 to 2003, over 200 million children living in the priority countries received a second opportunity for measles immunization through SIA. In 2003, UNICEF supplied more than 164 million doses of measles vaccine.

- There has been a significant reduction in estimated global measles deaths. In 1999, there were an estimated 869,000 measles deaths globally. By 2002, this figure had dropped by 29% to 614,000 deaths. In Africa, the rate of reduction is even greater – 35% since 1999; these averted deaths account for 67% of the global reduction in burden.

- Partners have steadily increased their financial support for measles activities. Measles programmes must be integrated with national health programmes and strategies in order to ensure sustainability and success. Strong partnerships will also be crucial to achieving the goal.
• We are on track to achieve the global goal of a 50% reduction in measles deaths by the end of 2005. While the goal is technically feasible with full implementation of current strategies, it will require political ownership by the affected countries and continued collaboration between countries and their partners.

Preventing measles deaths in Africa

Robert Kezaala, WHO Regional Office for Africa, AFRO

• Measles SIA must be seen as opportunities to strengthen routine immunization systems by building skills at the district and local level, improving the cold chain, renewing interest in immunization, and developing new partnerships both at the local and international level.

• Partners are working with countries to increase routine measles coverage by 10% per year, to provide all children with a second opportunity for measles immunization, to build case-based surveillance and the laboratory network, and to improve clinical management of measles through the integrated management of childhood illness (IMCI) approach.

• There are now three regional reference laboratories (Côte d’Ivoire, South Africa and Uganda) and 28 national measles laboratories in the Region. Case-based surveillance is being implemented in countries that have conducted catch-up campaigns.

• These efforts have had a major impact in reducing measles deaths and in strengthening immunization systems throughout the Region. Africa has made significant progress towards the 2005 goal.

The Africa Measles Initiative: A partnership model for other regions?

Andrea Gay, UNF, USA

• The Africa Measles Initiative provides a useful partnership model that has effectively coordinated partners and channelled funding at the country level for activities to support sustainable measles mortality reduction in the African Region.

• Characteristics of the partnership include: common funding structure, inclusive management structure, full transparency, regular communication and shared decision-making.

• Other regions should benefit from the experience of this partnership and work to develop additional regional partnerships for sustainable measles mortality reduction.
Cost effectiveness of measles mortality reduction in Kenya

Steven Muchiri, Ministry of Health, Kenya

• The result of a cost-effectiveness study of measles mortality reduction activities in Kenya showed that from a health care system perspective the immunization programme has been very successful. For example, at a cost of US$ 0.89 per child immunized in measles campaigns, an expenditure of US$ 2.80 per measles case prevented and US$ 85.70 per measles-related death averted.

• SIA were found to be cost saving when treatment costs were included, for a net present value of US$ 12 million in treatment costs averted and a net savings to the health system of US$ 1.5 million over the next 10 years.

• Similar analyses may be useful for countries for decision-making, advocacy and resource mobilization purposes as countries further develop their national measles mortality reduction programmes.

See Figure 1 for a breakdown of global deaths among children, showing the high proportion connected with measles.
Session two: Strengthening immunization services and preventing measles deaths

Reaching every district approach

Deo Nshimirimana, WHO, AFRO

- The Reaching Every District (RED) approach is the foundation of the strategy for sustainable measles mortality reduction. The focus needs to be on strengthening immunization services at district level.

- Key elements of this approach include:
  - re-establishing outreach immunization services;
  - supportive supervision;
  - community link with service delivery;
  - monitoring and use of data for action; and
  - proper planning and management of resources.

- As routine coverage increases, the interval between follow-up campaigns can be increased as well.

- Challenges include: optimizing use of existing resources, integrating other priority public health interventions with the Expanded Programme on Immunization (EPI), increasing capacity at district level, improving planning and logistics, increasing coverage and eliminating inequities.

- Strengthening routine immunization services at district level will play a major role in achieving and maintaining polio eradication, maternal and neonatal tetanus elimination and sustainable measles mortality reduction.
Country experiences implementing the RED approach

Cambodia

Sann Chan Soeung, Deputy Director of Maternal Child Health

- Cambodia developed a coverage improvement plan (CIP) including: improved microplanning, the development of performance-based agreements between various levels of government, increased outreach activities and strengthened monitoring and evaluation systems.
- During the period 2001–2003, Cambodia conducted a “rolling” measles catch-up campaign. Additional priority interventions, including vitamin A, oral polio vaccine (OPV), mebendazole, iodine and other EPI antigens were included in the campaign.
- These efforts have been very successful in improving coverage and markedly reducing measles incidence in Cambodia.

Togo

Tchamdja Potougnima, General Director of Health

- Decentralized planning and improved management of resources made available from partnerships is a priority in ensuring the effective implementation of the RED strategy in Togo.
- Priority is placed upon poorly performing districts.
- The comprehensive strategy has had a major impact in reducing measles morbidity and mortality. There has been a 94% reduction in confirmed measles cases and a 100% reduction in measles deaths.
- Challenges include: strengthening communications, improving monitoring, better financial planning and further development of partnerships.

Bangladesh

Mohammed Mahbubur Rahman, Director Primary Health Care

- Specific RED approach activities include: retraining of EPI staff, development of district and sub-district level microplans, development of national EPI communication strategies, improved monitoring and reporting systems and promotion of decentralized budgets.
- Approximately 3500 additional field staff were recruited in 64 priority districts.
- Using funds from GAVI/Vaccine Fund, District Immunization Medical Officers (DIMOS) have been posted in the 25 districts with the highest drop-out rates for the third dose of diphtheria–tetanus–pertussis vaccine (DTP3).
- These activities are expected to have a major impact in increasing and sustaining routine immunization coverage.
Promoting synergy: Integration of other public health interventions with measles supplemental immunization activities

Zambia

Ben Chirwa, General Director of Health

- Early planning and well coordinated integration of vitamin A supplementation, insecticide-treated bed nets (ITN) and mebendazole distribution with measles SIA has been demonstrated to be cost effective, efficient and time saving.
- Plans for logistics, advocacy, social mobilization, monitoring and evaluation were also integrated, resulting in an effective and efficient use of resources.
- Estimated coverage approached 100% for all interventions.
- Integrated activities proved synergistic in improving child health.

See Figure 2 for the distribution of insecticide-treated bed nets in Zambia during the measles campaign in 2003.

Figure 2: Insecticide-treated bed nets distributed in the Zambia National Measles Immunization Campaign, 2003
Mali

Celestino Costa, UNICEF

- Some experimental immunization delivery programmes have been used to complement the RED approach. These include the Sustainable Outreach Services (SOS) and Strategie Accélérée de la Survie et du Développement de l’Enfant (SASDE).
- These programmes attempt to provide priority public health interventions, including immunization, vitamin A, prenatal and postnatal care, primary care and bed-net distribution in areas with limited health infrastructure.
- Mothers are well aware that measles is dangerous. There is a very high demand for measles vaccination in the community, which can be used as a means of assuring high attendance rates for these activities.
- The overall goal of both SOS and SASDE is to reinvigorate the routine health system, including EPI.

Viet Nam

Do Si Hien, EPI Manager

- During 2002–2003, nationwide measles SIA were conducted targeting all children 9 months through 10 years of age. Over 15 million children were vaccinated and coverage was estimated to be greater than 99%.
- A second opportunity for measles immunization will be provided to children through the addition of a second dose of measles vaccine to the routine immunization schedule. Periodic SIA will be conducted in areas that are unable to reach a very high proportion of children.
- The use of SIA has resulted in a major reduction in measles incidence.
- Lasting outcomes of successful SIA have included the refurbishment of the cold chain system, strengthening of measles surveillance, and the enhancing of ongoing efforts to strengthen routine immunization services.
Session three: Measles between two giants – competition or collaboration?

GAVI – Routine EPI, new vaccines and measles

H.E. Francisco Songane, Minister of Health, Mozambique, GAVI Board Member

• GAVI was launched in 2000 to fight declining immunization rates and growing disparities in access to vaccines among the world’s poorest countries. It was launched with a five-year timetable: 2000 to 2005.

• GAVI members are the leaders in global measles control efforts.

• GAVI is a consortium of interested parties. The GAVI Board has five renewable members – WHO, UNICEF, the World Bank, the Bill & Melinda Gates Foundation and the Vaccine Fund – and 11 rotating members – governments from developing and industrialized countries, members of the vaccine industry from developing and industrialized countries, technical health institutes, research institutes and NGOs.

• The main goals of GAVI are to:
  – increase access to all vaccines (through strengthening routine EPI);
  – speed introduction of new and underused vaccines;
  – encourage development of new vaccines; and
  – prevent millions of avoidable deaths each year.

• The 75 poorest countries of the world are eligible for support from the Vaccine Fund through GAVI. Over 60 have already received vaccines and/or cash support and over eight million additional children have been vaccinated with three doses of DTP.

• At the GAVI Board meeting in Dakar, 2002, the WHO/UNICEF measles mortality reduction strategy was fully accepted and endorsed, and a statement was released to the press.

• The main areas of GAVI’s added value to global immunization efforts are listed below. These are the areas where collaboration with measles control efforts are likely to be most effective:
  – strengthening coordination and building consensus;
  – supporting countries with resources from the Vaccine Fund;
  – innovation; and
  – advocacy and communication.
• In order for a truly successful collaboration between efforts to reduce measles mortality reduction and the added value provided by GAVI, the following conditions must be met:
  − National interagency coordinating committees (ICCs) must communicate regularly and engage in joint planning.
  − Countries must have integrated immunization plans, so that different efforts do not compete with each other at the country level.
  − Countries need to set ambitious, yet reachable immunization coverage goals in order to reduce measles mortality over the long term.

• GAVI plans to continue its work at least through 2015.

**Polio eradication – Lessons learned and future opportunities**

*Bruce Aylward, Global Coordinator for Polio Eradication, WHO HQ, Geneva*

• There is only one EPI goal: to keep children alive and healthy. Polio eradication and measles mortality reduction are both part of that goal.

• In 1988, the World Health Assembly resolved to eradicate polio in order to both prevent the approximately 500,000 cases of paralytic polio annually and to reinvigorate routine immunization, which had stagnated at around 70% coverage globally.

• Polio is endemic in only seven countries with just over 1000 paralytic cases globally. The strategies that have achieved this are:
  − strengthening routine immunization;
  − conducting national supplementary immunization activities;
  − establishing and maintaining disease surveillance;
  − establishing and maintaining a global laboratory network to support control and surveillance; and
  − creating and sustaining partnerships at local, national, regional and global levels to support the efforts.

• Important lessons for successful implementation of the strategies have been learned, especially that the following are of crucial importance:
  − community mobilization;
  − microplanning and mapping;
  − reaching the unreached; and
  − adequate resources for surveillance.

• The priorities of the polio eradication programme are the same as for measles mortality reduction and therefore the experiences of the polio programme should be exploited to improve measles mortality reduction efforts.

• For political and financial reasons, unless polio eradication is completed successfully, global measles mortality reduction cannot achieve and maintain its goals.
The table below shows the identical priorities for polio eradication and measles elimination efforts.

**Polio priorities for 2004–2008 are measles priorities**

<table>
<thead>
<tr>
<th>Routine EPI</th>
<th>to maintain immunity</th>
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<tr>
<td>Surveillance</td>
<td>to guide efforts and certify</td>
</tr>
<tr>
<td>Campaigns</td>
<td>to stop transmission</td>
</tr>
<tr>
<td>Partnership</td>
<td>to strengthen ICCs!</td>
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</table>
Session four: Providing a second opportunity for measles immunization

Country experiences in providing a second opportunity for measles immunization

Lessons learned from the Americas

Jon Andrus, Regional Advisor Immunization, PAHO

- PAHO’s success at providing a second opportunity for measles immunization through periodic supplementary immunization activities is due to good campaign planning, including management and supervision with technical guidance. Extensive support was given to countries to improve their surveillance systems after campaigns.
- Equity: although there is a steady increase of municipalities achieving routine immunization coverage of greater than 95%, there is still a gap where 50% of municipalities have less than 95% coverage.
- As measles incidence decreases and surveillance improves, rubella cases can be detected.
- Strengthening routine immunization is a critical component of the PAHO strategy. This is done through the use of the revolving fund for vaccine procurement, regular ICC and technical advisory meetings, planning for financial sustainability, and building partnerships with many national and international organizations.

Mexico

Carlos Alvarez Lucas, General Director of Preventive Programs

- In 1990, Mexico experienced a very large measles outbreak with over 80,000 reported cases and 5,899 deaths.
- In 1992, Mexico conducted a catch-up campaign and has been offering all children a second opportunity for measles immunization through regular follow-up campaigns.
- This strategy has resulted in the interruption of indigenous measles virus circulation.
- Since 2000, all measles cases have been due to importations and there have been no measles deaths.
- A strong surveillance system is needed. With an effective surveillance system established, the chain of transmission in every measles case in Mexico can be identified.
South Africa

Ngcobo Ntombenle, EPI Manager

- South Africa started using measles vaccine in 1975. In the 1980s, measles became notifiable. In 1996–1997, a second opportunity was provided to all children between 9 months and 15 years of age. Since then, there has been a significant drop in the number of measles cases and no deaths have been reported.
- This successful measles campaign was followed by establishment of a case-based surveillance system where each suspected case of measles and rubella was investigated. Measles outbreaks have still occurred in South Africa, but all of them appear to be due to importations.
- Surveillance needs to be improved and routine immunization needs to be strengthened to reduce the drop-out after first and second doses. Moreover, improved cross-border collaboration is needed.
- With a decrease in measles incidence and improved surveillance, a greater proportion of measles cases is being observed among young adults. Many of these cases are among unvaccinated persons living in rural areas in South Africa or Mozambique.

Preventing measles deaths in emergency situations

Peter Salama, UNICEF, Afghanistan;
John Tabayi, UNHCR, United Republic of Tanzania

- In emergency situations, measles is a major killer of children under 5 years of age with reported case-fatality ratios in the range of 2–22%. Children in refugee populations are often malnourished, suffer micro-nutrient deficiencies and are susceptible to measles. The crowded conditions of refugee camps can facilitate measles virus circulation, resulting in many measles deaths in this high-risk population.
- In the past, many deaths occurred in emergency situations because of the delay in responding and providing measles vaccine to children. Vaccination efforts were often delayed because emergency efforts were focused only on providing food and not on other interventions.
- Depending on the local epidemiology, available human resources and financial capacity, all children aged 6 months through 14 years living in camps should be immunized against measles, together with the provision of vitamin A as soon as possible. If this is not possible, children aged 6 to 59 months should be the primary target.
- Measles campaigns in emergency situations can be used as a vehicle to strengthen the routine immunization system and surveillance. Moreover, these campaigns can help attract donor funding to support routine EPI.
“Immunization of children against measles is probably the single most important (and cost-effective) preventive measure in emergency-affected populations, especially those living in camps.”
— Toole and Waldman, 1997

Afghanistan

Sayed Shukrullah Wabidi, Director of Primary Health Care

- Afghanistan’s war crisis has resulted in prolonged suffering. Hampered by geographic difficulties and logistic problems, and complicated by a severely compromised health infrastructure, the <5 mortality rate was high. This was in part due to the fact that measles immunization coverage was reported to be only 50%.
- In 2001, the measles campaign that was under way was stopped due to the outbreak of war. It resumed and was completed in 2003, with over 16 million measles vaccine doses administered.
- Afghanistan’s health officials are confident that the target of reducing measles deaths by 50% by 2005 will be reached.
- The keys to success of the Afghanistan measles campaign were high commitment of the local government, strong social mobilization, the involvement of religious leaders and community participation, with good collaboration and partnership amongst international and national NGOs.
- 152 cases of abscesses were reported due to the wrong use of reconstitution diluent.
- The collaboration between WHO and UNICEF has shown remarkable results in emergency situations.

Angola

Fatima Valente, EPI Manager

- Following more than 25 years of civil war, Angola faced many difficulties due to the destruction of the health infrastructure in many parts of the country.
- Prior to the campaign, measles was responsible for thousands of deaths each year.
- Despite many challenges, Angola, with the support of UNICEF and WHO, managed to conduct a very strong measles campaign. The campaign was conducted in three stages: the first stage targeted children attending schools; the second stage used fixed health facilities to provide measles vaccine to children in the target age group; and the third stage used mobile teams and mop-up vaccination to find and vaccinate hard-to-reach children.

Support from the military and UNHCR was also provided to transport supplies and secure transport routes by clearing land mines.

Microplanning, supportive supervision and monitoring were the keys to ensuring the success of the campaign. Moreover, there was high-level political support, strong community mobilization and high community participation.

Angola proved that even in very difficult circumstances, collaboration and partnership are key to the success of such campaigns.
Session five: Critical inputs; vaccines and injection equipment

Assuring supply of high quality measles vaccine

_Alejandro Costa, WHO HQ, Geneva_

- The supply of high quality vaccine is a multi-step process that involves:
  - capacity: amount of vaccine that can be produced;
  - quality: maintained through good manufacturing practices;
  - quality assurance: done by national regulatory authorities;
  - logistics: proper handling, transport and storage; and
  - financing: predictable, reliable and sustainable.

- The goal of this process is to ensure that the vaccines are safe, effective and meet the specific requirements of the national immunization programmes (i.e. the desired presentation, potency and combinations, acceptable cost, labelling, shipping, etc).

- WHO advises UNICEF and other UN procuring agencies on the acceptability of vaccines from different sources for supply to these agencies; these are considered the “prequalified” vaccines.

- The major factors affecting supply are price, the number of doses per vial, combination versus single antigen vaccines and prequalification.

Forecasting demand for measles vaccine and injection equipment

_Steve Jarrett, UNICEF HQ, New York_

- The unique position of UNICEF is that it buys 40% of the global volume of vaccine doses, mainly basic vaccines, but represents only 5% of the market value.

- UNICEF faces a diverging vaccine market between developing and industrialized countries: for measles, it is between monovalent vaccine and measles–mumps–rubella (MMR) combinations, with the greatest profitability in the industrialized countries, selling MMR combinations.

- Manufacturers need long-term firm demand forecasts from buyers, backed up by money, or else they will take decisions without the buyers; for measles this could result in a shortage of monovalent measles vaccine.
• It is important to know that the manufacturing of vaccine is a slow process. The production of a dose of measles vaccine takes 9–24 months; to increase capacity takes 2–3 years; to build a new plant takes 5–7 years. Changes to regulatory requirements often occur and tend to cause interruptions.

• UNICEF vaccine procurement has these specific objectives:
  − ensuring an uninterrupted, sustainable supply of affordable, quality vaccine (vaccine security);
  − ensuring continuous and effective communication with vaccine manufacturers;
  − consolidating long-term strategic procurement and relationships with manufacturers;
  − complying with UNICEF financial rules and regulations; and
  − complying with public procurement principles.

• The goal is to ensure vaccine security – an uninterrupted, sustainable supply of affordable, quality vaccine. There are three basic elements of vaccine security:
  − accurate, long-term forecasting of demand;
  − secure future funding; and
  − contracting for affordable vaccines.

• For the period 2003–2006, there is greater availability of measles vaccine because forecasting is more reliable and supply is greater than demand. However, the average weighted price of measles vaccine will rise by more than US$ 0.4 per dose, from US$ 0.13 per dose to US$ 0.17 per dose.

• For the period 2003–2006, annual demand for measles–rubella vaccine purchased through UNICEF is from 3 to 12 million doses and for MMR 500 000 to 2 million doses. Any increases must be forecast sufficiently early to ensure availability.

• UNICEF supply of auto-disable syringes has increased rapidly since 2001 due to campaigns and GAVI activities; the number of manufacturers is increasing and costs are decreasing.

• The UNICEF Supply Division will continue to support countries on forecasting and vaccine management and continue to work with national programmes, governments and funders on long-term plans and funding needs, to promote planning with the vaccine industry on short-term and long-term vaccine needs.
Assuring immunization safety

Philippe Duclos, WHO HQ, Geneva

- Immunization safety implies the safe use of vaccines in the broadest sense, including safe manufacturing, storage, handling, transport, reconstitution, administration and waste disposal. Vaccine safety is but one part of immunization safety.
- There must be no compromises in terms of immunization safety. Safety must be ensured to protect the health of target children. It must also be ensured to protect the reputation of vaccines and vaccination programmes, so that they are available and trusted when future vaccination needs arise.
- Immunization safety is a special problem during campaigns when programmatic errors tend to increase. It is important to stress surveillance for adverse events following immunization (AEFI) and proper waste disposal.
- The Global Advisory Committee on Vaccine Safety is a scientific and clinical body that advises WHO on vaccine safety issues. The Committee can be contacted at: www.who.int/vaccine_safety/en/.

See Figure 3.

Figure 3: Safety issues

Safety - no compromise!!

- Prevent damage to health
- Prevent damage to programmes
- Still many unfortunate examples of mishaps
  - Unsafe injections
  - Bad reconstitution
- Undue blame on vaccine safety and quality of UN-supplied vaccines
Bangladesh experience with surveillance for adverse events following immunization

Mohammed Mabubur Rahman, Director Primary Health Care, Bangladesh

- On 4 September 2003 in rural Jamalpur District, a travelling vaccination team held 11 routine immunization sessions using standard vaccines and injection equipment, not auto-disable syringes. In the village of Sabilapur, 27 children were vaccinated, including six with measles vaccine. All six who received measles vaccine became ill and none of the others. Within 16 hours, two of the six died and after 22 hours a third child died. The other three children recovered.

- The AEFI surveillance system works – the event was reported and a local team investigated on 5 September 2003. A national team with WHO and UNICEF staff investigated on 6 September 2003, and a regional team arrived to study the incident on 9 September 2003.

- Results: contaminated measles vaccine found in a single vial resulted in what appeared to be toxic shock in the six children, killing three. It was programmatic error.

- Actions: representatives met with the community and the media to explain the situation and were able to maintain confidence in EPI. Intensified training in 2004 to prevent a recurrence of such a serious error was the decided outcome of the incident.

Statements from industry

International Association of Safe Injection Technology (IASIT)

Fiona Garin, IASIT, Spain

- The International Association of Safe Injection Technology (IASIT) was founded in May 2001. Its members produce about 90% of the global supply of syringes.

- The role of IASIT is to coordinate industry as a unified group in relation to: (a) regulators and standard setters; (b) international agencies that procure syringes; and (c) the public health community.

- There are seven types of AD syringes currently available on the market. Auto-disable syringes are available in standard 0.5 ml size and 0.05 ml size for BCG vaccine.

- IASIT is committed to the principle of: “ONE SYRINGE – ONE INJECTION”.

- The IASIT website is at: www.iasit.org
Developing Countries Vaccine Manufacturers Network (DCVMN)

Rajeev M. Dhere, Director, Serum Institute of India

• Having noted the vaccine demand required for measles vaccination activities, the Developing Countries Vaccine Manufacturers Network (DCVMN) pledged full support to the sustainable reduction of global measles mortality.

• DCVMN emphasized and specifically requested all authorities concerned to respect the lead time necessary for vaccine production. In the presence of forward planning and early order placement, DCVMN pledged to ensure that no global shortage of measles vaccine occurs.

• The DCVMN website is at: www.dcvmn.org
Session six: Strengthening measles surveillance

Global measles mortality reduction: Measuring progress

Maureen Birmingham, WHO HQ, Geneva

- Progress towards the 2005 measles mortality reduction goal can be measured by assessments of both the stage of implementation of recommended immunization strategies and the impact of these strategies on morbidity and mortality.

- Monitoring progress of strategy implementation includes:
  - assessment of routine measles vaccination coverage in every district (percentage in district greater than 80%);
  - consistency checks between reported measles incidence rates and coverage;
  - establishment of policy for providing all children with a “second opportunity” for measles immunization;
  - high performing surveillance indicators;
  - assuring careful investigation of measles outbreaks;
  - availability of high quality laboratory services; and
  - appropriate measles case management and vitamin A supplementation, among others.

- Impact of the strategies is monitored by using high-quality local data from measles case surveillance, outbreak investigations, and hospital-based sentinel surveillance.

Some indicators of impact include:
- trends in number of reported cases and deaths;
- case-fatality ratios;
- shift of measles to affect older age groups; and
- interval between outbreaks.
Lessons learned from measles outbreak investigations

**Overview**

*Peter Strebel, CDC, Atlanta*

- Many measles cases and deaths are missed by routine passive surveillance systems. Careful investigation of measles outbreaks provides additional information for better understanding the epidemiology of measles and for revising programme strategies.
- The objectives of an outbreak investigation are to describe the outbreak in terms of person, time and place and to assess specific risk factors and ascertain the cause of the outbreak (failure to vaccinate versus vaccine failure). Data from several recent outbreak investigations suggest that most outbreaks are due to the failure to vaccinate.
- A recent example of the usefulness of outbreak investigations is that of the Marshall Islands.
  - The area was free of measles for 14 years and had a reported coverage of over 90%. However, in 2003, they experienced a large outbreak with 731 reported measles cases and three deaths. Their reported high coverage led to complacency; investigations revealed that the actual rate of coverage was significantly lower.
  - The main lesson from this outbreak is that the absence of measles is not equal to the absence of risk and clearly demonstrates the importance of accurate coverage monitoring.

*Niger*

*Ali Djibo, General Director of Health*

- In 2003, Niger reported an investigation of a measles outbreak in Mirriah district of Zinder Province. There were 945 reported cases and 92 deaths.
- The main findings of the outbreak investigation include: low routine coverage, late detection and reporting of the outbreak, frequent complications from measles, and a gross underestimation of the measles case-fatality ratio (9.7% versus 0.4% passively reported).

*Papua New Guinea*

*Nicholas Mann, Secretary of Health*

- In 2002, a measles vaccine schedule was administered that provided two doses of measles vaccine at 6 and 9 months. A large measles outbreak was experienced, with 3279 reported cases and 167 deaths, mostly in children under 5.
- This outbreak underlines issues of the relatively limited protective efficacy of measles vaccine when administered to children under 12 months of age, especially with low vaccine coverage and lack of good case management (i.e. when vitamin A was not used routinely).
AFRO experience with integrated disease surveillance

Balcha Masresha, WHO, AFRO

- Introduced in 1998 in Africa, integrated disease surveillance (IDS) and case-based surveillance is currently being implemented in 24 African countries. To date, 17 countries have initiated training.

- IDS is a regional approach with the goals of promoting synergy between different surveillance initiatives and strengthening weak national surveillance systems. It focuses on data collection at the district level.

- The case-based surveillance has provided an efficient use of personnel and resources, has strengthened laboratory capacity, improved the flow of information, and enhanced the use of data for decision-making. Countries are now implementing measles case-based surveillance in conformity with the regional IDS strategy.

- The measles case-based system builds upon the acute flaccid paralysis (AFP) surveillance system developed for polio. IDS tools and procedures include: a generic case-based investigation form and line listing, generic epidemiological analysis tools, timeliness and completeness monitoring tools, district outbreak investigation forms, and performance indicators.

- Some of the lessons learned from case-based systems include the need for a regional laboratory network, regular monitoring of performance indicators, regular feedback, and periodic reviews. Finally, there is a need for closer collaboration between programmes and additional resources for IDS implementation.

Development of the Global Measles Laboratory Network

Marilda Siqueira, Fundacao Oswaldo Cruz (FIOCRUZ), Brazil

- Laboratory confirmation of suspected measles cases is extremely important as measles can be clinically confused with other diseases. The phases of the measles control programme determine laboratory activities from serological confirmation of outbreaks to laboratory investigation of each case.

- The Global Measles Laboratory Network was built on the successful model of the Global Polio Laboratory Network, with a strong quality assurance programme. See Figure 4.

- The Global Measles Network is present in 149 countries, with a total of 671 laboratories currently working on measles diagnosis. The number of laboratories has doubled in the last two years. A comprehensive proficiency testing programme is being implemented.

- Good coordination will be needed to ensure efficient functioning of laboratory networks, including regular meetings to ensure integration with surveillance activities. Focus on priority countries will be required as there are limited resources available.

- A working group should be formed to review data on alternative sampling techniques, and produce guidelines for the introduction of these new techniques.

- Eventually, integration of rubella testing with measles should be implemented, when appropriate.
Figure 4: The Global Measles Laboratory Network, 2003

- N=671
- Measles strain banks
- 154 Subnational laboratories
- 149 countries
- 31 Provincial laboratories
- 326 Prefecture laboratories
- 160 National laboratories
- Regional reference laboratories
- Global specialized laboratories

149 countries
Shifting grounds: Building public trust in immunization

Heidi Larson, UNICEF HQ, New York

- To achieve, maintain and sustain successful immunization programmes, it is necessary to win and keep the trust of the public. This has become more difficult because there are more sources of information, they are more decentralized (the Internet) and less scrutinized. The result is that small groups with high motivation and commitment can deliver their message more easily, even if the message has no merit. Marginalized anti-immunization groups have taken advantage of this.

- Immunization programme managers must recognize the importance of maintaining the trust of the public and have a well planned and implemented communication strategy. The keys to the strategy are to be proactive, positive and prepared.

- The greatest threats are from rumours and from actual adverse events following immunization. Rumours and AEFIs are more likely to be reported during an immunization campaign. Staff should be prepared, available to the media, and responsible, responsive and reasonable in their dealings with the media and the public.

A communication framework for action

Susan MacKay, WHO HQ, Geneva

- A comprehensive communication strategy strives to change the behaviour of all participants. For immunization programmes, such a strategy communicates with:
  - health care providers to improve service delivery;
  - parents and the public at large to increase demand for immunization services; and
  - political, religious and social leaders at all levels to increase political commitment.

- Communication is one part of the strategy to achieve and maintain optimal immunization services. The others are access to facilities and supplies; good environment for training and supervision; and finally, maintaining motivation. See Figure 5.
The communication strategy uses Information Education Communication (IEC) materials, radio, television, newspapers, and training and advocacy materials to inform the target audience, engage them and convince them, all with the goal of modifying their behaviour.

It is relatively easy for communication activities to have a rapid impact when holding an immunization campaign. It is more difficult to have a long-term impact in support of routine immunization services.

Figure 5: Strategies for optimal immunization services

“A Gesture of Love”: Vaccination Week in the Americas

Jon Andrus, Regional Advisor Immunization, PAHO

In June 2003, 19 countries of the Americas conducted the first Vaccination Week in the Americas, with the common slogan aimed at parents: “A Gesture of Love”. The objectives were to:

- maintain measles eradication;
- strengthen equity and access to vaccination;
- maintain immunization on the political agenda;
- protect risk groups from outbreaks;
- promote communication and cooperation between countries; and
- promote Pan Americanism.
• The target population was 14,085,451 children under 5 years and about 3,000,000 women of child-bearing age in the following communities and areas in 19 countries:
  – peri-urban communities;
  – border areas;
  – tourist areas;
  – indigenous peoples;
  – hard-to-reach communities; and
  – displaced populations.

• Results: 13,583,888 (97%) of the targeted children were immunized against measles.

• Other outcomes included the following:
  – vaccination assumed as a regional public good with high political priority in 19 countries;
  – clear contribution to the reduction of inequities and increased coverage in risk areas;
  – strengthening of cross-border coordination; and
  – improved interagency cooperation and mobilization of resources.

• As follow-up, an Ibero-American Vaccination Week is scheduled for 24–30 April 2004 and will include the United States of America and Spain.
Session eight:
Looking forward

Financial resource requirements, 2004–2008

Jeffrey McFarland, UNICEF HQ, New York

- The recommended strategy for sustainable measles mortality reduction includes providing all children with a second opportunity for measles immunization. Since older children may have escaped both measles vaccination and measles disease, children remain susceptible and often serve as a source of measles infection to unvaccinated young children and infants. Most countries implementing the comprehensive strategy conduct a one-time-only catch-up campaign, targeting all children 9 months through 4 years. Subsequent follow-up campaigns, targeting smaller age ranges (usually 9 months through 4 years), ensure complete coverage. The consequence is that more money is required at the beginning of the implementation of the strategy. After countries have implemented the catch-up campaign, costs become markedly lower and more predictable.

- To complete the initial phase of catch-up campaigns in the 45 priority countries, it was estimated that an average of US$ 141 million per year from 2004 to 2008 would be required, with a third (an average of US$ 47 million per year) for bundled vaccine (vaccine together with auto-disable syringes and safety boxes) and two-thirds (US$ 94 million) for operational costs. These funds will come from both host governments and donors, but since the mix will differ from country to country, the total required from donors is not clear.

- It is imperative that during this process the recipient governments and donors build national, regional and global partnerships. Only through such a coordinated process can funding for measles control and other immunization services be sustained, with a greater share of the funding gradually and equitably shifted to recipient governments.
Financial sustainability of measles mortality reduction activities

*Lidija Kamara, WHO HQ, Geneva*

- It is assumed that national governments should be ultimately responsible for immunizing their children.
- Financial sustainability planning must be an integral part of any national plan of action for immunization and is a first and necessary step in securing a predictable and sufficient supply of funds. It is anticipated that donor funds will continue to constitute the bulk of funds in most of the 45 priority countries. Thirty-three countries (73%) are designated “least developed countries” for the near future, but the final goal should be national financial self-sufficiency.
- GAVI financial sustainability plans (FSP) have been completed in 12 countries, 6 of which conducted large-scale measles campaigns (Cambodia, Ghana, Kenya, Lao People’s Democratic Republic, Mali and Rwanda). Data from these six FSPs were presented, but were too sparse to allow for specific conclusions or recommendations.
- It was stressed that a cost-effective and inexpensive health intervention on a per capita basis may still require significant resources; what is cost effective may not be affordable for the poorest governments.

See Figure 6 for costs of sustainable measles mortality reduction activities for the 45 priority countries.

**Figure 6: Past and projected costs for 45 priority countries, by region, 2001–2008**
Session nine: Recommendations of the ad hoc Global Measles Advisory Panel

Members of the ad hoc Advisory Panel

Chair, Greg Hussey (Child Health Care Unit, University of Cape Town, South Africa)
Agorits Edere Awosika (EPI Manager, Ministry of Health, Nigeria)
Stephen Cochi (Deputy Director, CDC, USA)
Do Si Hien (EPI Manager, Ministry of Health, Viet Nam)
Lalit Kant (Indian Council of Medical Research, India)
Carlos Alavarez Lucas (Director General of Preventive Programmes, Mexico)
Bijan Sadrizadeh (Senior Advisor to the Minister, Ministry of Health, Iran)
Hélène Mambu Ma-Disu (WHO Representative of Cameroon)

WHO/UNICEF Strategic Plan, 2001–2005


2) The Advisory Panel endorses the WHO/UNICEF framework for collaboration with countries for measles mortality reduction. Components of this framework include a multi-year immunization plan, well-defined strategies and the identification of sufficient human and financial resources for implementation.

3) The Africa Measles Partnership is recognized as a highly effective mechanism to standardize, synchronize and coordinate control measures and resource mobilization for measles mortality reduction. Countries, WHO, UNICEF, CDC, ARC, UNF and other partner organizations are encouraged to develop similar partnerships in other regions.

4) Measles mortality reduction plans should be designed to strengthen routine immunization and other primary health care services and integrate additional priority interventions, as appropriate, in collaboration with other partners.
Strengthening routine immunization services

1) Routine immunization is the foundation for effective measles control. Increasing and sustaining high measles coverage in every district (i.e. = 90%) is essential for achieving sustainable measles mortality reduction.

2) Efforts to improve routine immunization should include district microplanning, strengthening management and implementation of the Reaching Every District (RED) strategy, especially in low performing districts.

3) Countries should use high quality vaccine, achieve high coverage, ensure injection safety and monitor adverse events following immunization for all measles immunization activities.

Providing a second opportunity for measles immunization

1) All countries should provide children with a second opportunity for measles immunization. The goal is to ensure that all children have received at least one dose of measles vaccine and that a high percentage of children receive two doses of vaccine, thereby achieving high population immunity.

2) WHO should publish and disseminate to countries and partners an updated recommended EPI vaccination schedule that includes a “second opportunity” for measles immunization. The second opportunity can be provided either through routine immunization services or through periodic supplemental immunization activities.

3) WHO and UNICEF should work with countries to begin monitoring and reporting coverage for the second opportunity for measles immunization (including reports on the Joint Reporting Form).

4) Countries conducting measles supplementary immunization campaigns are strongly encouraged to perform a post-campaign evaluation of vaccination coverage, injection safety and adverse events following immunization.

Strengthening measles surveillance

1) Countries should strengthen surveillance for measles, including laboratory confirmation of suspected cases, characterization of circulating virus and careful investigation of outbreaks. Measles outbreaks provide an excellent opportunity to document disease burden and obtain information that can be used to direct programme activities.

2) Countries that have conducted nationwide catch-up campaigns should move towards implementation of case-based measles surveillance with laboratory confirmation and should monitor the quality of surveillance using standard indicators.

3) To strengthen laboratory-based surveillance, each region should designate a laboratory coordinator with the responsibility for coordination and facilitation of the regional network.
4) WHO should assist countries to assess disease burden by means of a country-specific model that can be used to monitor mortality reduction.

5) Measles surveillance should build upon polio surveillance activities and be integrated with surveillance for other priority diseases of public health importance.

Preventing measles deaths in complex emergencies

During and immediately after complex emergencies, immunizing children against measles and providing vitamin A are among the most cost-effective preventative public health measures available, particularly for displaced persons housed in camps. Ideally, all children from 6 months through 14 years of age should be immunized; at a minimum, children from 6 months through 4 years of age should be reached. The choice of the ages targeted will be influenced by vaccine availability, funding, human resources and local measles epidemiology.

Financial sustainability

To ensure sustainability, activities related to measles mortality reduction should be integrated into the national EPI multi-year plan of action and include a budget line to cover specific activities such as injection safety, surveillance, waste disposal, monitoring adverse events following immunization and follow-up SIA.

Research

Countries are encouraged to conduct operational research on the effectiveness of vaccination and surveillance strategies for measles mortality reduction. In particular, research on adverse events following immunization is encouraged in areas with high prevalence of HIV infection.

Measles case management

Programme managers are encouraged to work with partners responsible for clinical management of patients, to ensure that children with measles receive vitamin A and other appropriate medical interventions.

Strategic Plan, 2005–2009

Given the great progress that has been made globally in reducing measles deaths and the changes that have occurred since the current strategic plan was written in 2000, the Global Measles Advisory Panel recommends that the next version of WHO/UNICEF Strategic Plan include discussion of the following elements:

- Strategies to improve measles coverage at the national, provincial and district levels, including coordination with immunization system strengthening activities and implementation of the RED strategy.
- Elaboration of strategies to integrate measles activities with other efforts for disease control, including malaria prevention, micro-nutrient supplementation, deworming, polio eradication, disease surveillance, prevention of transmission of blood-borne pathogens, and other primary health care initiatives.
• Incorporation of measles mortality reduction activities into national immunization financial sustainability plans.
• Strategy to market the joint strategic plan more widely to professional organizations, private sector providers and decision-makers.
• Practical strategies to ensure children receive appropriate case management, including vitamin A.
• More in-depth analysis of the benefits and challenges of linking rubella surveillance and immunization strategies with measles mortality reduction and regional elimination activities.

Cost estimates and financial resource requirements for implementation of activities.

See Figure 7 for a summary of the strategy.

**Figure 7: WHO/UNICEF strategy for sustainable measles mortality reduction**

1. Strong routine immunization of > 90%  
   – Reaching Every District strategy
2. Provide second opportunity for measles immunization  
   – One time only “catch-up” campaign (< 15 years of age)  
   – “Follow-up” campaigns every 3 – 4 years (< 5)  
   – Campaigns linked to other priority health interventions (Vit A, polio, TT, bed nets, etc.)
3. Provide surveillance  
4. Improved case management  
   – (Vitamin A – antibiotics)
Annex:
The Cape Town Measles Declaration

CAPE TOWN MEASLES DECLARATION
17 October 2003

ALARMED that in 1999 alone an estimated 875,000 infants and children died from measles, and that measles continues to cause hundreds of thousands of child deaths each year, especially in developing countries;

STRESSING the importance of achieving the goals adopted by the United Nations General Assembly Special Session on Children in 2002 and the World Health Assembly in 2003 to reduce measles deaths by 50% compared with 1999 levels by the end of 2005, and the United Nations Millennium Declaration target to reduce the under-five child mortality rate by two-thirds by the year 2015 compared with 1990 levels;

RECOGNIZING that measles deaths are primarily due to lack of immunization with existing safe, effective and inexpensive measles vaccines and incomplete implementation of proven strategies;

NOTING the critical importance of continuing to strengthen routine immunization services, including the provision of a second opportunity for measles immunization, as the foundation of a comprehensive strategy to reduce measles deaths sustainably and the essential role of surveillance in monitoring and guiding measles control efforts;

HIGHLIGHTING the importance of developing multi-year immunization plans, the full integration of measles mortality reduction activities with other national health goals and mobilizing necessary human and financial resources for sustainable measles mortality reduction;

WELCOMING the remarkable progress that has been made by the Region of the Americas in interrupting measles virus circulation and the ongoing efforts in Africa, with strong support from the Measles Initiative to reduce measles deaths;

Those present at the Global Meeting for Sustainable Measles Mortality Reduction and Immunization Systems Strengthening declare our intent to:

SUPPORT the WHO/UNICEF Global Strategic Plan for Measles Mortality Reduction and Regional Elimination, 2001–2005 with special attention to increasing routine measles immunization coverage to at least 90 per cent coverage in all countries, combined with providing all children with a “second opportunity” for measles immunization either through the routine immunization schedule or periodic supplemental immunization activities;

WORK TOGETHER to identify the human and financial resources to strengthen immunization and health systems and to reduce measles deaths throughout the world;

ADVOCATE to strengthen immunization systems and reduce further measles mortality according to the strengths of each partner.