

WHO immunization work: 2006-07 highlights



This publication was produced by the World Health Organization Department of Immunization, Vaccines and Biologicals; the work was led by its Communications, Advocacy and Media team.
It is available on the Internet at: <http://www.who.int/immunization/documents/en>.

Copies may be requested from:
World Health Organization
Department of Immunization, Vaccines and Biologicals
20, avenue Appia
CH-1211 Geneva 27
Switzerland
E-mail: vaccines@who.int



WHO Library Cataloguing-in-Publication Data:
WHO immunization work: 2006-07 highlights
1.Immunization programs. 2.Vaccines. 3.Program evaluation. 4.Health policy.
5.World Health Organization. I.World Health Organization.
ISBN 978 92 4 159674 9
(NLM classification: WA 115)
Printed: September 2008

The Department of Immunization, Vaccines and Biologicals thanks the donors whose unspecified financial support has made the production of this publication possible.

© World Health Organization 2008

All rights reserved. Publications of the World Health Organization can be obtained from WHO Press, World Health Organization, 20 Avenue Appia, 1211 Geneva 27, Switzerland (tel.: +41 22 791 3264; fax: +41 22 791 4857; e-mail: bookorders@who.int). Requests for permission to reproduce or translate WHO publications – whether for sale or for noncommercial distribution – should be addressed to WHO Press, at the above address (fax: +41 22 791 4806; e-mail: permissions@who.int).

The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted lines on maps represent approximate border lines for which there may not yet be full agreement.

The mention of specific companies or of certain manufacturers' products does not imply that they are endorsed or recommended by the World Health Organization in preference to others of a similar nature that are not mentioned. Errors and omissions excepted, the names of proprietary products are distinguished by initial capital letters.

All reasonable precautions have been taken by the World Health Organization to verify the information contained in this publication. However, the published material is being distributed without warranty of any kind, either expressed or implied. The responsibility for the interpretation and use of the material lies with the reader. In no event shall the World Health Organization be liable for damages arising from its use.

Photography: Geneva E. Sacido, Institut Pasteur, Measles Initiative, PATH/ Monique Berlier, Olivier Asselin, PAHO/WHO Harold Ruiz, Peter Williams (front cover), Petterik Wiggers, WHO/Chris Black, WHO/David Featherstone, WHO/Victoria Hladilova, WHO/Umit Kartoglu, WHO/Caroline Scudamore, WHO/Jos Vandelaer, WHO/Pierre Virot.
Design and layout: www.miseenoeuvre.com; printed in Switzerland



Outstanding results in terms of lives saved were announced.

Director's message

It is my pleasure to present herein the World Health Organization's work on immunization and vaccines in 2006 and 2007. This was a great biennium for global immunization with major progress achieved on several counts. New vaccines to protect against cervical cancer and rotavirus diarrhoea were licensed and are being put into use. Unprecedented new funding through the International Finance Facility has become available. More and more countries are delivering an integrated package of life-saving child health interventions along with vaccination, also contributing to stronger health systems. Outstanding results in terms of lives saved were announced.

"This is an historic victory for public health," said Dr Margaret Chan, WHO Director-General, as she declared in January 2007 that measles deaths had fallen by 60% worldwide from 1999 to 2005. This monumental success was achieved in only six years of accelerated activities carried out by committed countries and a highly effective global partnership called the Measles Initiative, of which WHO is a founding member. Not only had a goal set by the United Nations been achieved, it had been surpassed. Astounding progress was made in some of the poorest and most underserved places on the planet. Later in 2007, it was announced that Africa achieved a 91% reduction in measles deaths in the period 2000

to 2006, reaching the 2010 goal four years early. Vaccination against measles and other high burden vaccine-preventable diseases such as *Haemophilus influenzae* type b (Hib) and pneumococcal diseases is essential to reaching the Millennium Development Goal on reducing child mortality. Immunization currently averts between 2 and 3 million deaths every year in all age groups. With all immunization partners we are working to save millions more lives.

With its committees of experts, WHO plays an essential role in shaping the research and development agenda; setting global immunization policy; establishing norms and standards; and strengthening vaccine regulatory processes, which are the backbone of safe and effective immunization.

I would like to sincerely thank donors, other partners in the public and private sectors, civil society and staff for their support, dedication and solid work at all levels. This has certainly energized immunization and opened the way to a bright future where more people are protected against more diseases, as stated in the *Global Immunization Vision and Strategy*.

Dr Jean-Marie Okwo-Bele
Director
Department of Immunization, Vaccines and Biologicals
World Health Organization, Geneva



I. GLOBAL TRENDS IN IMMUNIZATION

Immunization: a major life-saver

The widespread establishment and implementation of immunization programmes over the past 30 years has led to remarkable achievements.

- ▶ Smallpox was eradicated in 1977.
- ▶ The worldwide incidence of poliomyelitis has dropped by more than 99% since 1988.
- ▶ Measles has been eliminated in the Western Hemisphere and measles mortality has decreased by an estimated 68% globally from 2000 to 2006.
- ▶ Neonatal tetanus mortality has been reduced by about three quarters. The estimated number of deaths decreased from 800 000 in the 1980s to under 200 000 in recent years.
- ▶ Seventy-nine per cent of children under one year of age are estimated to have received three doses of diphtheria-tetanus-pertussis (DTP3) vaccine* in 2006.
- ▶ Overall, between 2 and 3 million deaths from diphtheria, tetanus, pertussis (whooping cough), and measles are estimated to be prevented annually as a result of immunization. Hepatitis B vaccination prevents an additional 600 000 future deaths (from liver cirrhosis and liver cancer) annually.

* Coverage with DTP3 vaccine is generally used as an indicator for a fully immunized child. DTP coverage is also an indicator of health system performance.

Preventable deaths

In 2002, an estimated 1.4 million children under the age of five — 14% of the 10 million children who die each year — died of diseases that are preventable with widely available vaccines: diphtheria, Hib, measles, pertussis, poliomyelitis, tetanus and yellow fever.

Immunization can substantially contribute to achieving Millennium Development Goal Four on reducing under-five mortality by two thirds by 2015.

Improving services to deliver traditional vaccines will reduce the percentage of vaccine-preventable child deaths.

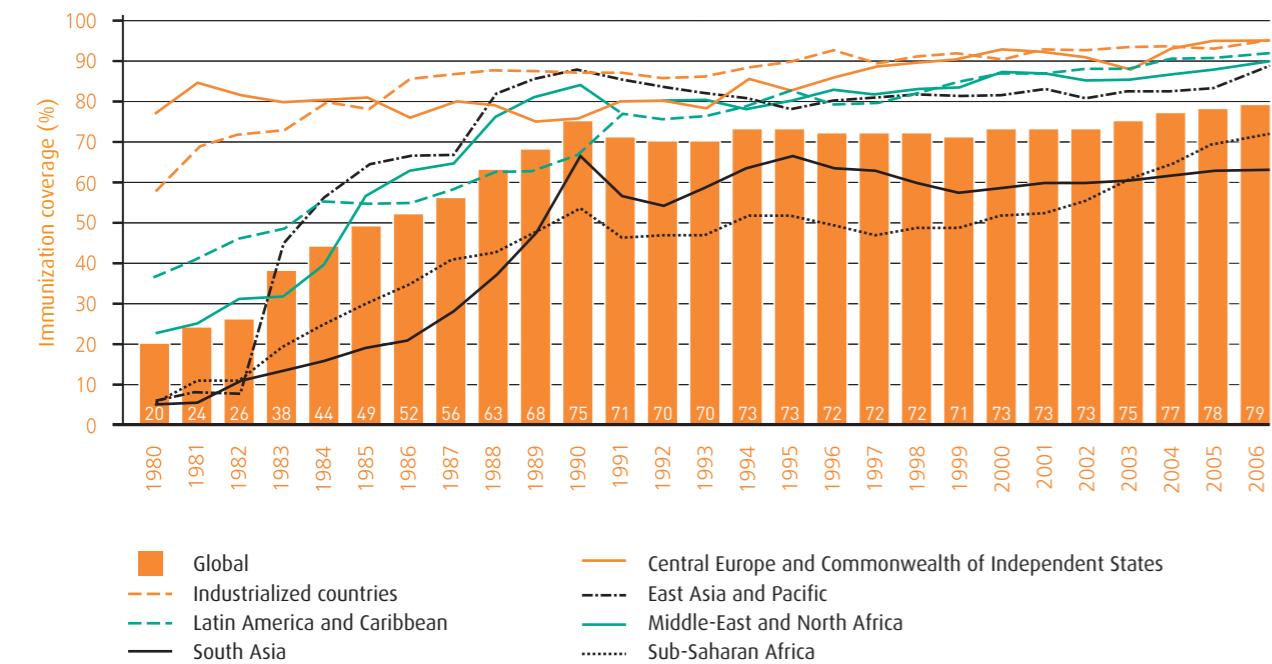
Introducing new vaccines will help to prevent some of the 1.1 million under-five child deaths attributed to pneumococcal disease, meningococcal disease and rotavirus diarrhoea.

Immunization coverage progress

Trends related to global vaccination coverage (as measured by estimates of delivery of DTP3) continued to be positive in 2006, as shown in the bar graph below. Most regions sustained high levels of coverage (more than 80%). Sub-Saharan Africa reached a record high vaccination coverage level of 72%, while estimates for South-East Asia indicate coverage stalling at 63%.

Global and regional immunization (DTP3) coverage, 1980-2006

Estimated global coverage in 2006: 79%



Source: WHO/UNICEF coverage estimates for 1980-2006, as of August 2007; 193 WHO Member States.

More than 100 million infants vaccinated: a first

In 2006, out of the estimated 128 million annual surviving infants, the number of children under age one vaccinated with DTP3 vaccine exceeded 100 million for the first time ever, reaching 102 million (compared with 99 million in 2005). The children who benefited from vaccination are protected against a number of infectious diseases that can have serious consequences in terms of illness and disability or can be fatal.

More countries achieve high levels of vaccination coverage

Number of countries reaching 90% or more DTP3 coverage in 2006: 114 (compared to 113 in 2005).

Number of countries reaching DTP3 coverage of 80% or more in 2006: 154 (compared to 150 in 2005).

The unprotected children

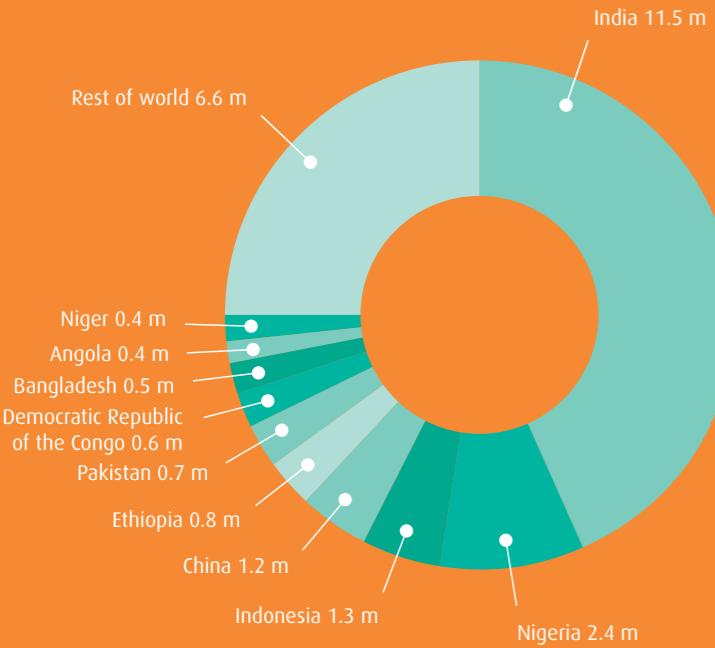
Number of children under one year of age who did not receive DTP3 in 2006: 26.3 million (compared to 28.1 million in 2005).

Seventy-five per cent of these unimmunized children live in just 10 countries in Africa and Asia. These countries are Angola, Bangladesh, China, Democratic Republic of the Congo, Ethiopia, India, Indonesia, Niger, Nigeria and Pakistan.



Top ten countries with the most unvaccinated infants*

Globally, 26.3 million unvaccinated infants



* Children under one year of age, not vaccinated with DTP3, in millions (rounded), 2006.

Source: WHO/UNICEF coverage estimates for 1980-2006, as of August 2007.



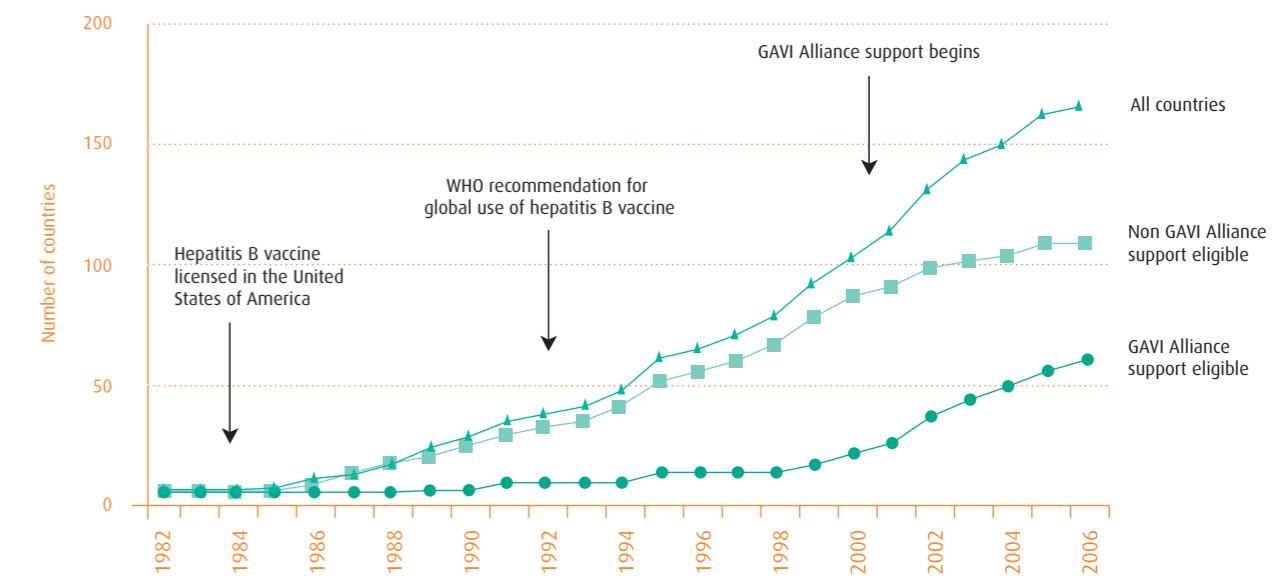
Increasing uptake of underused vaccines

Hepatitis B vaccine

Hepatitis B vaccine for infants had been introduced in 163 WHO Member States* by the end of 2006, compared to 31 Member States in 1992, the year of the World Health Assembly resolution recommending global vaccination against hepatitis B. Global hepatitis

B vaccine coverage is estimated at 60% and is as high as 89% in the WHO Region of the Americas, in contrast to 28% in the South-East Asian Region and 49% in the African Region.

Countries* having introduced hepatitis B vaccine into their routine infant immunization system, 1982-2006



Source: WHO/Department of Immunization, Vaccines and Biologicals database, 2007; 193 WHO Member States, including 72 GAVI Alliance support eligible countries.

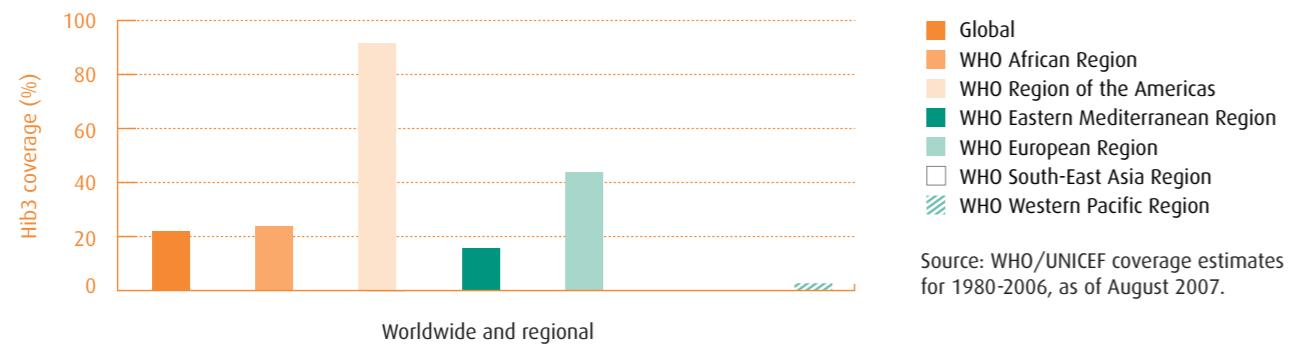
* In four other countries hepatitis B vaccine was administered to adolescents only and in one additional country the vaccine was partially introduced.

Hib vaccine

WHO recommends that in view of their demonstrated safety and efficacy, conjugate Hib vaccines should be included in all routine infant immunization programmes. By the end of 2006, the Hib vaccine had been introduced in 104 countries, compared to 15 countries in 1994. Global Hib vaccine coverage is estimated at 22% for 2006. Vaccine uptake is highest in the Americas (92%). This reflects, in great part, the support from the Pan American Health Organization (WHO Regional Office for the Americas) Revolving Fund. This pooled procurement mechanism has helped supply nearly

40 countries with a range of affordable quality vaccines and syringes for over 30 years. Sri Lanka was the first country in the WHO South-East Asia Region to introduce Hib vaccine (three doses of Hib or Hib3), as of January 2008. In 2007, a record number of countries applied to the GAVI Alliance for Hib vaccine introduction. Projections from those applications suggest that by the end of 2008, more than 45% of children living in countries eligible for GAVI Alliance funding support will have access to Hib vaccines.

Global and regional Hib3 coverage estimates, 2006



Rubella vaccine

The number of countries using rubella vaccine in their routine childhood immunization programmes increased from 65 countries in 1996, representing 12% of the children born that year, to 123 countries in 2006 (26% of the children born that

year). There has been remarkable progress towards the elimination of rubella and congenital rubella syndrome in the WHO Region of the Americas with a reduction of 98% of confirmed cases between 1998 and 2006.

Yellow fever vaccine

Yellow fever vaccine has been introduced in routine infant immunization programmes in 33 countries and territories out of the 44 at risk for yellow fever in Africa and the Americas. Yellow fever vaccination coverage in countries that have introduced the vaccine increased to 76% in 2006, from 60% in 2004. In the WHO African Region, nearly 19 million people were vaccinated against yellow fever through mass vaccination campaigns in the period 2004-07, thus decreasing the risk of yellow fever outbreaks.

Maternal and neonatal tetanus vaccine

By the end of 2006, the immunization of pregnant women with tetanus toxoid-containing vaccine was part of routine immunization programmes in 104 countries. In 2006, coverage with at least two doses of tetanus toxoid vaccine or tetanus-diphtheria toxoid vaccine was estimated at 69% and an estimated 81% of births were protected against tetanus through immunization. As of December 2007, maternal and neonatal tetanus persist as public health problems in 47 countries, mainly in Africa and Asia.



Progress in introducing new vaccines

Pneumococcal vaccine

Fifteen countries had introduced pneumococcal conjugate vaccine in their routine national immunization schedules by the end of 2006: Australia, Belgium, Canada, France, Germany, Greece, Italy, Luxembourg, Monaco, the Netherlands, Norway, Qatar, Switzerland, the United Kingdom of Great Britain and Northern Ireland and the United States of America. Three more countries — Micronesia (Federated States of), Palau and the United Arab Emirates — introduced this vaccine in 2007 and Mexico introduced the vaccine in parts of the country. In March 2007, WHO published a position paper encouraging countries with high child mortality to consider introducing pneumococcal conjugate vaccines into their national immunization programmes. In November 2007, a first group of countries was approved for GAVI Alliance funding support for the introduction of pneumococcal vaccine.

“Pneumococcal disease is a major global health issue. [] The WHO considers pneumococcal vaccines to be a priority and recognizes the urgency to make these vaccines available for children in developing countries.”



Dr Thomas Cherian, Coordinator, Expanded Programme on Immunization, WHO Department of Immunization, Vaccines and Biologicals, Leading experts urge commitment from industry and international donors to prepare for the introduction of pneumococcal vaccines, *Canada NewsWire*, 18 May 2006.

Rotavirus vaccines

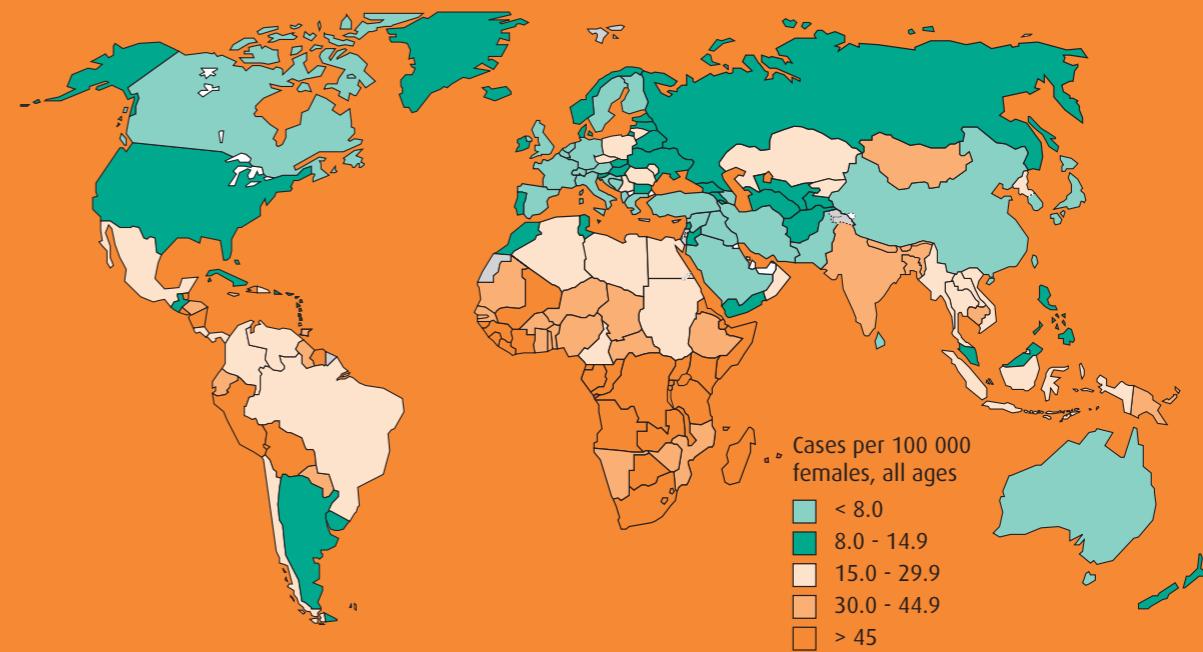
Eleven countries introduced rotavirus vaccine in their national immunization schedules during 2006-07: Austria, Belgium, Brazil, Ecuador, El Salvador, Luxembourg, Mexico, Nicaragua, Panama, the United States of America and the Bolivarian Republic of Venezuela. This marks the first time that the introduction of a vaccine has occurred simultaneously in both developed and developing countries. In November 2007, a first group of countries was approved for GAVI Alliance funding support for the introduction of rotavirus vaccine.

“There are challenges for countries in terms of cost and so on, but this vaccine is unique and offers tremendous possibilities.”



Dr Teresa Aguado, Coordinator, Product Research and Development, WHO Initiative for Vaccine Research, Vaccinating against cervical cancer, *Bulletin of the World Health Organization*, Volume 85, Number 2, February 2007, 85-160.

Worldwide incidence of cervical cancer



Source: WHO/Evidence and Information for Policy Burden of Disease Projections.
Age standardized to the WHO standard population, 2005.

Human papillomavirus (HPV) vaccines

More than half a million women develop cervical cancer each year, with nearly half of those dying as a result. Over 99% of cervical cancer cases result from genital infection with human papillomavirus. The disease represents a major health inequity, as 80% of women with cervical cancer live in developing countries. Currently, the best way to prevent cervical cancer is through regular gynaecological screening and treatment of precancerous lesions. In low and middle-

income countries, however, this strategy has had virtually no impact for the majority of women because screening programmes are absent or ineffective.

Two new vaccines against HPV infections have great potential to reduce the incidence of cervical cancer. WHO's Global Advisory Committee on Vaccine Safety recently indicated that available safety data are reassuring.

II. WHO'S CORE COMPETENCIES IN IMMUNIZATION



Headquarters

Through its Department of Immunization, Vaccines and Biologicals, WHO's core immunization work includes:

- ▶ Development of global policy, strategy and guidelines, taking into consideration knowledge and experience from regions, countries and other immunization partners, as well as from basic research;
- ▶ Shaping the research and development agenda for novel vaccines and immunization strategies;
- ▶ Development of standards for vaccines and other biological products, especially in the field of vaccine formulation, and evaluating them;
- ▶ Provision of technical advice and support for national immunization systems, vaccine-preventable disease surveillance and control, immunization programme sustainability; and
- ▶ Advocacy for the implementation of technically sound interventions in the immunization area.

As of January 2006, the Department began operating with a streamlined organizational structure. It is comprised of three (rather than five) technical units staffed by about 120 people.

- ▶ The **Initiative for Vaccine Research** guides, facilitates and provides a vision for worldwide vaccine and immunization technology research and development efforts. It focuses on current and emerging diseases of global public health importance, including pandemic influenza. Its main activities cover: i) research and development of key candidate vaccines; ii) implementation research to promote evidence-based decision-making on the early introduction of new vaccines; and iii) promotion of the development, evaluation and future availability of HIV, tuberculosis and malaria vaccines.
- ▶ The **Quality, Safety and Standards** team concentrates on the development of vaccine norms and standards, national regulatory authority strengthening, prequalification of vaccines and global vaccine safety issues.
- ▶ The **Expanded Programme on Immunization** develops strategies aiming to vaccinate more people with a greater number of vaccines through the strengthening of immunization systems, the use of surveillance data and other information and the establishment of links between immunization and other life-saving health interventions.

The Director's Office is in charge of immunization policy recommendations, planning and global coordination, in addition to overall management of the Department. It also carries out communication, advocacy and media-related work, resource mobilization and ensures the management of funds.

The Department is located within the WHO Family and Community Health cluster.

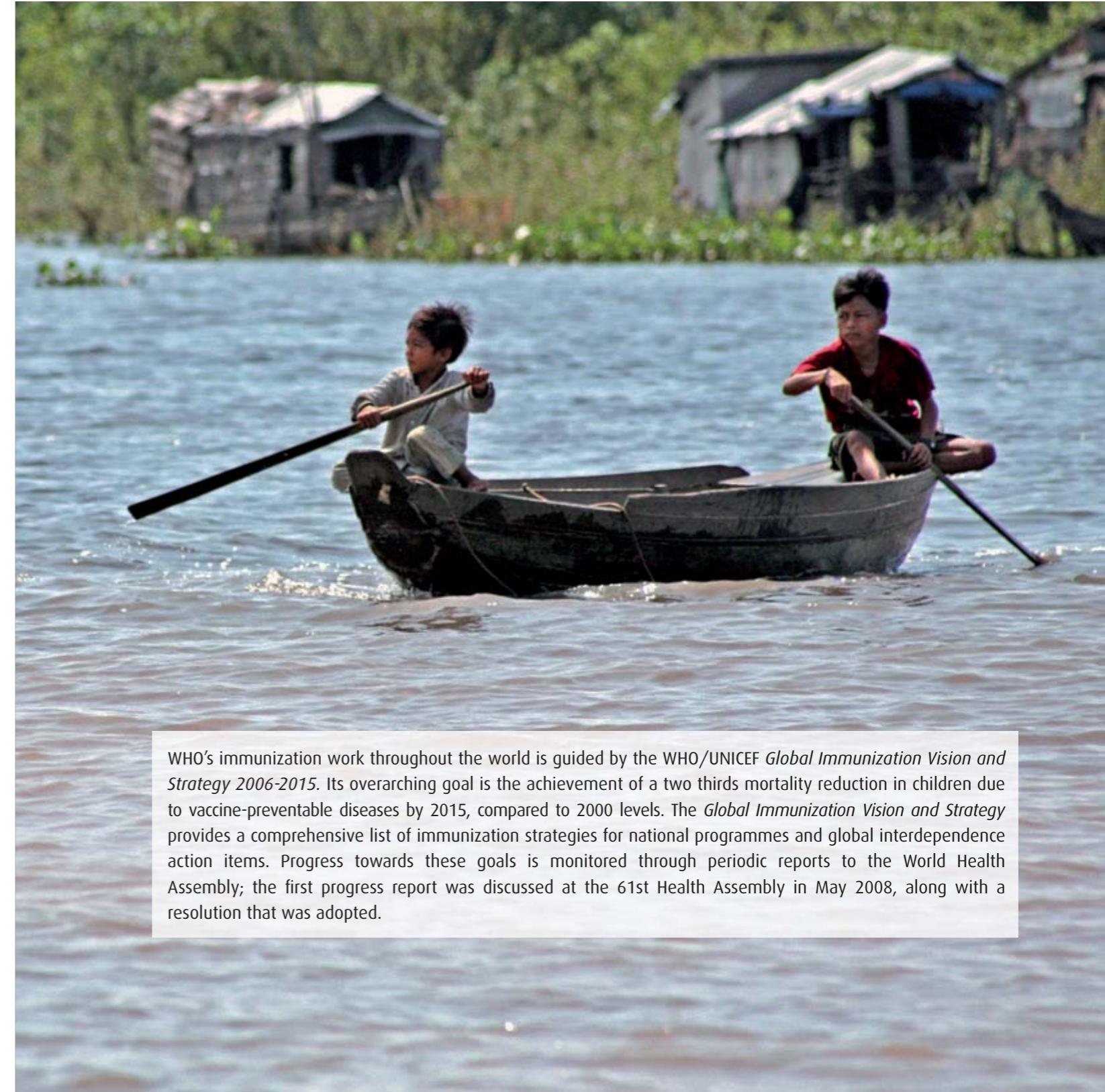
Regions and countries

Immunization strategies for each region reflect the status of disease incidence and vaccination coverage in the countries they support, and cover a vast range of immunization priorities. WHO assists countries in developing their national immunization plans; conducting disease surveillance; making decisions and implementing them regarding the introduction of new vaccines; undertaking efforts to ensure that vaccines used are of high quality and are administered safely; and carrying out effective monitoring and management of adverse events following immunization.

Key work in immunization also takes place in the context of polio eradication. At WHO headquarters, this work is undertaken by a separate department and a Representative of the Director-General.

A technical advisory group for each region provides recommendations on immunization priorities and strategies, taking account of particular regional epidemiological and social issues.

Approximately 550 immunization staff are based in the six WHO regional offices (located in Brazzaville, Cairo, Copenhagen, Manila, New Delhi and Washington, D.C.) and 67 country offices. In addition, about 2000 staff work on polio eradication.



WHO's immunization work throughout the world is guided by the WHO/UNICEF *Global Immunization Vision and Strategy 2006-2015*. Its overarching goal is the achievement of a two thirds mortality reduction in children due to vaccine-preventable diseases by 2015, compared to 2000 levels. The *Global Immunization Vision and Strategy* provides a comprehensive list of immunization strategies for national programmes and global interdependence action items. Progress towards these goals is monitored through periodic reports to the World Health Assembly; the first progress report was discussed at the 61st Health Assembly in May 2008, along with a resolution that was adopted.

III. WHO'S ACHIEVEMENTS IN IMMUNIZATION



A. Global immunization policy

Evidence-based immunization policy recommendations are formulated through the regular consultation of experts from around the world. There are four key, cross-cutting advisory bodies on immunization issues that meet in Geneva:

- ▶ The Strategic Advisory Group of Experts (SAGE) meets twice a year, and is the main committee that generates policy recommendations.
- ▶ The Expert Committee on Biological Standardization (ECBS) meets once a year.
- ▶ The Global Advisory Committee on Vaccine Safety (GACVS) meets twice a year.
- ▶ The Initiative for Vaccine Research Vaccine Advisory Committee (IVAC) meets once a year.

Vaccine and immunization policy-making

SAGE was established in 1999 by the WHO Director-General and is the principal advisory group to WHO for vaccines and immunization. It is charged with advising WHO on overall global policies and strategies, ranging from vaccine technology and research and development, to delivery of immunization and its linkages with other health interventions. SAGE is concerned with vaccines and immunization for all age groups. The conclusions and recommendations from WHO's technical committees, both at the global and regional levels, form part of the evidence base on which SAGE makes its recommendations.



WHO position papers on vaccines

In accordance with its mandate to provide guidance to its 193 Member States on health policy matters, WHO issues a series of regularly updated position papers on vaccines and vaccine combinations preventing diseases that have an international public health impact.

WHO position papers on vaccines are concerned primarily with the use of vaccines in large-scale immunization programmes. They summarize essential background information on the respective diseases and vaccines, and conclude with the current WHO position regarding their use in the global context. SAGE's oversight of these position papers extends from helping to set priorities for their drafting and updating to reviewing their content prior to publication. Key SAGE recommendations are reflected in the papers.

WHO position papers on vaccines are designed for use mainly by national public health officials and immunization programme managers. They may also be of interest to international funding agencies, the vaccine manufacturing industry, the medical community, and the scientific media.

WHO position papers are published in English and French in the WHO *Weekly Epidemiological Record*. They are posted on the web site of the Department of Immunization, Vaccines and Biologicals in these languages, as well as in Arabic, Chinese, Russian and Spanish.

WHO position papers published in 2006-07:

Diphtheria

<http://www.who.int/wer/2006/wer8103.pdf>

Haemophilus influenzae type b conjugate vaccines

<http://www.who.int/wer/2006/wer8147.pdf>

Inactivated poliovirus vaccine following oral poliovirus vaccine cessation

<http://www.who.int/wer/2006/wer8115.pdf>

Japanese encephalitis

http://www.who.int/wer/2006/wer8134_35.pdf

Mumps

<http://www.who.int/wer/2007/wer8207.pdf>

Pneumococcal conjugate vaccine for childhood immunization

<http://www.who.int/wer/2007/wer8212.pdf>

Rabies

http://www.who.int/wer/2007/wer8249_50.pdf

Revised BCG vaccination guidelines for infants at risk for HIV infection

<http://www.who.int/wer/2007/wer8221.pdf>

Rotavirus

<http://www.who.int/wer/2007/wer8232.pdf>

Tetanus

<http://www.who.int/wer/2006/wer8120.pdf>

B. Research and development: vaccines and technologies



2006

Taking action to increase pandemic influenza vaccine supply

Senior level WHO experts working on vaccine research and infectious diseases, joined by UNICEF and Health Canada, launched the new *WHO Global pandemic influenza action plan to increase vaccine supply* at a news conference in October. The *Global Action Plan* aims to ensure equal access to vaccine for all countries in the event of a pandemic. The plan calls for immediate and sustained action to: 1) increase seasonal influenza vaccine use; 2) increase influenza vaccine production capacity, and; 3) carry out research and development to design more potent and effective vaccines and to produce vaccines more efficiently and quickly. The 14-page plan is the product of the advice of more than 120 scientific experts. At the time of the plan's launch, production capacity for trivalent seasonal influenza vaccine stood at 350 million doses, falling far short

of the 10-15 billion dose global requirement for monovalent pandemic vaccine, of which two doses are needed per immunization course. To reduce the gap, the *Global Action Plan* identifies and prioritizes a number of activities, falling under eight strategies. Initial results were expected in three to five years. Funding required for activities is estimated at US\$ 3-10 billion. The United States Secretary of Health and Human Services announced a contribution of US\$ 10 million and Canada and Japan also offered financial support. For this critical work to continue and proceed in a timely manner, additional funds are needed. The *Global Action Plan* is available at: http://www.who.int/immunization/documents/WHO_IVB_06.13/en/index.html.

“We are presently several billion doses short of the amount of pandemic influenza vaccine we would need to protect the global population. This situation could lead to a public health crisis.”



Dr Marie-Paule Kieny,
Director, WHO Initiative
for Vaccine Research,
The Washington Post,
24 October 2006.

Developing pandemic influenza vaccines

WHO held consultations of experts to determine the status of the development of pandemic influenza vaccines. About seventeen companies had undertaken or were planning to conduct clinical vaccine trials in humans using recently circulating H5N1 virus, with various antigen types, doses, applications (intradermal,

as opposed to intramuscular or subcutaneous), production technologies (e.g. cell culture, as opposed to growth in eggs), and virus particles. Nine H5N1 clinical trials were completed in 2006. Four areas of research were identified to continue working towards an effective, low-dose pandemic influenza vaccine.

Effective malaria vaccine by 2025

Scientists have recently reaffirmed that it is possible to develop a malaria vaccine. Currently, there are more than 30 potential vaccine candidates under development. The *Malaria Vaccine Technology Roadmap* (<http://www.malariavacine roadmap.net>), a new global strategy, was launched at the Global Vaccine Research Forum in December. The plan calls for the malaria vaccine community — scientists, funding organizations, policy experts and national and global decision-makers — to work together to develop an effective vaccine that prevents severe disease and death caused by *Plasmodium falciparum*, the most deadly form of the malaria parasite. The *Roadmap* aims to develop a malaria vaccine by 2025 that would have a protective efficacy of more than 80% against clinical disease and would provide protection for longer than four years. More than 230 experts representing 100 organizations from 35 countries collaborated to

develop and publish the *Roadmap* over a two-year period. Every year, there are around 300 million cases of malaria and the disease kills more than one million people, mainly African children.

The development of the *Roadmap* was sponsored by the Bill & Melinda Gates Foundation and the Wellcome Trust. These two foundations, as well as other agencies and institutions from the "malaria vaccine funders' group", are investing resources into priority *Roadmap* activities. They have been joined in this endeavour by the Fondazione Monte dei Paschi di Siena. Additional resources will be needed to support research on vaccine candidates and to advance promising candidates through clinical development. New and existing donors are urged to support priorities identified in the *Roadmap*.



Malaria vaccine funders' group

WHO, the PATH Malaria Vaccine Initiative, the Bill & Melinda Gates Foundation and the Wellcome Trust, together with representatives of the European and Developing Countries Clinical Trials Partnership, the European Malaria Vaccine Initiative, the European Commission (Directorate-General for Research),

the United States National Institute for Allergy and Infectious Diseases, and the United States Agency for International Development form part of a malaria vaccine funders' group, with the WHO Initiative for Vaccine Research serving as its focal point. The group's participation and support was critical to the *Roadmap* process.

Needle-free vaccination

The potential for disposable-cartridge jet injectors to permit safe, needle-free delivery of all injectable vaccines, particularly in developing countries, was reviewed by the Steering Committee on New Vaccine Delivery Systems. For the first time, numerous jet-injector developers, syringe and vaccine manufacturers and regulatory agencies met to discuss this technology. Several devices are under development and could contribute significantly to cost-effective improvements in immunization safety if introduced in developing countries. However, a number of significant barriers to development and introduction exist. These include the regulatory pathway, vaccine manufacturers' lack of interest in undertaking the required clinical studies and inadequate resources of device developers, justifying the involvement of the public sector. Recommendations were made on which studies with which vaccines would generate the most important data.



Global Vaccine Research Forum — movers and shapers of the global vaccine research agenda

The vaccine industry has recently undergone a renaissance. Many new vaccines that have the potential to save millions of lives are at different stages in the research pipeline and will become available within the next decade. The WHO Global Vaccine Research Forum brings together every year and a half 100 to 200 top researchers, scientists, public health experts, regulators and manufacturers from all over the world.

The Forum's ultimate goal is to stimulate and accelerate research and development efforts on new vaccines, especially those targeting infectious diseases in developing countries. At the Forum, vaccine research and development issues are presented and discussed. Research agendas are updated. The meeting also provides an opportunity for discussion of broader issues of vaccine policy and implementation.

Some of the issues covered at the Forum, held in Bangkok in December 2006, were:

- ▶ Prospects for pandemic influenza vaccines;
- ▶ Vaccines against cervical cancer;
- ▶ Development of vaccines against HIV, malaria and tuberculosis;
- ▶ Innovation, intellectual property rights and new vaccine production in the WHO South-East Asia Region; and
- ▶ Rabies, an unrecognized health priority in Asia.

The Forum was held most recently from 29 June to 2 July 2008 in Paris.

Advocating for AIDS vaccines

Based on previous experience with immunization programmes, it is well recognized by WHO and its Member States that an effective vaccine for HIV/AIDS would be an extremely valuable tool for controlling the AIDS pandemic. The annual AIDS vaccines conference was convened in Amsterdam in August-September:

approximately 700 people attended. WHO, together with the African AIDS Vaccine Programme (AAVP), organized a series of advocacy activities, including a meeting of the AAVP Steering Committee, an AAVP satellite session and a lunch with global partners.

Promoting HIV vaccine research in Asia

A regional consultation was organized by the WHO-UNAIDS HIV Vaccine Initiative in collaboration with the International AIDS Vaccine Initiative and Hokkaido University of Japan. Forty participants, representing most of the countries in the region, reviewed ongoing HIV vaccine programmes, discussed global and regional molecular epidemiology of HIV and their relevance

for HIV vaccines, examined the need for the development of multiple sites capable of conducting simultaneous, multi-centre, Phase III efficacy trials, and adopted a strategy for the development of a regional collaborative network in support of HIV vaccine research and development in Asia.



2007

Protection from deadly meningitis on the horizon

Following the successful completion in 2006 of a Phase I clinical trial of a new, candidate conjugate meningococcal A vaccine, promising results from a pivotal Phase II trial were released in the middle of 2007. The Phase I trial took place in India and the Phase II trial occurred in Mali and The Gambia. If all goes well in ongoing testing, the vaccine could be introduced in Africa in the next three to four years. The vaccine is expected to be priced at about US\$ 0.40 per dose.

These trials took place under the aegis of the Meningitis Vaccine Project, a partnership between the World Health Organization and the international, non-profit organization PATH. Established in 2001, the mission of the Project is to eliminate epidemic meningitis as a public health problem in sub-Saharan Africa through the development, introduction and widespread use of conjugate meningococcal vaccines.

Results from the Phase II trial pointed to the likelihood of the eventual elimination of periodic, deadly meningococcal epidemics that have long afflicted sub-Saharan African "meningitis belt" countries. Data from the trial, involving 600 one to two year olds, showed that the candidate vaccine was safe and produced antibody levels almost 20 times higher than those obtained from the current polysaccharide (un-conjugated) vaccine. The new vaccine conjugates (or joins) sugars from the meningococcal bacterium with a protein to stimulate immune cells which then produce antibodies to meningitis. The conjugated vaccine is expected to be much more effective in protecting people than any other vaccine currently on the market in the affected region. This protection is expected to last for several years.

"This important study brings real hope that the lives of thousands of children, teenagers and young adults will be saved by immunization and that widespread suffering, sickness and socioeconomic disruption can be avoided."

Dr Margaret Chan, Director-General, World Health Organization, joint News release WHO/28 *Improved meningitis vaccine for Africa could signal eventual end to deadly scourge*, 8 June 2007.



Deadly meningitis epidemics

Serogroup A meningococcus is a bacterium that causes periodic deadly meningitis epidemics and much human suffering in sub-Saharan Africa in the "meningitis belt". In this area, which stretches from Senegal to Ethiopia, 430 million people are at risk. Even with antibiotic treatment, at least 10% of patients die and up to 20% have serious permanent health problems as a result of the disease.

Measles aerosol vaccine: safe and effective

In 2007, Phase I clinical trials of a measles aerosol vaccine, initiated the previous year, at three sites in India, yielded promising results in terms of safety and immune response. Only a few mild and temporary adverse events in vaccinated volunteers based

in Kolkata, Pune and Chennai were reported. Preliminary results also indicated good immune response (immunogenicity) after measles aerosol vaccination with three different vaccine devices. A pivotal trial is planned to begin in India in 2008.

Why develop an inhaled measles vaccine ?

The current measles vaccine, which has been available for more than 40 years, is safe, effective and inexpensive. This vaccine is administered via injection. In some countries the availability of trained personnel to safely administer injections is limited and there is concern over injection practices when syringes are reused, collected in an unsafe manner and not disposed of safely. These problems are more critical during mass measles immunization campaigns when

millions of doses of vaccine are administered. A measles vaccine which could be inhaled would avoid potential problems related to the use of needles, their costs, disposal and waste management. By reducing disposal and personnel training costs, the aerosol administration method should make safe, sustainable measles vaccination coverage achievable particularly in developing countries.



Measles Aerosol Project

The goal of the Measles Aerosol Project, which began in November 2002, is to develop and license at least one method for respiratory delivery of currently licensed measles vaccines. The Measles Aerosol Project is carried out by a partnership comprised of WHO, the American Red Cross and the United States Centers for Disease Control and Prevention.

WHO sets criteria for subsidized vaccines

The Advance Market Commitment (AMC) is a financial commitment to subsidize the future purchase, up to a pre-agreed price, of a vaccine which is not yet available, if it is requested by a low income country. The pneumococcal vaccine has been selected to pilot this new financing instrument, in order to accelerate the control of pneumococcal disease, which causes more than 700 000 annual deaths in children under the age of five.* Several countries and foundations are supporting this new initiative (<http://www.vaccineamc.org/>). As part of the AMC process, specifications for eligible products need to be defined in advance. These product specifications are

called the *target product profile*, which WHO has developed for conjugate pneumococcus vaccines eligible for the AMC. The target product profile defines the criteria that relate to the public health impact and suitability of the product — covering measures of vaccine efficacy, safety, dose-scheduling, presentation and packaging — assuring the suitability of AMC-subsidized vaccine for use in low income countries. It is expected that the AMC will stimulate investments into new pneumococcal vaccines, support the scaling up of manufacture, and thus accelerate the use of these much needed vaccines.

"Vaccination has been clearly shown to be one of the most effective ways to fight infectious diseases around the globe, and this initiative has the potential to save millions of lives."

Minister of Finance of Canada, Jim Flaherty, News release, Department of Finance, Canada, *Canada's New Government Doubles Its Contribution to the Global Effort to Develop and Produce Vaccines for Diseases in Developing Countries*, 9 February 2007.

* Estimated number of deaths due to pneumococcal disease in 2002: 1 612 000, of which 716 000 under age five.

Six countries win grants to produce flu vaccines

In order to increase production capacity for pandemic influenza vaccines — an urgent need — six developing country manufacturers each received a one-year grant of US\$ 2-2.7 million in 2007. The funds will support the development of a process, on a pilot scale, to produce inactivated or live attenuated seasonal and H5N1 vaccine. Grant recipients are manufacturers in Brazil, India, Indonesia, Mexico, Thailand, and Viet Nam. Several of these countries have had human H5N1 cases. The grants were made possible through the financial support of the Governments of Japan and the United States of America. Additional countries and manufacturers have expressed interest in receiving WHO assistance in order to acquire technology to manufacture influenza vaccine to protect their populations in the event of a pandemic. Most countries with resource constraints currently do not have the means to access vaccines in the event of a pandemic.

"Immunization is a critical control strategy for limiting the impact of an influenza pandemic. Immediate, collaborative action to increase vaccine supply could have a massive payoff."



Dr David L. Heymann, Assistant Director-General, Health Security and Environment and Representative of the Director-General for Polio Eradication, WHO
News release 58, *Immediate and sustained action required to sharply increase pandemic influenza vaccine supply*, 23 October 2006.

"With influenza vaccine production capacity on the rise, we are beginning to be in a much better position vis-à-vis the threat of an influenza pandemic. However, although this is significant progress, it is still far from the 6.7 billion immunization courses that would be needed in a six-month period to protect the whole world. Accelerated preparedness activities must continue, backed by political impetus and financial support, to further bridge the still substantial gap between supply and demand."

Dr Marie-Paule Kieny, Director, WHO Initiative for Vaccine Research, WHO News release 60, *Projected supply of pandemic influenza vaccine sharply increases*, 23 October 2007.

Projected supply of pandemic influenza vaccine sharply increases

Projections of how many pandemic influenza vaccine courses can be made available in the next few years have sharply increased. In spring of 2007, WHO and vaccine manufacturers said that about 100 million courses of pandemic influenza vaccine, based on the H5N1 avian influenza strain, could be produced immediately with standard technology. Experts now anticipate that global production capacity will rise to 4.5 billion pandemic immunization courses per year in 2010. This is due to increased vaccine manufacturing capacity and scientific advances, specifically, the use of water-in-oil adjuvants that allow the production of an effective vaccine with less than 5 micrograms (rather than 45 micrograms) of antigen, the substance that stimulates an immune response.

This progress was reported at the first meeting, in October, of the Global Action Plan Advisory Group, an independent, international committee of 10 members that advises WHO on pandemic influenza vaccine production and supply issues. WHO's *Global pandemic influenza action plan to increase vaccine supply* was published a year earlier.

The Advisory Group also discussed a new business plan which assessed options for further increasing vaccine production capacity and reviewed priority next steps. The three most valuable options include continuing to promote seasonal influenza vaccine programmes, supporting industry to sustain production capacity beyond seasonal demand and enabling some vaccine production facilities to convert, at the onset of a pandemic, from producing inactivated influenza vaccines to live attenuated influenza vaccines. Due to the higher yields obtained with live attenuated influenza vaccine technology, facility conversion could, by 2012, bridge the expected supply-demand gap and produce enough vaccine to protect the global population within six months of the declaration of an influenza pandemic.



HIV vaccine clinical trials: meeting the highest ethical standards

The overall environment for biomedical HIV/AIDS prevention trials has changed dramatically over the past years with increased awareness about the need to carry out multiple trials to develop new HIV prevention tools. In particular, these trials need to be conducted in populations at risk in developing countries, as they should benefit the most from the outcomes of the trials. Substantial progress has been made in ensuring access to treatment for and prevention of HIV/AIDS. There is a need to set the highest ethical standards for the conduct of any HIV prevention trial.

In this regard, WHO, the Joint United Nations Programme on HIV/AIDS (UNAIDS) and the African AIDS Vaccine Programme have conducted an extensive consultative process at country, regional and global levels to discuss various ethical aspects of HIV prevention trials. This has served as a basis for the development of a new ethics guidance document:

Ethical considerations in biomedical HIV prevention trials. This document is targeted at national ethics committees, institutional review boards, regulatory authorities, principal investigators of trials, as well as community representatives. It offers guidance in nearly 20 areas including: recruitment of participants which should be voluntary, fair and justified; the enrolment of women, children and adolescents; potential harms and benefits which should be specified; informed consent; and community participation. The new guidance document was developed by the WHO Initiative for Vaccine Research and UNAIDS and supersedes the UNAIDS *Ethical Guidance* document issued in the year 2000.



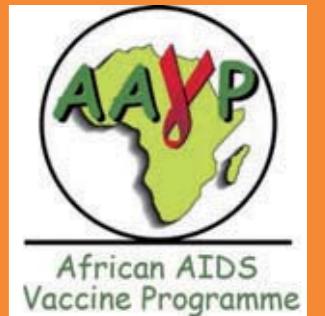
An AIDS-free Africa through an effective vaccine

The First Lady of Rwanda, Mrs Jeanette Kagame, was appointed High Representative for the African AIDS Vaccine Programme (AAVP). The announcement was made in November at the Fourth Forum of the Programme held in Abuja. In this capacity, she helps raise awareness among decision-makers in support of HIV vaccine research and development and also of AAVP. In recent years, the agenda for HIV vaccine research and development has focused increasingly on countries most affected by the disease. Since 1999, when the first HIV/AIDS vaccine trial was conducted in Africa, there have been more than 12

trials in eight African countries. Financial investment on the continent in this area has grown significantly. It was also announced at the Forum that four new centres of excellence are being established in Africa to build and strengthen capacity in the most crucial areas of HIV vaccines work: biomedical research; regulatory issues; ethics, law and human rights; and communication and media. A new strategic plan for 2007-11 was adopted in 2007: it emphasizes the implementation of multi-disciplinary collaborative projects and training programmes across Africa. The Fifth Forum of the Programme will take place in Uganda in 2009.

The African AIDS Vaccine Programme

The African AIDS Vaccine Programme was created in 2000, and it is funded by WHO and UNAIDS. Its mission is to advocate for and support a coordinated international effort to promote the development of and future access to HIV vaccines suitable for use in Africa. Core activities are aimed at strengthening vaccine trial sites in Africa. AAVP also develops appropriate normative frameworks in the areas of policy, legal matters, regulatory issues and ethics.



C. Quality, safety and standards for vaccines and immunization

Ensuring uniform quality of vaccines

WHO's Expert Committee on Biological Standardization, established in 1947, has overall responsibility for setting norms and standards for vaccines. Standards developed through the Committee, at its annual meetings, relate to the production and quality control of safe and effective products. The standards also serve as the benchmark for acceptability of vaccines for supply to countries through international agencies (termed prequalification). Biological standards (reference preparations) are also established by the Committee and provide the basis for the laboratory comparison



Dr David Wood
Coordinator
Quality, Safety and Standards Team

of vaccines worldwide. Full reports of Committee meetings are published in the WHO Technical Report Series, accessible from:
http://www.who.int/biologicals/expert_committee/en/

Vaccine safety: continued scientific oversight

WHO's Global Advisory Committee on Vaccine Safety considers vaccine safety issues of potential global importance. Created in 1999, the Committee reviews, at its biannual meetings, the latest knowledge on vaccines, in close collaboration with experts from national governments, academia, and industry. It assesses the evidence for purported relationships between vaccines and/or their components, and adverse events attributed to them. During meetings in 2006-07, the following topics were discussed: safety and post-marketing surveillance of rotavirus diarrhoea vaccines; vaccination of adolescents and young adults;

coincidental pathologies and safety assessments; immunogenic overload; vaccination of immuno-compromised individuals; mumps vaccine strains; vaccination and Guillain-Barré syndrome; squalene (natural oil vaccine additive); vaccine formulations; and the safety of influenza, human papillomavirus, pneumococcal conjugate, Japanese encephalitis, bacille Calmette-Guérin (BCG), yellow fever, hepatitis B and meningococcal B vaccines. The Committee publishes its conclusions in several languages on its web site http://www.who.int/vaccine_safety/en/





2006

New global standards adopted for vaccines

The WHO Expert Committee on Biological Standardization adopted new standards for two vaccines.

- ▶ One standard is for promising human papillomavirus vaccines with considerable potential to prevent illness and death caused by cervical cancer. The new WHO standard paves the way for the prequalification (and thus purchase by United Nations agencies) of these vaccines and, therefore, their future availability.
- ▶ The other standard is for new meningococcal type A conjugate vaccines. Meningococcal disease is responsible for recurrent epidemics in the “meningitis belt” countries in sub-Saharan Africa where a major outbreak is anticipated in the near future.

The availability of this documentation will assist Member States in the evaluation and licensure of candidate vaccines that are currently under development.

Strengthening collaboration with major partner

In April, WHO met with the senior management team of the National Institute for Biological Standards and Control, United Kingdom of Great Britain and Northern Ireland. The objective was to align priorities between WHO and the major WHO Collaborating Centre for biological standards, and to preview proposals for new or replacement biological reference materials that will be submitted by the laboratory to the Expert

Committee on Biological Standardization. A total of 108 projects were reviewed, of which around 15 projects were targeted for submission to the 2006 Expert Committee. It was agreed that an annual meeting between WHO and the National Institute to review the reference preparation development portfolio would be very beneficial.

Vaccine stability

The stability of vaccines has a major impact on the success of immunization programmes worldwide and national regulatory authorities play an important role in assessing the stability of vaccines. Work on developing general guidelines to define regulatory expectations in this area began in 2000 and culminated in the adoption of a groundbreaking standard by the Expert Committee on Biological

Standardization in October. The new standard opens a novel regulatory pathway for vaccine stability studies. To promote and gain experience in the regulatory evaluation of vaccine stability, a series of in-country workshops are being held in 2008. This is a novel approach to stimulate the use of a new written standard. Use of the standard following the workshops will be closely monitored.

"Immune overload" is unfounded fear

At its June meeting, the Global Advisory Committee on Vaccine Safety discussed the issue of immune overload. It acknowledged the fact that supposed "immune overload" as a result of infant immunization is a parental and societal concern that may limit confidence in, and thus, affect, immunization programmes. The available evidence reviewed by the Committee does not support the idea that vaccines, as currently used, weaken or harm the immune system. Surveillance should continue and changes in vaccine schedules or introduction of new vaccines may provide opportunities to perform randomized studies to strengthen the evidence indicating a lack of harm or to identify any possible harm posed by infant vaccines. This is of crucial importance to help national authorities respond to public concerns.



Rotavirus diarrhoea vaccines safe

Two rotavirus vaccines were demonstrated to be safe and efficacious in infant populations in the United States of America, Latin America and Europe. One of these vaccines was approved for licensure by the United States Food and Drug Administration. The other was approved by the European Medicines Agency.

One of the vaccines has been prequalified by WHO and the other is under evaluation for prequalification. The public health value and the safety of rotavirus vaccines have been reviewed by the Strategic Advisory Group of Experts and the Global Advisory Committee on Vaccine Safety. Recommendations have been made for introduction of rotavirus vaccine in the national immunization programmes of regions where efficacy data suggest a significant public health impact and where appropriate infrastructure and financing mechanisms

are available. Efficacy trials are ongoing in Africa and Asia and will provide evidence for their potential usefulness in these regions by 2009. The Global Advisory Committee also strongly recommended that the introduction of rotavirus vaccines be associated with careful consideration of post-marketing surveillance at country level.

At its 2007 meetings, the Committee again reviewed safety data relating to the two rotavirus vaccines approved for licensure in 2006. It concluded that the data regarding intussusception (a condition in which part of the intestine collapses into itself) are reassuring. Information was also presented on rare cases of Kawasaki disease observed following rotavirus vaccination. The Committee concluded that the evidence for a causal association was not strong and that there was no reason for concern.

Tuberculosis vaccine not for use in infants known to be infected with HIV

The Global Advisory Committee on Vaccine Safety reviewed the policy on the use of BCG vaccine in HIV-infected children in light of new evidence. Data from retrospective studies in Argentina and South Africa indicate a higher risk of disseminated (not limited to the lung, but generalized to several or all organs) BCG disease in children with AIDS who were vaccinated at birth. The Committee considered whether the reported risk outweighed the benefits of preventing severe tuberculosis.

Building clinical trial regulatory oversight capacity in Africa

Many vaccine candidates are being developed for diseases that are predominantly endemic in Africa and clinical trials are increasingly being undertaken in the African region. The regulatory burden for the authorization and monitoring of clinical trials, which previously rested on vaccine-producing countries, is shifting to the countries hosting these trials. However, most developing countries do not have the expertise and capacity to review clinical trial applications, authorize the importation of clinical trial batches and monitor the trials.

Recognizing the need to support national regulatory authorities in the assessment of clinical trial applications and the monitoring of clinical trials, as well as the

evaluation of clinical data in registration dossiers, WHO has initiated the African Vaccine Regulatory Forum. The Forum is intended to serve as a source of expertise for countries having to make regulatory decisions. It also provides a platform where countries can discuss with peers in order to build on available expertise in the region, strengthen the capacity of weaker countries and identify needs for support and training. The first meeting was held in Accra, Ghana in September. Participants were drawn from national regulatory authorities and national ethics or scientific advisory committees from 18 African countries. A plan of action was agreed, with joint regulatory activities for the following 12 months identified.



Improving health through regulation of biological products

A WHO-organized conference in Seoul discussed and reviewed issues concerning appropriate approaches and mechanisms for assuring the quality, safety and efficacy of biological medicines and vaccines. The main outcome of the April meeting was a recognition that biological products (products derived from living organisms) are major contributors to global health both now and increasingly in the future. Biologicals are diverse and complex and regulation presents special challenges. It was recognized that not all countries have comprehensive regulatory oversight

systems for biologicals. Countries were therefore encouraged to establish effective regulatory collaboration on issues including regulatory research. WHO was requested to facilitate the process through establishing regional and global networks of regulators. The conference was attended by 130 participants, including representatives from national regulatory authorities in 34 countries and industry. More information may be found at: http://www.who.int/medicines/areas/quality_safety/regulation_legislation/icdra/en/index.html

2007

Vaccine Vial Monitors — saving at least US\$ 5 million per year

At an event organized to celebrate the 10-year anniversary of the Vaccine Vial Monitor (VVM) — a simple tool which indicates if a vaccine is likely to have been damaged by heat — WHO and UNICEF issued a new joint policy statement on the role of VVMs in improving access to immunization. The statement urges all vaccine self-procuring countries to include VVMs as a minimum requirement for vaccine purchase agreements. It also urges donor agencies and international non-governmental organizations to adopt a policy that explicitly includes the monitor as a minimum standard in every vaccine donation. Since their introduction in 1996, nearly 2 billion monitors have been used on vaccine vials. WHO and UNICEF estimate that their use is saving the global health community at least US\$ 5 million per year.



"Vaccine vial monitors are useful tools for detection of the vaccine's exposure to excessive temperature, thus contributing to success of immunization programmes."



Mrs Daisy Mafubelu, Assistant Director-General, Family and Community Health Cluster, WHO
Note for the media 21,
WHO and UNICEF urge donors and Member States to fund and expand use of vaccine vial monitors to ensure effective immunization, 3 May 2007.

Vaccine prequalification — addressing the evolving demands of the global market

Given the increasing demands related to vaccine prequalification, WHO and UNICEF have prioritized vaccines for consideration. The list for 2007-08 was published in January. Criteria used were market demand, number of existing suppliers and profile of the vaccines offered. Those given high priority were pentavalent (protecting against five diseases), measles, measles-rubella, measles-mumps-rubella, rotavirus, pneumococcal conjugate, inactivated poliovirus and monovalent oral poliovirus, and seasonal influenza vaccines. During the biennium, applications for 33 vaccines were received for evaluation. Twenty-four of these were for combination or novel vaccines. Ten evaluations resulted in prequalification and one was rejected. The remaining applications are being reviewed in 2008.



Performance, Quality and Safety system expands

Product specifications and verification protocols for immunization equipment including safety boxes, cold rooms, freezer rooms and temperature monitoring devices, were released during the year, as part of the Performance, Quality and Safety system. Only products assessed by WHO as meeting the standards listed in these documents can be supplied to countries

In the coming years, global access to vaccines at affordable prices will increasingly rely on production in emerging economies such as Brazil and India, and vaccine-producing countries which have not previously supplied the global market. In view of this, efforts continued during the year to increase the number of suppliers, particularly in developing countries, with prequalified vaccines. Activities undertaken in support of these efforts related to: the standardization and validation of tests performed by different laboratories for individual products; the identification of additional laboratory capacity for testing novel vaccines; and preparation of new guidelines on applying for vaccine prequalification.

Safety of human papillomavirus vaccines: data reassuring

At its June meeting, the Global Advisory Committee on Vaccine Safety was reassured by evidence presented relating to the safety of HPV vaccines. The Committee indicated that, as with the introduction of any new vaccine, it is important to conduct surveillance to identify possible, rare unexpected effects. This is especially important as good quality information on

the rates of a variety of diseases before widespread vaccination introduction is generally lacking in the target age group for HPV vaccination (i.e. nine to 26 years). Also, careful surveillance for specific adverse effects during pregnancy is important as the target group includes females of reproductive age.

Vaccination of the immunocompromised: studies commissioned

The risks of vaccination in immunocompromised individuals encompass a broad spectrum of situations related to the types of immunological impairment and the vaccines being considered. Vaccine efficacy may be reduced among immunocompromised individuals, who are at risk of having a weaker response to immunization, and might also face increased risks of adverse events. A review of selected studies on the use of vaccines among immunocompromised individuals revealed that the level of evidence available to estimate efficacy and safety varies substantially depending on the situation being considered.

The Global Advisory Committee on Vaccine Safety decided to undertake an in-depth review of existing evidence and has tasked a working group with oversight of this topic. The safety of vaccines in persons living with HIV will be considered first.

Priority will be given to live attenuated vaccines, and in particular those for measles, yellow fever and rotavirus. The working group will report to the full Committee with a framework for developing advice and a proposed detailed work plan for addressing the priority vaccines.



Regulatory capacity in Africa continues to increase

HIV, malaria, meningococcal A, and human papillomavirus — diseases of importance in Africa for which vaccine clinical trials are in progress — were discussed at the second meeting of the African Vaccine Regulatory Forum, held in September in Ouagadougou. Representatives from 19 African countries attended the meeting; for most countries, these were from the national regulatory authority and national ethics committee.

Preparing the way for a WHO stockpile of H5N1 influenza vaccines

Technical specifications for a WHO stockpile of H5N1 influenza vaccines were discussed at a meeting held in Geneva in October. The specific objectives of the meeting were: 1) to develop consensus on the following issues related to a WHO stockpile: quality, safety and efficacy specifications; regulatory pathways; logistics specifications; and further studies required, if any; and 2) to discuss guiding principles for access to the stockpile. Recommendations made on the establishment, operation, and sustainability of a WHO stockpile were submitted for consideration by the WHO Strategic Advisory Group of Experts for immunization at its meeting in November.



Speeding up the approval of pandemic influenza vaccines

Shortening the time between the emergence of a pandemic influenza virus and the availability of a safe and effective vaccine is of the highest priority. An essential element of any strategy is the promotion of international convergence on regulatory matters regarding the quality, safety and efficacy of the vaccines.

At its October meeting, WHO's Expert Committee on Biological Standardization approved new guidelines on regulatory preparedness for pandemic influenza vaccines. The guidelines will advise countries on all regulatory issues — from production and quality control to post-marketing surveillance — for future pandemic influenza vaccines.

The new guidelines were the result of a series of meetings — organized and sponsored by WHO, Health Canada, the United States Food and Drug Administration, and the governments of Japan and Spain — which laid the groundwork for an emerging global consensus and enabled networking between key players engaged in pandemic influenza vaccine regulation.

One key outstanding issue, following the October meeting of the Expert Committee, was the definition of laboratory endpoints (immune correlates) that will predict if a pandemic influenza vaccine will be protective. A subsequent meeting in December, organized by WHO, the United States Food and Drug Administration and the United States National Institutes of Health, considered this issue. Participants concluded that the criteria proposed by WHO were the most appropriate benchmarks to use and made recommendations for a research programme.

Participants at the above-noted series of meetings made further recommendations regarding vaccine prequalification and safety issues. They advised WHO to develop mechanisms to prequalify influenza vaccines (seasonal, pandemic and those for novel strains). They also asked the Organization to facilitate coordinated post-marketing surveillance studies of seasonal influenza vaccines as a means of preparing for the safety evaluation of vaccines in a pandemic situation.

Japanese encephalitis vaccines: new recommendations adopted

Revised WHO recommendations on the production and control of Japanese encephalitis (JE) inactivated vaccines for human use were adopted by the Expert Committee on Biological Standardization at its October meeting. The scope of the revised document encompasses both existing vaccines and those under

development. Key changes in the revised version include new guidance on non-clinical and clinical evaluation of candidate JE vaccines. An international collaborative study to evaluate a candidate new WHO reference preparation for use in the test for potency of JE inactivated vaccines was also agreed.

Strengthening vaccine regulatory capacity: a 10-year review of progress and a look to the future

Participants at a meeting in Geneva in December examined progress made over the past decade in strengthening vaccine regulatory capacity, and made proposals for the future. The success of the project over the last 10 years was recognized as a major public health achievement. National regulatory authorities of more than 80 countries have been reviewed; some countries have received more than 10 visits. More than 1000 technical personnel have been trained through the Global Training Network. Over 400 experts have been identified for the conduct of assessments and a database of experts has been compiled for these people to serve on a roster. The overall result has been the establishment and strengthening of functional

national regulatory authorities, with a consequential increase in the number of vaccine manufacturers, particularly in the developing world. The original purpose of the review programme has expanded, and continued evolution is needed to meet expectations. To assist WHO in this development, meeting participants made recommendations for the harmonization of WHO national regulatory authority assessment initiatives, working particularly with the medicines department to: improve the tools and methodology for assessment; introduce quality assurance into the process; and utilize the accumulated data for research on strengthening health systems.



D. Access to immunization services



2006

Maternal and neonatal tetanus: progress towards elimination in India

Maternal and neonatal tetanus is a disease that kills tens of thousands of newborns each year, most of them in developing countries. Yet, it is preventable through hygienic birth practices and immunization of women of child-bearing age with tetanus toxoid vaccine. A 1989 World Health Assembly resolution called for the elimination of maternal and neonatal tetanus. In 2006, five Indian states (Haryana, Maharashtra, Tamil Nadu, Karnataka and West Bengal) were validated as having eliminated maternal and neonatal tetanus, in addition to Andhra Pradesh (validated

in 2003) and Kerala (validated in 2005). Surveys found that neonatal tetanus had fallen to levels below the elimination threshold, which is one per 1000 live births at district level. In addition, tetanus toxoid coverage among pregnant women was above 80% in all of the districts. 2009 is the target year for elimination of maternal and neonatal tetanus in India. The government, in collaboration with WHO and UNICEF, is gradually validating elimination of the disease.

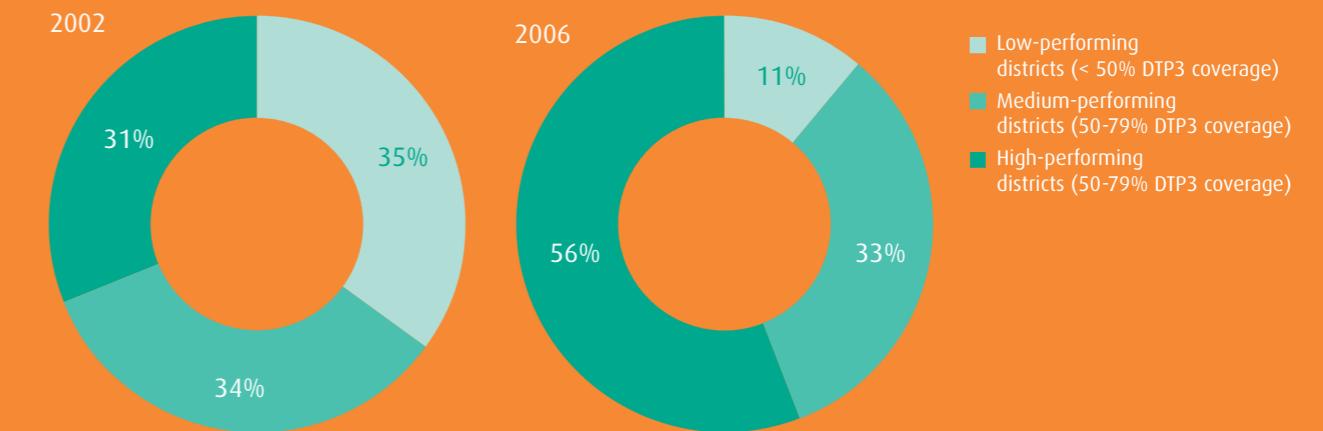


Strengthening routine immunization

In 2006, an estimated 102 million children under one year of age were vaccinated with DTP3 vaccine and the number of children who did not receive DTP3 decreased to 26.3 million from 28.1 million in 2005. The stagnation of routine immunization coverage that prevailed since the early 1990s has ended. Globally, coverage has been increasing since 2003, particularly in sub-Saharan Africa. The approach known

as "Reaching Every District" (RED) has been jointly developed by WHO and UNICEF. Using the RED strategy, DTP3 coverage in Ethiopia improved in 14 of the worst-performing districts, from an average of 35% in 2002 to 71% in 2005. In several eligible countries, GAVI Alliance immunization services support has facilitated the implementation of the RED strategy as well as other activities for strengthening routine immunization.

Impact of RED activities on district-level coverage



Source: WHO/UNICEF joint reporting form. Analysis includes 29 African countries reporting on district-level coverage in 2002 and 2006

Historic victory for global public health

In 2007, two achievements on the progress towards reducing measles mortality were announced. In January, Dr Margaret Chan, in one of her first press conferences as newly-elected WHO Director-General, along with other Measles Initiative partners, announced that measles deaths worldwide plunged by 60% from an estimated 871 000 in 1999 to 345 000 in 2005, exceeding the goal to halve measles deaths between 1999 and 2005. The largest reduction occurred in Africa, where measles deaths fell by 75%, from an estimated 506 000 in 1999 to 126 000 in 2005.

New goal to further reduce measles deaths

Building on this achievement, a new goal aims to reduce global measles deaths by 90% by 2010, compared to 2000 levels. This means that the gains made in countries that have implemented the accelerated measles control strategy must be sustained, and this strategy must be applied in large countries with high numbers of measles deaths, such as India and Pakistan.

This public health achievement is the result of major national immunization activities and better access to routine childhood immunization. Nearly 7.5 million lives were saved through measles immunization between 1999 and 2005, with accelerated immunization activities accounting for 2.3 million of the lives saved — mainly lives of children. Data related to the goal's achievement were published in *The Lancet* on 20 January 2007:

http://www.who.int/immunization_delivery/adc/measles/Lancet.pdf



Africa achieves new measles goal four years early

In November 2007, Measles Initiative partners announced that measles deaths in Africa fell by 91% between 2000 and 2006, from an estimated 396 000 to 36 000, reaching the United Nations 2010 goal to cut measles deaths by 90% four years early. The spectacular gains achieved in Africa were reflected in the strong decline in global measles deaths, which fell 68% worldwide — from an estimated 757 000 to 242 000 — during this period.

The significant decline in measles deaths in Africa was made possible by the firm commitment of national governments to fully implement the measles mortality reduction strategy, which includes vaccinating all children against measles before their first birthday via routine health services and providing a second opportunity for measles vaccination through mass vaccination campaigns.

A successful partnership: the Measles Initiative

<http://www.measlesinitiative.org>

A key factor contributing to the progress in reducing global measles deaths has been the strong support of the Measles Initiative. Launched in 2001, the Measles Initiative is spearheaded by the American Red Cross, the United States Centers for Disease Control and Prevention, the United Nations Foundation, UNICEF and WHO. Other key partners of the Initiative include the Canadian International Development Agency, the Japanese International Agency for Development Cooperation, the Bill & Melinda Gates Foundation, the Izumi Foundation, the Church of Jesus Christ of Latter Day Saints and the International Federation of Red Cross and Red Crescent Societies.

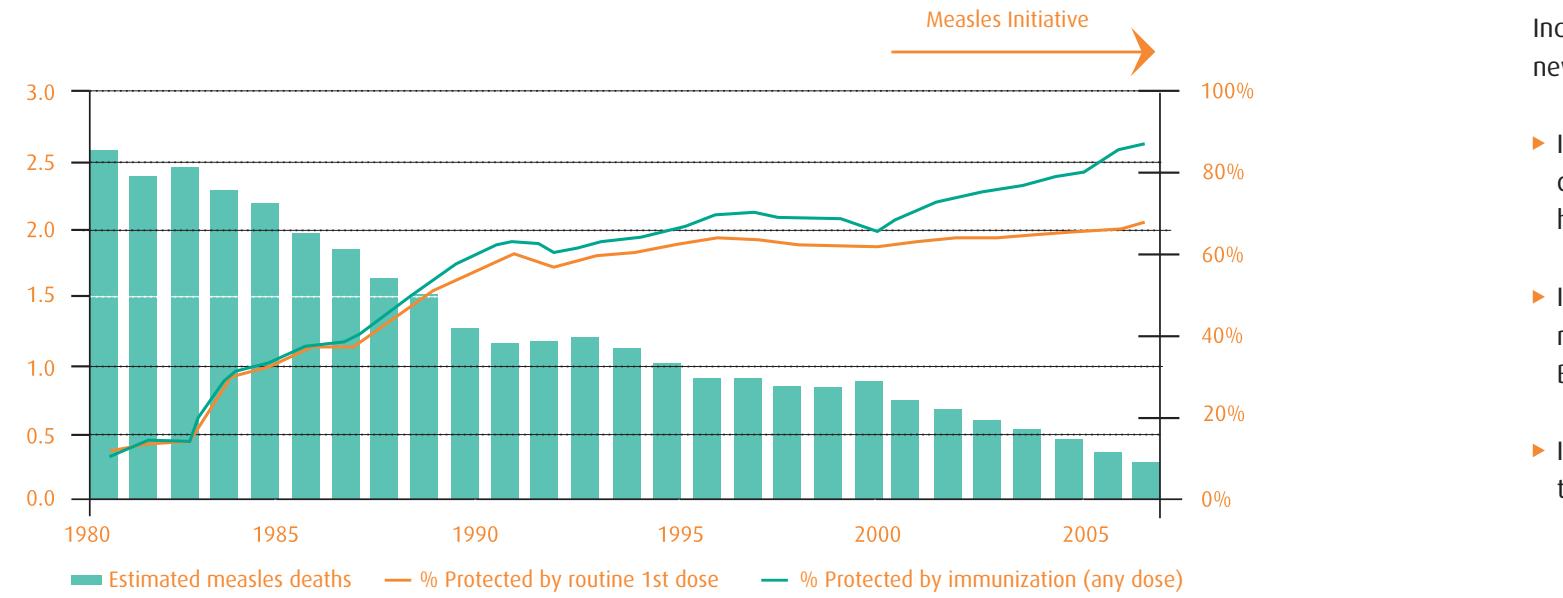
WHO's role

Within the Measles Initiative, WHO provides technical leadership and strategic planning for the management, coordination and monitoring of global measles control activities and is responsible for ensuring that all components of the strategy are technically sound and successfully implemented.

"We are winning the fight against measles, which has long killed, sickened and disabled our children. Our determination is stronger than ever to make measles history by further strengthening our measles control activities, working in concert with our international partners and setting aside resources."

Mr U Olanguena Awono, Minister of Public Health, Cameroon, WHO/UNICEF/American Red Cross/CDC/UN Foundation, News release *Global goal to reduce measles deaths in children surpassed*, 19 January 2007.

Estimated trends in global measles mortality, 1980-2006



Source: WHO Department of Immunization, Vaccines and Biologicals, October 2007

Polio outbreaks stopped or slowed

Implementation of new outbreak response guidelines adopted at the World Health Assembly in May 2006 markedly reduced the size, extent and duration of outbreaks of imported polio. As a result of these efforts, only 6% of all new polio cases in 2006 were

from re-infected countries, compared to more than 50% in 2005. By the end of 2007, efforts to stop transmission of imported polio could be focused on central and western Africa, most notably Angola and Chad.

Intensified effort employs new tactics to finish polio

In 2007, an intensified effort for polio eradication was launched, with commitment from heads of state of the four remaining endemic countries — Afghanistan, India, Nigeria, and Pakistan. Widespread utilization of new monovalent oral polio vaccines — which provide

type-specific immunity twice as rapidly as the standard trivalent oral polio vaccine — and new laboratory procedures to confirm polio infection twice as quickly were bolstered by tactics tailored for each transmission zone:

- ▶ In Nigeria, state-driven Immunization Plus Days offer additional vaccines and health interventions to communities in the north of the country, along with oral polio vaccine, in a combination of fixed site and house-to-house activities.
- ▶ In India, the interval between polio vaccination campaigns has been reduced to just four weeks to more rapidly establish immunity in infants and very young children in the two remaining endemic states, Bihar and Uttar Pradesh.
- ▶ In Afghanistan and Pakistan, activities are synchronized by both countries to increase access to communities that are mobile or situated in insecure areas.



2007

Polio: 80% decline in most dangerous serotype

Progress in 2007 towards the goal of global polio eradication led the Advisory Committee on Poliomyelitis Eradication, the independent advisory body to the Global Polio Eradication Initiative, to conclude that transmission of type 1 wild poliovirus could be interrupted in 2008. The Advisory Committee hailed progress in curbing transmission of type 1 poliovirus, as cases due to this serotype decreased by 84% in 2007 compared to the previous year across the four remaining endemic countries. Type 1 polio is

generally considered the more dangerous of the two remaining serotypes (the other being type 3), due to its higher rate of paralysis and propensity to spread. To interrupt transmission of this virus globally by the end of 2008, the Advisory Committee recommended continuation of the intensified eradication strategy that was mapped out at the Urgent Global Polio Eradication Initiative Stakeholders Consultation convened by the WHO Director-General, in early 2007.



Egypt and Zambia eliminate maternal and neonatal tetanus

A survey conducted in Egypt and Zambia in districts selected as being most at risk for neonatal tetanus, revealed that neonatal tetanus has been reduced to levels below the elimination threshold, which is one

case per 1000 live births at district level. An estimated 180 000 deaths due to neonatal tetanus occur worldwide each year (based on 2002 data), usually among poor and remote communities.

New initiative against deadly yellow fever

The Yellow Fever Initiative, led by WHO and UNICEF with support from the GAVI Alliance, was launched at the 60th World Health Assembly in May to combat yellow fever in the 12 West and Central African countries where the disease is a major public health concern. The US \$58 million contribution from the GAVI Alliance will enable these countries — Benin, Burkina Faso, Cameroon, Côte d'Ivoire, Ghana, Guinea, Liberia, Mali, Nigeria, Senegal, Sierra Leone and Togo — to implement vaccination campaigns to immunize more than 48 million people against this dangerous disease. Togo was the first to implement a yellow fever vaccination campaign under the umbrella of the Yellow Fever Initiative in August, targeting 3.6 million people. Senegal implemented a campaign in December targeting 3.1 million people. Mali implemented a vaccination campaign starting in April 2008 to immunize 5.7 million people.

Yellow fever is an acute, viral disease that is transmitted to humans by infected mosquitoes. The disease is endemic in certain tropical regions where 44 countries (33 in Africa and 11 in South America) are considered to be at risk. Currently, 610 million people are considered to be at risk from the disease in Africa. Vaccination is the single most important measure for preventing yellow fever. Yellow fever vaccine is safe and highly effective. The protective effect (immunity) occurs within one week in 95% of people vaccinated. A single dose of the vaccine provides protection for at least 10 years, and possibly for a lifetime.



Surveillance strategy to maximize impact of immunization

A new comprehensive approach to meet the challenges in vaccine-preventable disease surveillance and immunization programme monitoring was developed by WHO and the United States Centers for Disease Control and Prevention. The *Global Framework for Immunization Monitoring and Surveillance* was produced in response to the need for timely and valid epidemiological and programme information, which is crucial in measuring progress towards immunization goals and controlling vaccine-preventable diseases.

The new Framework, aimed at public health planners and donors, provides guidance on how to:

- 1) integrate immunization surveillance and programme monitoring into national public health systems;
- 2) build surveillance and monitoring capacity at country level by expanding on existing systems; and
- 3) provide high quality data needed to monitor the performance of immunization programmes.

In November 2007, WHO and its immunization partners held a meeting to develop a plan of action to establish a system in which selected sites conduct surveillance for vaccine-preventable diseases. The plan of action also examines ways to integrate with other disease surveillance initiatives.

Fight against measles receives financial injection

In 2007, the GAVI Alliance contributed US\$ 139 million to support the worldwide effort by the Measles Initiative partnership to reduce measles deaths by 90% during the period 2000-2010. GAVI's contribution to the Initiative was made possible by an innovative new mechanism known as the International Finance

Facility for Immunisation (IFFIm). The IFFIm has been designed to accelerate the availability of funds to be used for health and immunization programmes in 70 of the world's poorest countries. The Measles Initiative partnership is one of the first programmes to benefit from IFFIm funding.

Building capacity to vaccinate every child

Training national staff to effectively plan and implement immunization services is crucial to achieving the goal of 80% immunization coverage in each district by 2010. WHO's Expanded Programme on Immunization (EPI) team formed the Immunization Training Partnership in 2002 which brings together global immunization partners to share ideas on capacity building and provides countries with high quality training programmes and materials.

In February 2007, EPI organized the fifth training partnership meeting, which focused on identifying training needs and coordination of training activities for national health staff. In addition, several EPI staff assisted in regional and country immunization training sessions on topics ranging from development of comprehensive multi-year immunization plans, and district micro planning to logistics management with a strong focus on the introduction of new vaccines.



Action plan to introduce life-saving vaccines

WHO and its immunization partners have identified a set of activities to accelerate the introduction of new life-saving vaccines such as those for rotavirus, pneumococcus and human papillomavirus and the expansion of the use of under-utilized vaccines such as those for hepatitis B and Hib. WHO's new and under-utilized vaccines action plan provides a platform for coordinating activities related to the introduction of vaccines in countries that need them most.

Decisions on implementing new and under-utilized vaccines require scientific evidence and data, a reliable supply of affordable vaccines which are adapted to the country's immunization schedule and an integrated disease monitoring and surveillance system. Work has begun on the implementation of this action plan, including the development of strategic options to support the introduction of more expensive new vaccines in low middle-income countries.

Sixty countries with new financing plans

By December, a little over a year after the comprehensive multi-year plans (cMYP) process was initiated, 60 countries had developed multi-year plans for their immunization programmes. Nearly 50 countries have included detailed costing and financing components in their five-year immunization plans. A complete review of the plans has been undertaken. Findings suggest that cMYPs have become an integral

part of national immunization planning processes and that countries are aligning their objectives with the *Global Immunization Vision and Strategy*. The results of the review show that immunization programmes have been strengthened in the past five years. Despite signs of increasing global and national financing for immunization, there is a funding shortfall of at least 40%.

E. Regions and countries



WHO African Region

Routine immunization: steady increases in coverage

In 2006, through the implementation of the Reaching Every District strategy and the intensification of routine immunization activities, immunization coverage in Nigeria (25% of the Region's population), Democratic Republic of the Congo and Ethiopia, improved significantly. Routine immunization coverage in the whole Region has increased — from 54% in 2001 to 73% in 2006.

As of December 2006, 40% of countries in the Region had received support for the development of comprehensive multi-year plans for immunization. Half of the countries were assisted with the use of WHO's data quality self-assessment tool: this is a flexible package of methods used to evaluate different aspects of the immunization monitoring system at district and health unit levels.

Training ensures increased capacity for immunization systems

During 2006, 21 African countries introduced new vaccine management tools, with training provided on strengthening national capacity in the areas of vaccine and cold chain management, and health-care waste disposal. National regulatory capacity was strengthened through training on vaccine regulation and inspection of clinical trials and exchanges between African regulators during the first African Vaccine Regulatory Forum. A follow-up evaluation of the national regulatory authority in Senegal was conducted in order to ensure

full functionality, such that the prequalification status of the yellow fever vaccine produced in the country could be maintained. Further training was provided on vaccine procurement systems and the development of health-care waste management plans. Courses for mid-level immunization programme managers were also held.

Two Expanded Programme on Immunization curricula prototypes for medical and nursing schools were adopted by 23 countries; eight countries have already initiated changes in their EPI content curricula.

New immunization plan sets ambitious targets

At its 56th session, the Regional Committee for Africa approved the Regional Strategic Plan for the Expanded Programme on Immunization for the period 2006-09. The Plan recognizes the huge challenges in relation to immunization in the Region such as the large numbers of unimmunized children, ensuring sustainable financing for more costly new vaccines (such as those

for rotavirus, pneumococcal disease and human papillomavirus) and the continuing circulation of wild poliovirus. The Plan incorporates the lessons learned of "what works", for example the RED approach, comprehensive multi-year planning, and working in partnership with the GAVI Alliance.

Decisions to introduce hepatitis B and Hib vaccines

Two high-level fora for francophone and anglophone countries were organized to provide technical information to help decision-makers make informed choices on the introduction of new and underutilized

vaccines. Following the fora, 16 out of the 18 eligible countries for GAVI Alliance funding who had yet to make a decision on the issue at the time of the fora, decided to introduce both hepatitis B and Hib vaccines.

Improving overall child survival while fighting measles and polio

Strong progress in measles control was made in Africa with measles deaths falling by 91% from 2000 to 2006. Supplementary immunization activities (SIAs) played an important role in this progress. In 2006, 20 countries in the African Region conducted SIAs, vaccinating over 76 million children. These activities served as a channel for delivery of other interventions including vitamin A supplements for children under the age of five in fifteen countries, deworming tablets in 10, oral polio vaccine in six,

and distribution of insecticide-treated nets to prevent malaria in seven. The links with other interventions have led to improved collaboration with other areas of the health sector and a reduction in distribution and planning costs. At country level, political commitment remains strong for measles control; all countries contributed varying degrees of in-kind and financial support, which proved critical for the success of each campaign.



Three years after introduction, routine immunization of infants in Kenya against Hib reduced invasive Hib disease rates by 88%.

Cowgill KD, Effectiveness of *Haemophilus influenzae* type b conjugate vaccine introduction into routine childhood immunization in Kenya, *Journal of the American Medical Association*, 2006, 296: 671-678.



WHO Region of the Americas



Remarkable progress made on rubella elimination

In 2003, a resolution was adopted at the 44th Directing Council in the WHO Region of the Americas, calling for rubella and congenital rubella syndrome elimination in the Americas by 2010. In 2006, the Directing Council reaffirmed the rubella elimination initiative as a regional priority. In 2007, the 27th Pan American Sanitary Conference approved a resolution calling for the formation of an Expert Committee responsible for the documentation and verification of the interruption of endemic rubella and measles virus transmission in the Americas.

The countries of the Region have demonstrated remarkable progress in the implementation of strategies for effectively interrupting endemic rubella transmission. In 2006-07, Argentina, Bolivia, Chile, Cuba, the Dominican Republic, Guatemala, Haiti, Peru and the Bolivarian Republic of Venezuela conducted national mass vaccination campaigns to reduce populations susceptible to measles and rubella and to prevent future congenital rubella syndrome cases. By the end of 2007, more than 140 million women, men, adolescents and adults in the Region had been vaccinated against rubella through the implementation of mass vaccination campaigns, obtaining at least 95% coverage.

By December 2007, 42 (95%) of the countries and territories in the Region had implemented rubella elimination vaccination interventions. As a result of sustained commitment to the rubella elimination initiative, the number of confirmed rubella cases decreased by almost 95% between 1998 and 2007.

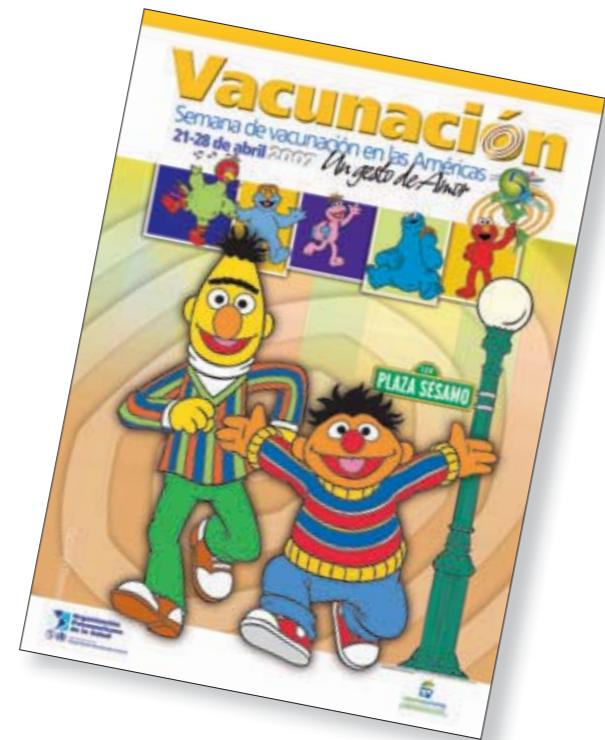
In addition to interrupting rubella transmission, mass vaccination campaigns have greatly contributed to consolidating measles elimination. Quality integrated measles-rubella epidemiological surveillance, including laboratory confirmation of cases, is a critical element to documenting rubella and measles elimination in the Americas.

Sustained political commitment of Member States and the invaluable contributions of the Pan American Health Organization's partners have been critical to the success of the rubella elimination activities and the progress achieved to date.

Vaccination Week: participating countries more than double

Vaccination Week in the Americas focused on the importance of immunization in border areas where high-risk populations reside. In its five years of existence, the event has grown in terms of participation from 19 countries in 2003 to 45 countries and territories in 2007.

The event was an opportunity for providing other health interventions. During Vaccination Week, six countries administered vitamin A, anti-parasitic drugs, oral rehydration solutions, iron, and folic acid, to the benefit of millions of women and children.



Eight countries carried out mass communication campaigns to raise awareness about vaccination among their populations.

Making tough decisions on introduction of new vaccines

The Pro-Vac Initiative (Initiative to Promote the Implementation of Economic Analysis for Vaccine Introduction in Countries of Latin America and the Caribbean), which aims, over a period of five years, to strengthen national capacity for evidence-based decision-making on the introduction of new and underutilized vaccines, was launched during a workshop held at the Regional Office's headquarters. Expected outcomes of the Initiative include: the formation of a regional network of key centres for economics, epidemiology, and public policy;

strengthened national capacity through information technologies, long-distance training/meeting platforms and region-wide follow-up conferences; and the development and communication of evidence for decision-making through the use of models for programme cost and disease burden.

Since the workshop took place, cost-effectiveness studies have been proposed by several countries. These include studies for human papillomavirus, pneumococcus and rotavirus vaccines.





WHO Eastern Mediterranean Region



Boosting routine immunization coverage

The Eastern Mediterranean Region sustained recent achievements in increasing routine immunization coverage in 2006. Reported coverage in 2006 was: 86% with DTP3 and three doses of oral polio vaccine; 83% with one dose of measles vaccine;

and 73% with three doses of hepatitis B vaccine. This was mainly due to the achievements made in Afghanistan, Sudan and Yemen, which have been very successful in implementing the Reaching Every District strategy.

Huge cut in measles deaths

2006 and 2007 were marked by successful measles campaigns in Pakistan, Somalia, Sudan and Yemen. Deaths from measles in the Region as a whole have declined significantly over the last years, from an estimated 96 000 in 2000 to an estimated 23 000 in 2006. Much remains to be done, however, if the Region is to achieve its 2010 goal of measles elimination. A measles elimination strategy has been fully implemented by all countries in

the Region, with the exception of two, Egypt and Morocco. Both countries are planning initial measles catch-up campaigns. Considerable work was done to improve measles surveillance, with all countries now reporting case-based surveillance data. A monthly surveillance bulletin was put in place. This was key to raising awareness of the regional goal for measles elimination.

Introduction of new vaccines gains momentum

In 2006, the Eastern Mediterranean Regional Technical Advisory Group recommended that Member States in this Region adopt a goal to reduce the prevalence of chronic hepatitis B virus infection to less than 1% among children born since vaccine introduction, and recommended that each Member State, having introduced the vaccine at least 10 years ago, conduct studies to evaluate whether this goal has been achieved.

As of 2007, hepatitis B vaccine was part of the routine immunization programmes in all but two countries in the Region (the exceptions being Djibouti, which is introducing the vaccine in the pentavalent combination using GAVI Alliance funding in 2007-08, and Somalia).

While the introduction of Hib vaccine has been slower than hoped (with the vaccine used in 11 countries in the Region as of 2007), mainly due to insufficient information about disease burden, several countries made the decision to introduce the vaccine in

early 2007. These countries are Iraq, Libyan Arab Jamahiriya and Morocco. In addition, Djibouti and Sudan received approval to introduce the vaccine using GAVI Alliance funds in early 2008.

Surveillance networks strengthened

Following their establishment, the regional surveillance networks for rotavirus diarrhoea (2004) and paediatric bacterial meningitis (2005) were strengthened and extended to additional countries in 2006. Paediatric bacterial meningitis surveillance has been extended in some countries to include surveillance for other invasive bacterial diseases. These networks are supporting countries in the Region in documenting disease burden relating to rotavirus, Hib and pneumococcal diseases so that decision-makers can make evidence-based decisions on whether or not to introduce the vaccines.

Recommendations made on mumps immunization and a comprehensive routine immunization schedule

The Regional Office organized consultations during 2006 on mumps and the routine immunization schedule. Important recommendations were made at the first meeting on mumps immunization

strategies. One of the main outputs of the second meeting was a standardized routine immunization schedule which includes infants, other children under five, adolescents and adults.





WHO European Region

Progress towards measles and rubella elimination by 2010

In order to reach disease control and elimination goals, efforts were scaled up to support countries in building and sustaining strong immunization systems.

- ▶ A regional plan to eliminate measles, rubella and congenital rubella infection by 2010 was finalized. It highlights advocacy, awareness-raising and reaching high-risk groups.
- ▶ An expert meeting of German-speaking countries and areas identified specific issues to be addressed to eliminate measles and rubella in this part of the Region.
- ▶ Azerbaijan conducted a nationwide measles and rubella immunization campaign in February and March 2006, targeting nearly 2.4 million people.
- ▶ More than 11 million people in Armenia, Turkmenistan and Uzbekistan were vaccinated against measles and rubella in 2007.

Substantial progress was achieved within the Region as a whole in the control of measles and rubella. By the end of 2006, all countries had a routine two-dose measles vaccination programme; 98% of countries were using rubella vaccine; more than 10 countries were undertaking national or sub-national supplementary immunization activities to address measles and rubella-susceptible populations; and

55% of countries were reporting measles incidence of less than one per million population.

More than 26 million people have now been reached by supplementary immunization activities, and vaccination campaigns in 2008 are scheduled to reach an estimated nine million people.

Free of polio for the fifth year

Following the certification of a polio-free European Region in 2002, the Regional Office has ensured technical and financial country support and continued monitoring. A strategic vision meeting for polio was held in the middle of 2006. Participants, which included polio eradication experts, considered the programmatic challenges and directions for a strategic plan to sustain the Region's polio-free status.

The MECACAR countries (countries in the Eastern Mediterranean and Caucasus, the Central Asian Republics and the Russian Federation working together to sustain or achieve the eradication of polio and to eliminate measles) agreed on the "MECACAR Declaration" that was signed at the 2007 World Health Assembly. This signifies commitment at the highest levels to fight polio and measles.

Evidence to make decisions on introducing new vaccines

Countries of the European Region were provided with extensive support to begin collecting evidence for the possible introduction of new or underutilized vaccines. WHO and its partners in the European Region supported Member States in establishing surveillance of Hib and

pneumococcal diseases, and rotavirus diarrhoea — a significant step towards controlling these diseases which are important causes of childhood morbidity and mortality in the European Region.

New tools developed to strengthen surveillance, quality and safety

New regional assessment tools were developed to strengthen national capacity for vaccine-preventable disease surveillance and to ensure the quality and safety of immunization. These tools are important components of capacity-building activities, focusing on laboratory-supported surveillance of vaccine-

preventable diseases and adverse events following immunization, as well as vaccine management and waste disposal. During 2006, the Regional Office offered inter-country workshops and direct country support in these areas.



Increasing awareness of the benefits of immunization

In times of scepticism and rumours about the safety and necessity of vaccination, continuous advocacy and information activities are critical. In order to achieve and sustain high immunization coverage and reach high-risk groups, countries strengthened their communication and advocacy work. This was reflected in the strong participation of twenty-five countries in the European Immunization Week in 2007.

Bolstering this increased focus on raising awareness, Her Royal Highness Crown Princess Mary of Denmark, at the European Regional Committee, announced her support of immunization, declaring that it is the right of every child to be immunized. The 2008 European Immunization Week took place from 21-27 April with 33 participating countries.

"As a mother I want to ensure that my child has every opportunity to grow up healthy, and [is] vaccinated against those diseases that can so easily be controlled. As Patron I want to ensure that this opportunity is given to every child in the European Region, and that we also reach those vulnerable groups that continue to exist."

Her Royal Highness Crown Princess Mary of Denmark, speech to the WHO European Regional Committee, 11 September 2006.



More countries introducing new and underutilized vaccines

By the end of 2007, 37 of the 53 Member States in the European Region had introduced Hib vaccine into their national immunization schedules. Kazakhstan, the Republic of Moldova, Tajikistan and the former Yugoslav Republic of Macedonia will introduce the vaccine in 2008. Eleven countries in

the Region have introduced pneumococcal vaccine into their national immunization schedules and the Republic of Moldova plans to introduce the vaccine in 2009. The rotavirus diarrhoea vaccine has been introduced in Austria, Belgium and Luxembourg; Uzbekistan plans to follow suit in 2010.



WHO South-East Asia Region



Polio eradication: the battle continues

During 2006, use of type-specific monovalent oral polio vaccine types 1 and 3 had a significant impact on increasing the immunity levels of children in areas of Uttar Pradesh and Bihar where polio is still entrenched.

With regard to polio surveillance and response, a new algorithm for testing stool specimens from paralyzed children was developed, tested and finalized. This algorithm has been rolled out in the regional laboratory network, cutting the time required from the day specimens are received in the laboratory to the day that results are available to the vaccination programme by half, to two weeks. This will reduce the total time required to respond to wild poliovirus detection from 60 to 30 days, enabling faster response.

In terms of polio eradication in the South-East Asia Region as a whole, an outbreak in India contributed to 700 cases of poliomyelitis reported in the region. In all countries where either imported polio still remains or the threat of importation still exists, intensified rounds of supplemental immunization activities were conducted and outbreaks were stopped.

Efforts were intensified to interrupt polio circulation in the endemic reservoirs in India (type 1 polio was reduced by 80% between 2006 and 2007), maintain the polio-free status of other countries and mobilize the additional resources required to achieve these goals.



Measles mortality reduction activities accelerated

Accelerated implementation of measles mortality reduction activities was undertaken during 2006 in Bangladesh, Bhutan, Indonesia, Maldives and Myanmar, with a total of 43 million people vaccinated in measles catch-up campaigns in most of these countries. Bhutan and Maldives used measles-rubella vaccine in their campaigns. Indonesia and Myanmar completed catch-up campaigns in 2007. India, given its large annual birth cohort, will be the

biggest challenge to achieving the measles mortality reduction goal in the Region. Fortunately, with the support of the Regional Office, India has already initiated measles surveillance in polio-free southern states. Following a WHO recommendation, an advisory group, the India National Expert Advisory Group for Measles, has been established. A measles mortality reduction strategy for the country has been developed.

Steady progress made in introducing vaccines

After completing the introduction of hepatitis B vaccine in their national immunization programmes, Bangladesh, Bhutan and Sri Lanka moved ahead with plans to introduce Hib vaccine with funds from the GAVI Alliance. Support for the generation of more robust disease burden information or the continuation of existing surveillance for Hib was provided to Myanmar, Nepal, and Sri Lanka.

WHO is working with countries in the Region to: strengthen rational decision-making with regard to the introduction of new and underutilized vaccines; ensure the financial sustainability of the vaccines already used; and keep open the possibility of adding additional antigens in the future. This support is particularly important as funding becomes available for additional vaccines from the GAVI Alliance.

Japanese encephalitis diagnosis: new laboratory network established

A regional network of laboratories was established during 2006 for the diagnosis of Japanese encephalitis (JE). In the outbreaks that occurred in India and Nepal, it was clear that not all encephalitis cases were caused by the JE virus. The surveillance strategy was thus expanded to include surveillance for both viral and bacterial causes of acute encephalitis syndrome. Training was given to laboratory staff and standardized diagnostic kits were provided to network laboratories. Additionally, surveillance staff from Bangladesh, India and Nepal are being trained on surveillance for acute encephalitis syndrome.



Fast-track licensing of vaccines

A guideline for fast-track licensing of vaccines was pioneered by the WHO Regional Office for South-East Asia in collaboration with headquarters. It was developed to guide countries that do not have adequate

regulatory mechanisms for licensing new vaccines, and particularly for the introduction of vaccines required in emergency situations.

Training to reach the highest standards of quality and safety

In the area of vaccine quality and safety, two courses of the WHO Global Training Network, on vaccine management and vaccine lot release, were conducted for Member States in the Region. Support for training

is part of the Regional Office's strategy for building national capacity for vaccine regulation. A workshop to develop regional reference standards for testing JE and pertussis vaccines was also conducted.

WHO Western Pacific Region



Polio containment activities continue apace

The Western Pacific Region was certified polio-free in 2000. The quality of polio surveillance and routine immunization coverage has been maintained at levels similar to previous years, resulting in the Region remaining polio-free. Work has begun to review national policies and legislation on the immunization of travellers from areas with circulating poliovirus. Significant progress has been made towards completion of regional Phase I wild-poliovirus laboratory containment (development of an inventory of laboratories with polioviruses) in China and Japan, the two countries with a large number of laboratories yet to achieve this. Completion of this phase will reduce the risk of re-introduction of the virus from

laboratories into communities. Phase II of laboratory containment entails either destruction of materials or higher bio-safety storage requirements.

In 2007, after more than 20 years of being polio-free, Australia reported isolation of a type 1 wild poliovirus from a 22-year old Pakistani man who had returned to Melbourne from a visit to his home country. The risk of onward spread of the poliovirus was considered low. Nevertheless, the Government of Australia undertook a number of additional steps in response to this importation, including enhancing disease surveillance and distributing public health alerts across the country.

Progress towards hepatitis B control

All countries and areas in the Region (with the exception of Japan, where hepatitis B vaccine is given only to infants born to mothers with chronic hepatitis B infection) now provide hepatitis B vaccine to all infants. A revised regional plan and certification guidelines for the 2012 hepatitis B control goal (chronic hepatitis B virus infection in less than 2% of children around five years of age) were developed in 2007. Preliminary data presented by the Government of the People's Republic of China, from a survey conducted in 2006, suggested that hepatitis B chronic

infection rates may have dropped to less than 2% among children under five years of age, from almost 10% in 1992. Special efforts are being made in many countries to increase birth dose coverage with impressive results, bringing these countries closer to achieving the regional goal.

Considerable progress has also been made in ensuring future funding for the vaccine, with China and Viet Nam having transitioned out of GAVI Alliance financing to full domestic funding in 2007.

Region moves closer to measles elimination

Progress was made towards the Region's target of eliminating measles by 2012. The Republic of Korea became the first country in the Region to declare that measles had been eliminated. In 2006, China developed a National Measles Elimination Plan and organized a first national meeting for measles elimination. Cambodia also developed a national plan. Kiribati, the Solomon Islands and Vanuatu implemented scheduled national measles campaigns in the second half of the year.

In 2007, six priority countries — Cambodia, China, Lao People's Democratic Republic, Mongolia, Philippines and Viet Nam — conducted measles campaigns. Some of these campaigns also included other life-saving health interventions such as vitamin A

supplementation and deworming medicine. China has taken steps to improve routine immunization services such as: the national financing of all childhood immunization vaccines; ensuring adequate salaries for immunization staff; changing the recommended age of the second dose of measles vaccine to 18-24 months; and requiring nationwide school entry checks of children's immunization status.

In January 2007, five countries (Cambodia, the Lao People's Democratic Republic, Mongolia, Papua New Guinea, and Viet Nam) received over US\$ 8 million from the Measles Initiative partnership in support of supplementary measles immunization activities in 2007-08.



Expanding the use of new and underutilized vaccines

A regional forum held in March 2006 on the prevention of childhood pneumonia and meningitis through vaccination helped countries take actions required to expand the use of Hib and pneumococcal vaccines in the near future.

In 2007, five countries — Kiribati, Lao People's Democratic Republic, Samoa, Solomon Islands and Viet Nam — introduced the Hib vaccine in their national immunization schedules, bringing the total number of countries and areas that have done so to 25. In addition, five Pacific Island countries and New Zealand have decided to introduce conjugate pneumococcal vaccine.

During the same year, Australia became the first country in the Region to introduce rotavirus and HPV vaccines in its national immunization schedule. Also, some territories, such as the Commonwealth of the Northern Mariana Islands and Guam have introduced HPV vaccine in their immunization schedules. Disease burden studies and cost-effectiveness analyses in support of the possible introduction of Japanese encephalitis and rubella vaccines are ongoing in many Member States in the Region.

F. Communication, advocacy and media

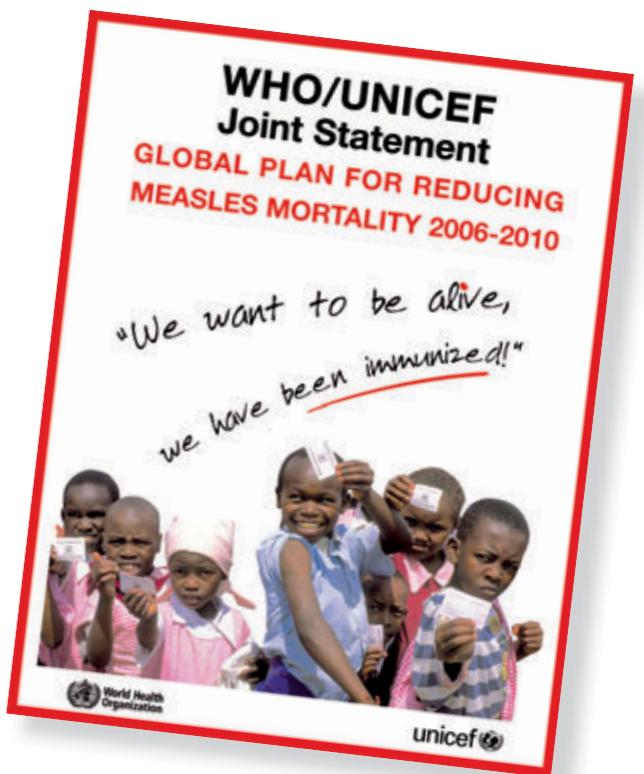
In 2006, a communications team for the Immunization, Vaccines and Biologicals Department was established. It consists of three professional and one administrative staff who carry out media, advocacy and other communications work leading to a variety of products and events. The team also contributes regularly to several partnerships such as the GAVI Alliance and the Measles Initiative.



“We want to be alive, we have been immunized !”

WHO and UNICEF issued a joint statement on the *Global plan for reducing measles mortality 2006-2010*. This short advocacy document presents the measles mortality reduction strategy, outlines challenges and goals, and stresses the importance of partnership in this endeavour. “We used to bury two or three children every week during measles epidemics. This does not happen any more,” says Serigne Dame Leye, Chief of Nguoye Diaraf village, Senegal in the brochure. The document also explains why children need to be given a “second opportunity” for measles immunization and notes that less than a dollar is needed to protect a child for life against measles.

The *Global Plan* (http://whqlibdoc.who.int/hq/2005/WHO_IVB_05_11_eng.pdf) focuses on reducing measles mortality in 47 priority countries that account for approximately 98% of global measles deaths. These countries, characterized by weak health systems and chronically low immunization coverage, are among the world’s poorest.



Immunization — an investment in life

Immunization financing issues were highlighted by the Immunization, Vaccines and Biologicals Department at the 59th World Health Assembly. The theme of the Department's exhibit was "Immunization — an investment in life". "We found powerful new sources of economic returns from immunization" (Dr David E. Bloom, Clarence James Gamble Professor of Economics and Demography, Harvard School of Public Health, GAVI

Alliance news release, *Harvard School of Public Health study finds vaccines boost economies of poor countries*, 14 October 2005) and "It costs less than US\$ 1 to immunize a child against measles" were the texts of two large banners. The many visitors to the stand took documents and give-aways relating to immunization financing. Six short papers on vaccine cost, supply and financing issues were published in three languages.

Advocacy with Group of Eight decision-makers

Information was prepared for the G8 summit hosted by the Russian Federation in St. Petersburg and attended by the then WHO Acting Director-General, Dr Anders Nordström. A web page was created in the Immunization, Vaccines and Biologicals Department Newsroom. The control of infectious diseases was one of the topics considered by leaders of the eight countries—they have long recognized that AIDS,

tuberculosis, malaria, polio and other vaccine-preventable diseases slow economic development, perpetuate poverty, and threaten security in large parts of the world. The recent threat of an influenza pandemic has focused international attention on the need for all countries to be better prepared, in order to reduce the death toll, widespread illness and severe social and economic consequences.

Visual identity: Global Immunization Vision and Strategy



Work was carried out to create a visual identity for the WHO/UNICEF *Global Immunization Vision and Strategy*. The visual identity will be used on various elements of an advocacy package.

Beating Measles

The achievement of the 2005 measles mortality reduction goal and the progress towards the 2010 goal were the central theme of the exhibition "Beating Measles" of the Department of Immunization, Vaccines and Biologicals at the 60th World Health Assembly held in May 2007. The exhibit included panels that showed the reduction of measles mortality and the lives saved based on three key years: 1999, 2005 and 2010. While 2400 people died as a result of measles every day in 1999, in 2010, deaths per day are expected to number about 220. The theme links the scientific data published in *The Lancet* to saving people's lives on a daily basis. Lives saved and lost were represented by over 12 000 drawings from the You Draw web site. Each of the three red bars contains a number of drawings that is equivalent to the number of measles deaths per day that year.

During the World Health Assembly, delegates discussed a progress report on reducing global measles mortality. The next ambitious measles goal — a 90% reduction in measles deaths during the period 2000 to 2010 — will require strong political commitment and continuing support from international partners. During the Assembly, a special reception was organized to honour countries for the outstanding achievement of the measles mortality reduction goal — a 60% reduction in 2005 compared with the 1999 level — and to rally support for the 2010 goal.



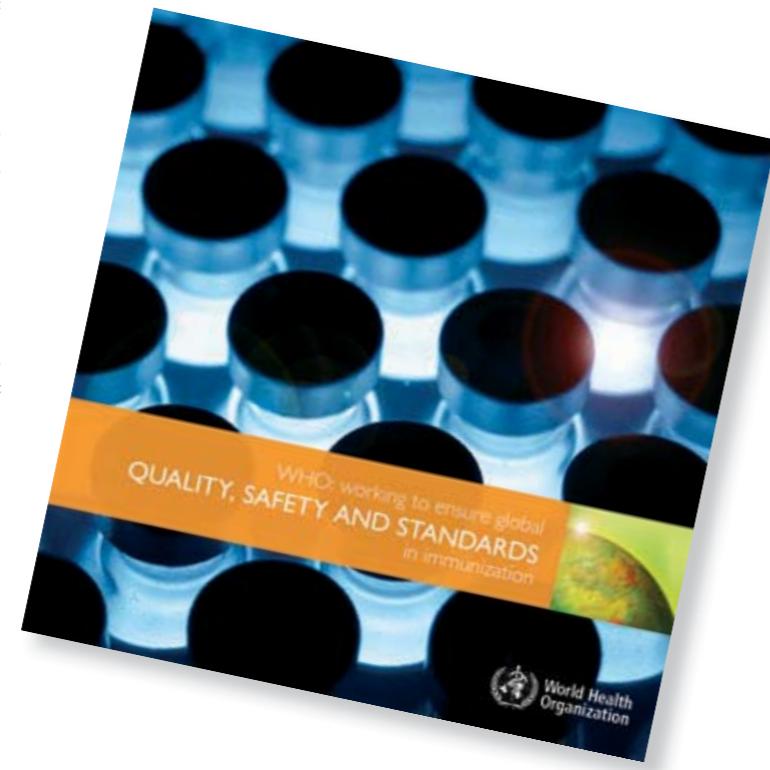
Media interest in candidate meningitis vaccine

More than 230 news reports in print, broadcast and online media resulted from the release of promising data on the performance of a candidate meningococcal conjugate vaccine in testing. The news was published in a joint news release in June 2007, issued by WHO

and PATH, partners of the Meningitis Vaccine Project. In a clinical trial carried out in Mali and The Gambia, the vaccine under development was found to be safe and produced much higher antibody levels than those obtained with the existing vaccine.

Explaining quality, safety and standards work

Produced primarily to increase awareness of the activities of the Immunization, Vaccines and Biologicals Department's Quality, Safety and Standards team, this short, colourful brochure was disseminated to a wide range of stakeholders across the world in October 2007. It covers the process for setting standards related to immunization; strengthening national regulatory authorities; prequalification of vaccines and immunization equipment; and responding to vaccine safety issues of global concern. It outlines the respective roles of the Expert Committee on Biological Standardization and the Global Advisory Committee on Vaccine Safety, two of WHO's key immunization committees, and provides information on budget and funding.



Regular reporting on influenza pandemic preparations

A news conference launching the WHO *Global pandemic influenza action plan to increase vaccine supply* was held in October 2006 at the United Nations in Geneva with experts from the WHO Initiative for Vaccine Research, other WHO experts and partners. It was attended by 25 journalists and resulted in around 30 news reports including those in *The New York Times*, *The Wall Street Journal* and *The Financial Times*. Since then, five press documents have been published. These news releases and notes for the press covered grants to developing countries to

increase their influenza vaccine production capacities, WHO's global stockpile of H5N1 vaccine and a sharp increase, reported in October 2007, in the projected supply of pandemic influenza vaccine.

In addition, an information note was written about important decisions taken at the November 2007 meeting of the Strategic Advisory Group of Experts. These experts recommended that WHO build a stockpile of up to 150 million doses of H5N1 influenza vaccine.

“An international pandemic influenza vaccine stockpile is an intervention tool for global benefit.”

Professor David Salisbury, Chairman of SAGE and Director of Immunisation, Department of Health, United Kingdom of Great Britain and Northern Ireland, WHO Department of Immunization, Vaccines and Biologicals Information Note, *Experts recommend WHO stockpile up to 150 million doses of avian flu vaccine*, 16 November 2007.

Communicating a success the world should celebrate

As soon as the Immunization, Vaccines and Biologicals Department learned that *The Lancet* had accepted, for fast-track publication, an article on achieving the 2005 measles mortality goal written by Department staff and partners, communications staff began working on a comprehensive communications package, in close consultation with the in-house measles expert. Staff produced nearly 40 elements, some jointly with United States-based partners, within two weeks. The package included a joint news release, a WHO fact sheet, key statistics, stories from the field, questions and answers, an op-ed signed by the WHO Director-General published in *The International Herald Tribune*, key messages, a podcast, web pages and a splash screen. The effort culminated in a dial-in news conference with the WHO Director-General and her counterparts in Measles Initiative partner agencies. WHO experts did many interviews with major media outlets and Joy Phumaphi, then Assistant Director-General, Family and Community Health, WHO, appeared on BBC World TV. News reports related to this announcement were compiled and number about 220.

Queries on immunization pour in from all over the world

Numerous queries from the media, partners, governments, academics, individuals and other WHO departments were handled by the Communications, Advocacy and Media team. It is estimated that at least 250 queries are responded to each year.



Media and advocacy products: a selection

Global immunization data

http://www.who.int/immunization/newsroom/Global_Immunization_Data.pdf

Immunization financing: a set of six papers

http://www.who.int/immunization/newsroom/IF_papers/en/index.html

Measles mortality reduction: a series of products related to the achievement of the 2005 goal and Africa's achievement of the 2010 goal

<http://www.who.int/immunization/newsroom/measles/en/index.html>

WHO immunization work: 2005 highlights

http://whqlibdoc.who.int/hq/2006/WHO_IVB_06.02.pdf

WHO: working to ensure global quality, safety and standards in immunization

http://whqlibdoc.who.int/hq/2007/WHO_IVB_07.03_eng.pdf

To view the complete list, visit: <http://www.who.int/immunization/newsroom/en/>

News releases and other press documents: a selection

Viet Nam eliminates maternal and neonatal tetanus, 28 February 2006

<http://www.who.int/mediacentre/news/releases/2006/pr10/en/index.html>

Immediate and sustained action required to sharply increase pandemic influenza vaccine supply, 23 October 2006

<http://www.who.int/mediacentre/news/releases/2006/pr58/en/index.html>

Global strategy aims for effective malaria vaccine by 2025, 4 December 2006

http://www.who.int/immunization/newsroom/NOTE_MVTRM_4_12_06_Final.pdf



Global goal to reduce measles deaths in children surpassed; Measles deaths fall by 60 per cent, 19 January 2007
<http://www.who.int/mediacentre/news/releases/2007/pr02/en/index.html>

WHO reports some promising results on avian influenza vaccines, 16 February 2007
<http://www.who.int/mediacentre/news/notes/2007/np07/en/index.html>

Global stockpile of H5N1 vaccine 'feasible', 26 April 2007
<http://www.who.int/mediacentre/news/releases/2007/pr21/en/index.html>

WHO, UNICEF urge funding and use of vaccine vial monitors, 3 May 2007
<http://www.who.int/mediacentre/news/notes/2007/np21/en/index.html>

Improved meningitis vaccine for Africa could signal eventual end to deadly scourge, 8 June 2007
<http://www.who.int/mediacentre/news/releases/2007/pr28/en/index.html>

Hib vaccine: a critical ally in Asia's effort to reduce child deaths, 28 June 2007
http://www.who.int/immunization/newsroom/Hib_vaccine/en/index.html

Projected supply of pandemic influenza vaccine sharply increases, 23 October 2007
<http://www.who.int/mediacentre/news/releases/2007/pr60/en/index.html>

Measles deaths in Africa plunge by 91%, 29 November 2007
<http://www.who.int/mediacentre/news/releases/2007/pr62/en/index.html>

To view the complete list, visit: http://www.who.int/immunization/newsroom/press_releases/en/index.html

IV. INVESTING IN SAVING LIVES: THE FINANCIAL PICTURE



Global funding for immunization

In recent years, overall spending on immunization has increased in the 117 poorest countries. From 2000 to 2005, spending on immunization in these countries increased by US\$ 2 billion, from about US\$ 3.3 billion to US\$ 5.3 billion. In the chart

below, spending includes purchase of current and new vaccines, operations, routine immunization and immunization campaigns, and immunization systems costs (human resources, infrastructure and cold chain.)

Increase in global immunization spending, 2000-2005 (117 poorest countries)



A number of countries and organizations supported new financing mechanisms for immunization during the course of 2006. This provided a clear signal of the perceived importance of immunization in achieving the Millennium Development Goals on reducing child mortality, improving maternal health and combating infectious diseases.

The International Finance Facility for Immunization (IFFIm) and the pilot Advance Market Commitment for pneumococcal vaccines will undoubtedly help meet the challenges that are now being faced in the vaccine world such as: vaccines of increasing number and complexity in the research pipeline; the high cost of new vaccines; reaching global and regional mortality and morbidity reduction targets; and timely response to emerging public health crises such as pandemic influenza.

Successful sale of bonds raises funds for immunization

IFFIm, a new multilateral development institution designed to accelerate the availability of funding for health and immunization programmes in the poorest countries, successfully issued its inaugural five year bonds amounting to US\$ 1 billion. In November, notes were placed with a diverse group of 54 investors from 15 different countries, including His Holiness Pope Benedict XVI, central banks and corporations. Orders ranged from US\$ 1000 to US\$ 250 million, averaging US\$ 32 million.

This was the first time that bonds were used to finance a specific objective related to health and

immunization. Brazil, France, Italy, Norway, South Africa, Spain, Sweden and the United Kingdom of Great Britain and Northern Ireland have made commitments to IFFIm. IFFIm uses long-term, legally binding donor commitments to leverage additional money from international capital markets for immediate use as grants to developing countries to support immunization programmes. Proceeds from the first bonds are going, via the GAVI Alliance, towards: supporting new vaccines, strengthening immunization services, funding measles and tetanus campaigns and creating an oral polio vaccine stockpile, in case there is a recurrence of circulating poliovirus after polio has been declared eradicated.

"There is no better case for advancing money than vaccination."

Prime Minister of the United Kingdom of Great Britain and Northern Ireland, Gordon Brown launches vaccination bonds. *BBC news web site*, 7 November 2006.

IFFIm will, over the next ten years:

- ▶ Spend US\$ 4 billion on vaccines and health and immunization systems;
- ▶ Immunize more than 500 million children in over 70 of the poorest countries by 2015;
- ▶ Save 10 million lives, of which 5 million will be children, by 2015;
- ▶ Help to eradicate polio;
- ▶ Help introduce new vaccines and technologies; and
- ▶ Help strengthen health systems to deliver immunization services and other medical interventions.



"An innovative bond aimed at financing child immunisation in some of the world's poorest countries on Tuesday raised \$1bn after attracting demand from a wide range of investors, including central banks, religious groups and rock stars."

Chung J. New bond raises \$1bn for child jabs, *The Financial Times*, 7 November 2006.

A new incentive for industry to develop life-saving vaccines

The Advance Market Commitment concept is based on the premise that making a commitment in advance to buy vaccines, if and when they are developed, would create incentives for industry to increase investment in research and development or to invest in large-scale manufacturing capacity. As initiated by the finance ministers of the G7, through the World Bank, an AMC would be applicable both to products at a late stage of development or recently licensed (such as vaccines against rotavirus, pneumococcus and human papillomavirus) and to products at an early stage (vaccines against malaria, HIV and tuberculosis). A commitment of US\$ 1·6 billion for each priority disease is needed.

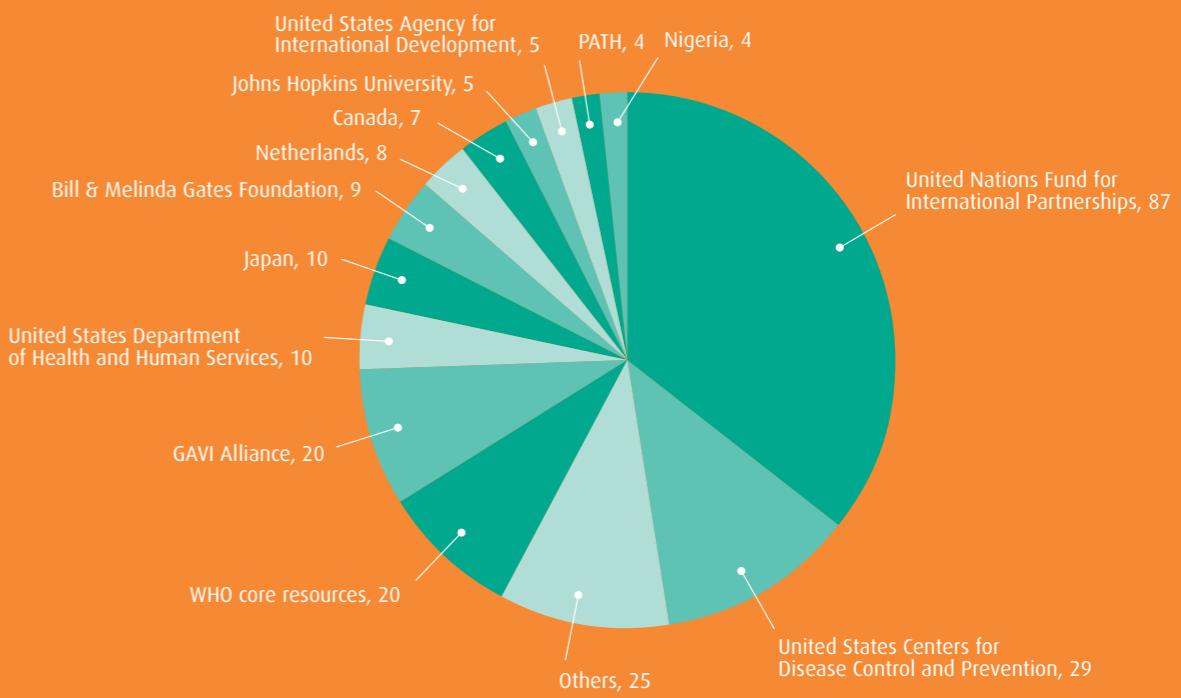
Sponsors would make payments for the purchase of vaccines by developing countries, for qualifying vaccines, up to a fixed number of sales or to a total investment figure. Developing countries would pay a relatively low price for the vaccines and donors would top-up those payments to a premium price aimed at rewarding producers for their research and development and investment in capacity. Once the commitment has been exhausted, manufacturers who have chosen to benefit from the premium price would be contractually obliged to either sell at a sustainable low price related to the cost of production or to license their technology to other manufacturers.

Funding for WHO's immunization work 2006-07 biennium

WHO secured US\$ 225 million (net of Programme Support Costs or administrative overhead), representing 84% of the US\$ 267 million Programme Budget for immunization at global and regional levels. The amount does not include contributions for the Global Polio Eradication Initiative. More

than 90% of funding received was in support of targeted projects and activities, leaving approximately US\$ 20 million of flexible resources (from WHO's core funds). The pie chart shows the main sources of funds for immunization received during 2006-07.

Contributions for WHO's immunization work for 2006-07 (in US\$, millions)



1. Data in the chart is as of 23 November 2007.

2. The figures in the chart include Programme Support Costs.

3. WHO core resources include funds from the Regular Budget and contributions at the corporate level from Belgium, Denmark, Finland, Japan, the Netherlands, Norway, Spain, Sweden and the United Kingdom of Great Britain and Northern Ireland.

4. Others include: Arab Gulf Programme for United Nations Development Organizations, Antwerp University, Asian Development Bank, Australia, China, European and Developing Countries Clinical Trials Partnership, Finland, Fondation Mérieux, International AIDS Vaccine Initiative, International Vaccine Institute, Italy, Merck & Co., Inc., the Netherlands, the Republic of Korea, Serum Institute of India Ltd., Sweden, UNICEF, the United Kingdom of Great Britain and Northern Ireland, Wellcome Trust, World Bank and carry-over of remaining unspecified funds from the last biennium.

A number of critical core activities were not implemented during the biennium due to a lack of funds. Updated recommendations for the production, control and evaluation of existing vaccines (e.g. BCG, DTP, hepatitis B and yellow fever) were not developed, resulting in difficulties in regulating these products, particularly in the areas of licensing and lot release. There is a subsequent delay in the prequalification of these vaccines and a potential shortage in their availability. Progress has been slow in the development of new or revised guidance documents on the stability of reference preparations and the standardization of new assays for the evaluation of pneumococcal vaccines. Lack of financial resources also impeded the provision of technical support to some countries, particularly in the WHO African Region, both for general planning, and for preparation of applications to the GAVI Alliance.



WHO gratefully acknowledges the substantial contributions of all donors, that enabled us to respond efficiently and effectively to the needs of Member States in 2006-07: Arab Gulf Programme for United Nations Development Organizations; Antwerp University; Asian Development Bank; Bill & Melinda Gates Foundation; European and Developing Countries Clinical Trials Partnership; Fondation Mérieux, GAVI Alliance; the governments and aid agencies of Australia, Belgium, Canada, China, Denmark, Finland, Italy, Japan, the Netherlands, Nigeria, Norway, the Republic of Korea, Spain, Sweden, the United Kingdom of Great Britain and Northern Ireland and the United States of America; International AIDS Vaccine Initiative; International Vaccine Institute; Johns Hopkins University; PATH; UNICEF; United Nations Fund for International Partnerships; Wellcome Trust; World Bank; as well as Bio Farma, GlaxoSmithKline Biologicals, Merck & Co., Inc., sanofi pasteur, the Serum Institute of India Ltd., Shantha Biotechnics Ltd. and Transgene for their unrestricted grants.

2008-09 biennium

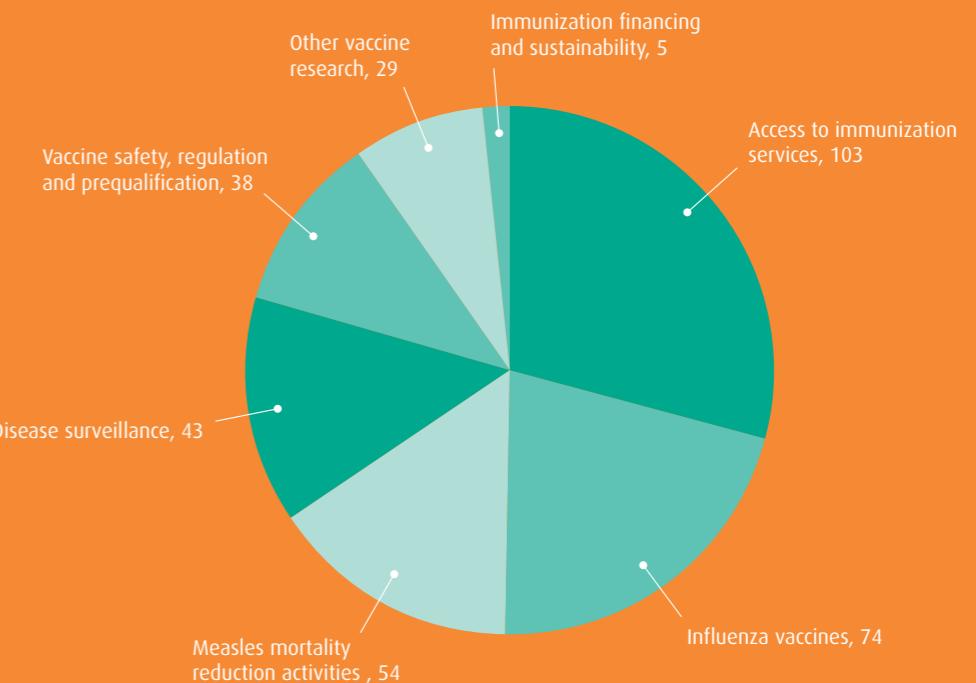
In the 2008-09 biennium, WHO's work on vaccines and immunization is included in four corporate strategic objectives, to consolidate synergies amongst several

WHO programmes. This will facilitate joint planning across the organization such that emerging public health priorities can be more effectively addressed.

Strategic objective	Department area of work
To reduce the health, social and economic burden of communicable diseases	<ul style="list-style-type: none"> Maximizing equitable access to existing and new immunization products and technologies Surveillance and monitoring of vaccine-preventable diseases Developing new knowledge, intervention tools and strategies for immunization and vaccine development, including pandemic influenza
To combat HIV/AIDS, tuberculosis and malaria	<ul style="list-style-type: none"> Product and operational research in HIV, tuberculosis and malaria vaccines
To improve health services through better governance, financing, staffing and management, informed by reliable and accessible evidence and research	<ul style="list-style-type: none"> Immunization financing and sustainability
To ensure improved access, quality and use of medical products and technologies	<ul style="list-style-type: none"> Vaccine quality, safety and regulation (including prequalification of vaccines and new technologies)

The total budget required to deliver WHO's expected results on vaccines and immunization is US\$ 346 million, as shown at right.

Breakdown of Programme Budget for WHO's immunization work, 2008-09 (in US\$, millions)



In 2008-09, the Department plans to:

- ▶ Reinforce its upstream vaccine development activities in the areas of pandemic influenza, human papillomavirus, typhoid, cholera and meningitis vaccines in partnership with other technical agencies and institutions;
- ▶ Expand its work in the area of safety and quality control, vaccine regulation, prequalification of vaccines and strengthening vaccine regulatory capacity in countries;
- ▶ Consolidate collaboration with UNICEF, the GAVI Alliance and other partners in support of the introduction of new vaccines and the expansion of disease surveillance for diseases targeted by new vaccines; and
- ▶ Continue to support countries' efforts relating to sustainable measles mortality reduction and improvement of routine immunization coverage.

About a third of the total budget still needs to be raised — US\$ 115 million. The lack of assured funding for the biennium may hinder the smooth and full execution of the workplan.

With global development assistance increasingly focusing on harmonization and alignment of aid in general, particularly health aid, it is vital that the

donor community makes the transition to predictable, long-term financing of health interventions a reality. Failing to build on the successes of recent mortality reduction efforts, missing opportunities to reach more people with more vaccines, and scaling down efforts on research and quality control, would threaten progress towards achieving the Millennium Development Goals.



V. PUBLICATIONS

Strategic plans

Immunization, Vaccines and Biologicals strategic plan 2006-2009

http://whqlibdoc.who.int/hq/2005/WHO_IVB_05.22_eng.pdf

Initiative for Vaccine Research strategic plan 2006-2009

http://whqlibdoc.who.int/hq/2006/WHO_IVB_06.08_eng.pdf

General

GIVS La vaccination dans le monde : vision et stratégie 2006-2015

http://whqlibdoc.who.int/publications/2006/GIVS_fre.pdf

State of the art of new vaccine research and development

http://whqlibdoc.who.int/hq/2006/WHO_IVB_06.01_eng.pdf

Position Papers

http://www.who.int/immunization/documents/positionpapers_intro/en/index.html

Technical guidelines and procedures

WHO-UNICEF guidelines for developing a comprehensive multi-year plan

http://whqlibdoc.who.int/hq/2005/WHO_IVB_05.20_eng.pdf

http://whqlibdoc.who.int/hq/2005/WHO_IVB_05.20_fre.pdf (French version)

Immunization costing and financing: a tool and user guide for comprehensive multi-year planning

http://whqlibdoc.who.int/hq/2006/WHO_IVB_06.15_eng.pdf

Procedure for assessing the acceptability, in principle, of vaccines for purchase by United Nations agencies

http://whqlibdoc.who.int/hq/2006/WHO_IVB_05.19_eng.pdf

Procedure for expedited review of imported prequalified vaccines for use in national immunization programmes
http://whqlibdoc.who.int/hq/2007/WHO_IVB_07.08_eng.pdf

Guideline for preparation of the product summary file for vaccine prequalification
http://whqlibdoc.who.int/hq/2006/WHO_IVB_06.16_eng.pdf

Guidelines on the international packaging and shipping of vaccines
http://whqlibdoc.who.int/hq/2005/WHO_IVB_05.23_eng.pdf

Surveillance

WHO vaccine-preventable diseases: monitoring system. 2006 Global summary
http://whqlibdoc.who.int/hq/2006/WHO_IVB_2006_eng.pdf

Global framework for immunization monitoring and surveillance
http://whqlibdoc.who.int/hq/2007/WHO_IVB_07.06_eng.pdf

Disease-specific documents

Global pandemic influenza action plan to increase vaccine supply
http://whqlibdoc.who.int/hq/2006/WHO_IVB_06.13_eng.pdf
http://whqlibdoc.who.int/hq/2006/WHO_IVB_06.13_fre.pdf (French version)

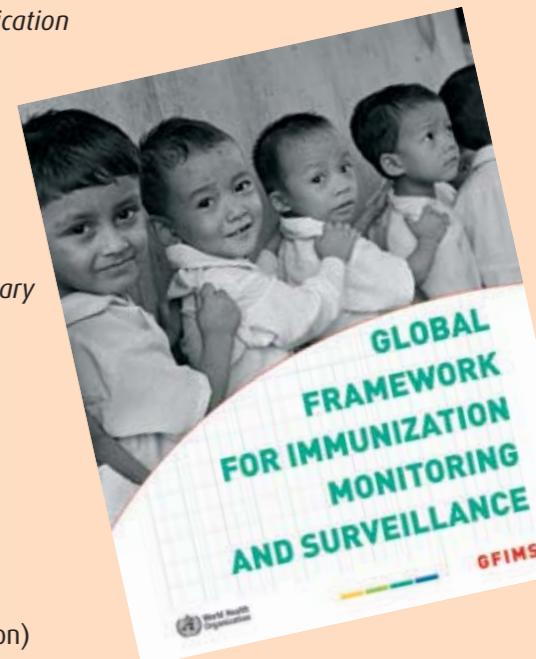
WHO/UNICEF joint statement. Global plan for reducing measles mortality 2006-2010

http://whqlibdoc.who.int/hq/2005/WHO_IVB_05_11_eng.pdf
http://whqlibdoc.who.int/hq/2005/WHO_IVB_05.11_fre.pdf (French version)

Human papillomavirus and HPV vaccines. Technical information for policy-makers and health professionals

http://whqlibdoc.who.int/hq/2007/WHO_IVB_07.05_eng.pdf

The above list contains a selection of publications released in 2006 and 2007. All documents (both in English and other languages for selected publications) can be accessed through the IVB online document centre
<http://www.who.int/immunization/documents/en/>



VI. WEB SITE AND USEFUL LINKS

Web site gets a new look and contents

The re-designed web site of the Immunization, Vaccines and Biologicals Department (<http://www.who.int/immunization/en>) went live in February 2006. The home page of the web site now features a headline, linked to a top news story and news archive. A *Newsroom* was created: photo stories on measles campaigns in Bangladesh and the United Republic of Tanzania, new pages on the *Global Immunization Vision and Strategy* and measles, key immunization resources for journalists and video footage were posted, along with all press materials. The *Document Centre* lists Department publications currently in circulation. *About us* describes the main focus of the Department's activities, its structure and its staff, who are pictured. Permanent links to the list of WHO position papers on vaccines

and the latest information on the Strategic Advisory Group of Experts can be found in the right column of the site. *Topics* provides information on vaccines for specific diseases.

The web site of the Department of Immunization, Vaccines and Biologicals covers the following topics: immunization standards; vaccine research and development; immunization financing, supply and procurement; immunization safety; immunization service delivery and accelerated disease control; and immunization surveillance, assessment and monitoring.

Any comments on the site can be sent to vaccines@who.int.



Useful links

WHO headquarters immunization web site
<http://www.who.int/immunization/en/>

Vaccine research and development
http://www.who.int/vaccine_research/en/

Immunization standards
http://www.who.int/immunization_standards/en/

Immunization safety
http://www.who.int/immunization_safety/en/

Vaccine Safety Net
http://www.who.int/immunization_safety/safety_quality/vaccine_safety_websites/en/index.html

Immunization service delivery and accelerated disease control
http://www.who.int/immunization_delivery/en/

Immunization financing, supply and procurement
http://www.who.int/immunization_supply/en/
http://www.who.int/immunization_financing/en/

Immunization surveillance, assessment and monitoring
http://www.who.int/immunization_monitoring/en/

Measles Initiative
<http://www.measlesinitiative.org>

Global Polio Eradication Initiative
<http://www.polioeradication.org>

Global Advisory Committee on Vaccine Safety
http://www.who.int/vaccine_safety/en/

WHO regions' immunization web sites

Africa
<http://www.afro.who.int/ddc/vpd/index.html>

Americas
<http://www.paho.org/english/ad/fch/im/Vaccines.htm>

Eastern Mediterranean
<http://www.emro.who.int/index.asp>

Europe
<http://www.euro.who.int/eprise/main/who/progs/vpi/home>

South-East Asia
<http://w3.whosea.org/en/section1226.asp>

Western Pacific
http://www.wpro.who.int/health_topics/immunization/

For the first time ever, in 2006, the estimated number of
vaccinated infants exceeded 100 million.

ISBN 978 92 4 159674 9



9 789241 596749

A standard linear barcode is positioned vertically on the right side of the page. It corresponds to the ISBN number 978 92 4 159674 9. Below the barcode, the numbers 9 789241 596749 are printed in a small, black font.