IMMUNIZATION
POLICIES FOR
THE COUNTRIES
OF CENTRAL AND
EASTERN
EUROPE

Report on a WHO Workshop
Rome, Italy
24–26 October 1996
TARGET 5

REDUCING COMMUNICABLE DISEASE

By the year 2000, there should be no indigenous cases of poliomyelitis, diphtheria, neonatal tetanus, measles, mumps and congenital rubella in the Region and there should be a sustained and continuing reduction in the incidence and adverse consequences of other communicable diseases, notably HIV infection.

ABSTRACT

This Workshop provided a forum for reviewing the current WHO recommendations and policies on vaccination against diseases covered by the WHO Expanded Programme on Immunization (EPI) and vaccine procurement procedures in the countries of central and eastern Europe. EPI and immunization programme managers in these countries could consider changes in vaccine delivery and surveillance to strengthen their programmes. Sharing recent experiences with the control of poliomyelitis (following the introduction of wild poliovirus in the Balkan peninsula), measles, pertussis and hepatitis B, the participants discussed where programme improvements could be made, focusing particularly on the current status of the global and European efforts towards poliomyelitis eradication. Participants thoroughly reviewed vaccine management, including the need for functional national control authorities, and vaccine procurement and handling. The discussion on vaccine delivery indicated the approaches of WHO, the United Nations Children’s Fund and the donor community to assisting the countries of central and eastern Europe to reach true self-sufficiency.

Keywords

IMMUNIZATION – organization and administration
VACCINES – supply and distribution
POLIOMYELITIS – prevention and control
MEASLES – prevention and control
WHOOPPING COUGH – prevention and control
HEPATITIS B – prevention and control
EVALUATION STUDIES
CCEE
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INTRODUCTION

With common borders and common problems in communicable disease control, and given the many political and economic events that have occurred in the countries of central and eastern Europe in the 1990s and the potential for impact on the public health programmes of those countries, the opportunity was taken for health professionals in this rich cultural region to meet at this workshop. The purpose of the meeting was to discuss in detail current policies for vaccine-preventable diseases and share experiences in the surveillance and control of vaccine-preventable illnesses. This workshop was organized by the World Health Organization, Regional Office for Europe in joint collaboration with the Division of Emergency and Humanitarian Action at WHO Headquarters, UNICEF, the Istituto Superiore di Sanità, with the support of the Government of Italy in Rome, Italy 24–26 October 1996. Session One on the management of immunization programmes and policies was chaired by Drs D. Greco and N. Guérin. Session Two on the uses of surveillance for action was chaired by Drs A. Combiescu and M. Slacikova; followed by Drs S. Popova and M. Ramsay; the Rapporteur for Sessions One and Two was Dr S. Wassilak. Session Three on vaccine self-sufficiency and sustainability was chaired by Dr B.-J. Martin and Ms M. Ayoub von Kohl, and the Rapporteur was Dr J. Larusdottir. Dr Ramsay presented the conclusions and recommendations of the meeting.

SCOPE AND PURPOSE

- To review the status of immunization programmes in countries of CEE with emphasis on vaccine self-sufficiency, quality assurance of vaccines and programme management.
- To review the surveillance system of vaccine-preventable disease with emphasis in polio, diphtheria, pertussis, measles and hepatitis B.
- To inform EPI managers of new areas for development of the programme, including new vaccines.
- To motivate countries to take appropriate action with regard to immunization policies and particularly on reducing contraindications.

OPENING

Dr Miozzo, Italian Ministry of Foreign Affairs, welcomed the opportunity for the participants to be together to discuss issues of EPI diseases, emphasizing the WHO European Regional Office’s slogan – “communicable diseases don’t stop at borders”. Dr M. Di Gennaro, Italian Ministry of Health, noted target 5 of the Region’s Health for All objectives and emphasized for the countries of this subregional meeting the EPI goals of the target to eradicate poliomyelitis, decreased diphtheria incidence to pre-epidemic levels and attain high vaccine coverage in all areas. She indicated that the successes of Operation MECACAR had provided a solid foundation for the polio eradication goal. With the concept that communicable diseases don’t stop at borders, the issues are of high interest also to Italy and she thanked the MFA and ISS for co-sponsoring this meeting.

Dr Greco indicated this meeting will focus on vaccine-preventable illnesses and vaccines, since the public health benefits of vaccination are easily evident. As host country, Italy is geographically and historically positioned to assist in providing a friendly forum on this issue, and shares with the
participant countries the problems of meeting target 5. Dr G. Rotigliano, Representative, UNICEF, Albania, addressed the need for dialogue, particularly on the issues of diphtheria control and polio eradication, the delivery of EPI vaccines, safe injection practices, resource allotment of manpower needs, and overall coordination of disease control efforts, in which WHO is a dependable partner. With the oversight of its Regional Office for Europe, UNICEF has offices in each participant country to particularly address the needs of technical and financial assistance in meeting vaccine delivery needs. UNICEF has prepared a means for global planning by which future issues of vaccine supply will be addressed by plotting gross national product per capita by population size.

Dr Roure welcomed the participants on behalf of the WHO Regional Office for Europe, indicating that EPI programme managers in the European Region have met regularly to discuss progress and changes in the Regional plans and strategies but that this meeting is a special opportunity for open discussion. With an EPI manager, paediatric opinion-leader and Ministry of Health administrator invited from each country, it was felt that this communication and discussion would be of particular mutual benefit.

**MANAGEMENT OF IMMUNIZATION PROGRAMMES AND IMMUNIZATION POLICIES**

**Target 5: Health for All by the Year 2000**

Dr Roure provided an overview of EPI goals for the Region, along the lines of the operational targets set in 1992 to achieve elimination/control of diseases preventable through immunization. These operational targets included both vaccine coverage and incidence of disease targets. While poliomyelitis is to be eradicated globally by 2000, the Region is planned to be certified polio-free by 2000 with interruption of indigenous transmission of wild poliovirus in Europe by 1997. Hepatitis B originally had no operational targets, but it was hoped that all countries would introduce routine vaccination by 1997 and an 80% decrease in new infant carriers be seen by 2000. She indicated that for the Region with 50 Member States and 850 million population, the common approach in immunization schedules is 3 doses of DTP and 3 doses of polio vaccine by one year of age and one dose of measles vaccine by age 2 years. With the introduction of acellular pertussis vaccines in Sweden in January 1996, all programmes now include anti-pertussis vaccination.

There is a diversity in the schedule of BCG use, with all countries participating in this meeting using BCG but with many doses in the schedules. Measles vaccine use is diverse with combinations of vaccines used, type of vaccine, and a two-dose schedule in most countries. For vaccines with multiple-dose schedules (i.e. DPT, polio), diversity with Europe includes the age at first dose and the intervals between doses. Diphtheria boosters are not routinely given in many areas. Hepatitis B and Hib vaccine are in various levels of use. Average immunization levels in Europe in 1994 were: BCG 82%, DTP3 81%, OPV3 82%, measles 82%. Country variation is high; for example, Italy has very high hepatitis B coverage but low measles vaccine coverage.

**Achievements**

Measles has seen a 98% reduction from the overall reported high to 1994 with 12/100 000 overall crude incidence, and 5–10 countries are nearing elimination. However, three countries do not report measles data to the Regional Office for Europe and in 1994, 12 countries had measles
coverage under 80%. Current observations from the available data include reaching a plateau of coverage.

For mumps, the overall incidence in 1993 was 37/100 000 with only 48% of Member States reporting, and five not including mumps vaccination, whereas in the Nordic countries, elimination is being approached. For pertussis, the overall rate of reported disease was 10/100 000 in 1993, which has been stable for many years. As with all the other EPI vaccine-preventable diseases, but more exaggerated, there are problems in diagnosis and surveillance. Whole-cell vaccines are known for their reactogenicity and has led to the practice of many false contraindications. There is not a consistent approach to booster doses, but many countries use a dose at approximately 5 years of age, given increased recognition in pertussis cases in older children, adolescents and adults.

Hepatitis B, despite the global recommendation, has variable use. Incidence varies from 0.5 to 175/100 000 with wide variation in the rate of carriers. The highest rate of carriage is in central and eastern Europe and the newly independent states – in particular in the central Asian republics and in the Caucasus. The major obstacle to routine use is the cost, although UNICEF and others are supporting its use in some areas. Haemophilus influenzae type b (Hib) vaccine has been available in some European countries since 1990, and is implemented in 16 countries; however, only few countries have surveillance systems in place.

Neonatal tetanus is still reported in EURO mostly from Turkey, where the TT2 coverage in pregnant women remains less than 30% in 1994. However, many countries with recent economic changes remain at high risk, and there is no separate reporting of neonatal tetanus to have reliable reporting.

For congenital rubella (CRS), 20 of the 50 Member States notify EURO, and there were 26 cases in 1991, 29 in 1992. Rubella vaccination is not routine in 15 countries and reliable surveillance systems for CRS exist in only 18.

For diphtheria, 20 countries have not reported cases for many years but the outbreak which began in the Russian Federation in 1990 and went on to involve other newly independent states (NIS) in subsequent years, has also lead to some importations into western and central Europe (Poland and Hungary among participants). The epidemic led to the recommendations to increase age-appropriate vaccine coverage and provide booster doses to adults and at school entry with appropriate vaccine dosage.

In discussion, participants from Bosnia and Herzegovina indicated that UNICEF is continuing to examine the situation regarding hepatitis B vaccination and the strategy has not been decided.

**Contraindications**

Dr Guérin started her presentation by acknowledging that no vaccine is perfectly safe and that vaccine recommendations are made balancing the potential for rare severe adverse events with the overall benefit of vaccine use. Advisory committees have developed lists of recognized contraindications. Acute illness with systemic signs can be a temporary contraindication, with immunization deferred to after the illness has resolved. For persons with known immune deficiencies or immunosuppression, live vaccines should not be given. BCG use in persons with altered immunity is a theoretical risk and therefore where tuberculosis is a high risk, BCG should be given at birth. Certain severe events following whole-cell DTP are contraindications to further
whole-cell pertussis vaccine but DT is not always available. In children with evolving neurologic disorders such as uncontrolled epilepsy and progressive encephalopathies of unknown origin, whole-cell DTP is not used to avoid any concern of falsely assigning a worsening of symptoms/signs with vaccine.

In pregnancy, no live vaccines are to be given, with the exception of yellow fever vaccination if travel is to a high-risk area. A history of anaphylaxis to egg protein is a contraindication to the use of yellow fever and influenza vaccination. Histories of anaphylaxis to the antibiotics in vaccines are unlikely to be found. The list of inappropriate contraindications as applied in many settings is long including allergies, treatment with antibiotics, family history of convulsions, previous history of disease such as measles and pertussis, etc. Dr Guérin illustrated this by presenting a summary of a study published in the August 1995 CDR which reviewed 358 United Kingdom children referred for contraindications to a vaccination clinic; real contraindications are less than 5% of a birth cohort for pertussis and less than 1% for other antigens.

Immunization schedules in the Region

Specific vaccination policy for BCG use within European Member States ranges from no policy, immunization of only high-risk children at birth, immunization of all the newborn, once at 13–16 years of age, once at birth plus revaccination of Mantoux test-negatives to at birth plus several other doses. The global EPI recommendation is at birth. The EAG considered this issue in April 1995 and recommended: BCG once at birth, with revaccination (if given) at 6 years of age without prior tuberculin testing, given the cost/benefit ratio of retesting.

The first doses of DTP within Member States is given at 2 to 4 months of age with subsequent doses 30–45 days after the prior, except Denmark uses pertussis vaccine alone at 5, 6 and 10 months and plans to introduce acellular pertussis vaccine. For polio vaccine policy, Finland, France, Iceland, the Netherlands, Norway, and Sweden have used IPV alone, and sequential vaccination has been used in Denmark, Hungary, Israel and Lithuania (and proposed for Romania for institutionalized orphans). OPV at birth is used in Kazakhstan, Turkey, and Uzbekistan. Otherwise, polio doses are commonly given with DTP.

Measles vaccination is given alone or in combination vaccines at 9 to 15 months of age, and many countries give a second dose at 11–14 years of age. The vaccine used and policy ranges from single dose of measles vaccine to two doses of MMR to MR with campaigns of measles vaccine. The EAG has considered this issue and stated that a single dose of measles vaccine dose should reach the target population shortly after the first birthday; coverage by the second birthday should reach 95% in all districts, and if two doses are given, no prior serologic testing is recommended. The EAG will soon meet to consider a practical and realistic plan of action for measles elimination.

Where used, 3 to 4 doses of Haemophilus influenzae type b vaccine is given, generally at the time of DTP. Where hepatitis B vaccine is used, a 3-dose schedule is mostly used at 0, 1 and 6 months, or given with DPT. Universal infant immunization and/or adolescent vaccination is used in France, Italy, Poland and Spain; universal infant immunization is policy in Albania, Bulgaria, Moldova and Romania. Selective vaccination is the policy in the Czech Republic and Slovakia. WHO and UNICEF are working to make vaccine available at an affordable price and recommend testing of blood and blood products, sterile medical equipment and disposable needles for immunization.

National policy regarding mandatory vaccination is variable and depends on the antigen.
Pertussis vaccination with acellular vaccines was discussed at the Programme Manager’s meeting in 1995. In countries with low coverage, acceleration of use to reach 95% coverage is recommended. Whole-cell vaccines should continue to be used until acellular vaccines are available and affordable; where they are available and affordable and where the pertussis coverage is not satisfactory, acellular vaccines can effectively be used. Diphtheria toxoid is generally given at three doses in the first year of life with a fourth dose before age 2–3, a fifth dose at school entry (using diphtheria toxoid preparations for infant/child use), and Td should be used at the age of exiting school. Td boosting in adults should be considered where the situation warrants.

Overall the immunization schedule should be set by the epidemiological situation; monitoring of adverse events following immunization is recommended for all programmes.

In discussion, Professor Magdzik queried WHO recommendations on the use of simultaneous vaccination, polio with regard to upcoming the availability of combination vaccines (of various antigens) from many manufacturers, recommendations on the use of IPV, given recent experience in Hungary where fewer vaccine-associated paralytic polio cases were reported under the new sequential OPV/IPV policy, and the use of vaccine vial monitors. Dr Combiescu supported limiting the list of contraindications, but questioned how an evolving neurologic illness can be differentiated from an non-evolving one. Dr Roure responded that the EAG will address the issues of IPV use and combination vaccines in future meetings, even while the research on combinations continues and availability progresses. Dr Wassilak indicated that a global policy on IPV use will also soon be discussed. Regarding contraindications, although there are guidelines for differentiating an evolving neurologic disorder from an evolving one, application of guidelines can be difficult and over-caution is frequent in many areas; continued education of physicians of the medical literature, WHO guidelines and practices in other countries can be quite helpful. Dr Ramsay indicated that the application of a diagnosis to the disorder can help categorize it.

New vaccines

Regarding the use of new vaccines, Dr Guérin presented data on Hib, which is believed to be responsible for 500 000 deaths due to acute respiratory infection and 50 000 due to meningitis annually in developing countries. The proportion of all meningitis cases due to Hib (in pre-vaccine era) varies by geographic area and age, and between 40% to 80% before 2 years of age and almost all before 5 years. Hib meningitis has a case-fatality of 3.5% and 20–40% have substantial sequellae. The incidence rate of invasive Hib disease can range from 20–40/100 000 (Scandinavian countries, France, U.S.) to 150–400/100 000 in high risk subpopulations (Alaskan Eskimos, Australian aborigines). Since implementing vaccine programmes with protein-conjugated polysaccharide vaccines, all countries with surveillance systems have seen an impressive impact on invasive disease. The vaccination schedule varies from one country to another with three or four doses usually given at 2, 3, 4 and 15 months of age. The cost of the vaccine is a limiting factor to its implementation. Meningococcal meningitis is estimated to globally occur with 300 000 cases and 30 000 deaths per year. With the AC serotype vaccines, control is limited, but Cuba has demonstrated the efficacy of serotype B outer membrane protein conjugate vaccine of 50–80%. Rotavirus is responsible for over 800 000 deaths per year in the developing world. A candidate vaccine has been found to be 57% effective in preventing mild disease and 87% in preventing severe disease. A larger trial is underway in Venezuela.
SURVEILLANCE FOR ACTION

Dr Ramsay from CDSC/PHLS discussed the evaluation the surveillance data, from incidence rates, seroprevalence, monitoring of adverse events following immunization (AEFI), and the tools and sources of data collection. With surveillance, the ideal system should be sustainable, flexible, acceptable, timely, sensitive, representative, and with a high predictive positive value. The objectives of a surveillance system for vaccine-preventable diseases would vary from pre-implementation of a programme to post. In the pre-implementation phase, the objectives would including an index of the burden of disease and defining the target strategy; in the post-implementation phase, the objective could more of monitoring programme effectiveness. When nearing a phase of elimination, surveillance objectives would include identifying remaining subpopulations of susceptible persons and aid in the certification of elimination. The primary purpose of statutory notification is not for accurate surveillance but rather to provide information for public health action, such as contact-tracing for many communicable diseases, timely application of antibiotics and vaccination of susceptible persons, etc. and so is generally aimed at a sensitive reporting of suspected disease. Nonetheless, sensitivity can be limited by the extent of participation. In the United Kingdom example, an active sentinel surveillance system in family practice offices allows timely and sensitive reporting of common diseases with a well-defined denominator. Many locations utilize laboratory-based surveillance which is highly specific, although minimal clinical data may be available; this system is particularly helpful for rare diseases where reference laboratories are used. Again, sentinel systems can be instituted to identify specific infections with a well-defined denominator population served. For some uncommon diseases, active surveillance of the likely providers of care can be a sensitive means of finding cases, like of paediatricians.

Regarding the issues of a surveillance case definition, the ideal characteristics are that it is 1) sensitive, particularly for diseases with elimination programmes; 2) specific, so that resources are appropriately targeted, and effectiveness can be more accurately estimated; 3) unbiased to the extent possible so that the vaccination policy can be ideally targeted; and 4) simple enough to be practical. Laboratory confirmation may be important for estimating vaccine efficacy or for elimination programmes. As an example, in the United Kingdom surveillance sources for pertussis can be based on physician diagnosis, laboratory diagnosis and a defined case definition in sentinel systems: in all, the periodicity of reported illness over time is congruent but bias can exist with age and vaccine status and phase of the 3–5 year periodicity (with lower specificity of reported illness during epidemic peak periods).

Dr Ciotti from WHO/EURO reviewed other issues of surveillance regarding evaluation of effectiveness, identifying problems in implementing the vaccination programme, identifying the high risks subpopulations, as well has having data to convince donors of the impact of the disease. Overall, the surveillance systems in Europe seem to be collecting too much data, perhaps on too many diseases, so that data is often not used at any level of the public health system. In particular, the issues of timeliness indicate an disconnection of the link of data and action. He went on to discuss the particular example of the data gathered and the issues behind the epidemic of diphtheria in the newly independent states, and the recent indications of the impact of adult mass vaccination programmes. The possibility and detection of importations of diphtheria has been raised in some western and central/eastern European countries. Professor Magdzik from Poland explained the particular interesting findings in the diphtheria cases in Poland and the evidence of indigenous transmission.
Dr Wassilak from WHO/EURO gave an overview on the eradication effort for poliomyelitis, indicating global progress in coverage and the downward trend in the reporting of disease, the widespread application of National Immunization Days (NIDs; mass campaigns of supplemental OPV for preschool children) successfully applied in many areas of the world, and efforts to increase surveillance. The fundamental strategies of polio eradication are: 1) high routine vaccine coverage, 2) NIDS, 3) “mopping-up” door-to-door supplemental immunization in high-risk subpopulations, and 4) virologic surveillance of Acute Flaccid Paralysis (AFP) which is a powerful means of early detection of cases and collection of the evidence of the lack of transmission of poliovirus. The recent introduction of wild poliovirus into Albania and surrounding countries lead to 90% of the eventual 188 reported cases for 1996 in the Region. Repeated examples have been seen in the Region of importation of wild poliovirus leading to indigenous transmission in susceptible subpopulations in the 1990s. Therefore, the emphasis for polio elimination in Europe must include improving immunity levels in the subpopulations.

Polio control strategy: country experiences

The status of the polio outbreak in Albania was presented by Dr Sallabanda, when at that time 127 cases and 12 deaths had been reported. Particular emphasis was made on the history of polio vaccination in the country and lack of effective cold chain before 1992. Since the transition in government, massive migrations and opening of the borders occurred. NIDs were conducted in the spring because of past weaknesses in the programme, but imported wild poliovirus was already circulating, but laboratory confirmation of this was delayed. Mass vaccination of persons aged up to 50 years was initiated, reaching over 85% of the target and appeared to be making some effect. When the issue was raised of border crossing requirements for written documentation of immunization by neighbouring countries, several participants including Drs Greco, Martin and Wassilak indicated that it is inconsistent with international health requirements, unlikely effective and generally applied arbitrarily and that effective surveillance and/or mass vaccination is a more appropriate response, and vaccination of travellers to areas of risk should be recommended.

The details of the polio outbreak in the Kosovo-Metohije area in Yugoslavia were reviewed by Dr Bukumirovic, with 5 confirmed cases and 20 suspected cases at the time, and the sub-NIDs which were previously planned and successfully carried out, extended to include preschool children as well as combined with some vaccination of school-aged children. In addition to registering children in advance with the cooperation of nongovernmental organizations, an additional 27 000 unregistered children presented for the first sub-NID to reach a total vaccinated of 230 000.

Dr Puvacic reviewed the immunization programme in Bosnia and Herzegovina, where an accelerated calendar of vaccination has been applied and increasing the number of immunization points, adding 1000 throughout the Federation. The last case reported case of polio was in 1974. Immunization rates have improved since the conflict (which were recorded as low as 30% for OPV3 in some urban areas, improving to 60–90% in those areas by 1996), but planning for further action for the older birth cohorts is under discussion.

Professor Sofijanov of The Former Yugoslav Republic of Macedonia indicated that the last registered cases of polio in the area was in 1987 and that three-dose vaccination has been up to 94% officially and is 97% in 1995 by survey (using card plus history) for three OPV doses. A national survey in 1994 supported the reliability of the official coverage data. Even by stratifying the data by geographic zone, with the substantial ethnic Albanian population in the West, there were no substantial differences in immunization coverage. Because of the recent epidemic
involving Albania, Greece and Yugoslavia, The Former Yugoslav Republic of Macedonia undertook a round of supplemental vaccination to all 3 months to 18 years of age over a three-week period.

**Discussion on polio eradication**

Some discussion was then held on the role of paediatricians in the control of polio and how they interact with epidemiologists and public health workers. Surveillance is often limited to passive collection of clinically suspect polio, and none of these three countries have engaged in full AFP surveillance, although Albania had initiated a system before the current outbreak.

Professor Madgzik raised the issue of the goal of eradication – is it absence of paralytic cases, absence of the virus of human origin, or absence of virus in the environment. With the latter, how does one determine that wild virus is absent when environmental sampling in countries using OPV finds high titers of vaccine virus, although provisional testing has indicated the possibility of detecting wild polioviruses in these same samples. He then went on to comment about the wisdom of continuing to use OPV through eradication, the timing in the eradication effort when a switch to IPV should occur, and whether we should be concerned about eliminating all poliomyelitis including vaccine-associated disease.

Dr Wassilak indicated that eradication is of course complete removal of wild poliovirus from human circulation, as attested to by the absence of confirmed cases in the face of high surveillance, and including environmental sampling when the techniques allow it to be sensitively applied. This sampling is best applied with elimination of human disease in wide geographic areas; the interpretation of finding wild polioviruses can be complex, since the Netherlands has repeated been able to isolate wild viruses on occasion without any clinical cases being detected, emphasizing there may be a more appropriate time for wide-scale environmental testing. The issues of when to change vaccination policy are complex and could be risky for the overall population and particularly the hard-to-reach subpopulations, but guidelines have not yet been developed. Dr Combiescu agreed that VAPP should be eliminated but after wild poliovirus eradication. He stated his opinion that with IPV, the risk of reintroduction with the level of sanitation in some populations and subpopulations was not low, and combination vaccination is expensive. When Professor Madgzik stated that recent data from Hungary would suggest that one dose of IPV could prevent VAPP, but Dr Combiescu stated that such a conclusion is premature and may not be applied to other country situations.

Dr Tolstopiatov stated that perhaps NIDs are indicated in areas where there is not a high prior level of routine coverage, but may not be rational for all neighboring countries; for example, The Former Yugoslav Republic of Macedonia has an excellent history of the absence of polio so that why would mass vaccination be necessary? Dr Wassilak responded that the absence of poliovirus circulation could also allow any susceptible, undervaccinated individuals to remain susceptible and accumulate, that these persons and young vaccinated children can nonetheless shed wild poliovirus and that NIDs are a barrier or insurance against substantial virus transmission if importation occurs. Dr Greco stated that he has been impressed that overall coverage of 90% or higher does not mean that pockets of susceptible persons in the population do not exist and also that Albania is excellent evidence that the past problems will not go away. That is, Chinese vaccine is effective but the distance of persons from a major town and the cold chain practices showed a major problem in protection only after wild virus was introduced 20 years after it was last present. This raises the question: how safe are we, how secure about the past, how much do we not know about “holes” in immunity that use of IPV may not cover as well? Continued use of
OPV by those countries currently with that policy is insurance for all countries of the entire Region.

Dr Martin (UNICEF, Geneva) endorsed the recommendations on maintaining high coverage but indicated that even with high reported coverage, some countries have been unable to eliminate disease from wild poliovirus. This raises concerns about the epidemiology, the accuracy of routine reported coverage, and that population movements can heavily influence coverage. He stated that in terms of cost-effectiveness, NIDs are very effective. That is, even though they are expensive, there are the benefits of increased public awareness, involvement of politicians and health workers which may improve coverage over the routine, and that the supplemental immunization has the advantage of simultaneously limiting transmission. The nearly yearly outbreaks seen in the 1990s in Europe indicate the lingering immunity problems. Dr Wassilak indicated that there is even evidence that seroconversion following NIDs is higher than following the same number of doses by routine coverage because NIDs (always supplemental immunization) are given in the low season for enteroviruses.

Dr Ion-Nedelcu indicated that in Romania with 41 districts, coverage with OPV3 varied from 64% to 99%, with a median of 95%. Because of this variation and despite the problems with injection-provoked VAPP, Romania was not changing from an OPV policy except in the special circumstances of institutionalized children.

Dr Popova stated that the issue of outbreak control is important. In 1991, following the recognition of indigenous transmission, Bulgaria introduced zero-based weekly reporting and aggressive vaccination efforts. Any clusters of AFP have been considered an indication for mopping-up. However, after conducting NIDs in 1995, Bulgaria MOH is not eager to repeat. The outbreak of 1991 was in the ethnic gypsy population which was suspicious of specific directed vaccination efforts. During the NIDs for all children, house-to-house vaccination in gypsy quarters and vigorous social mobilization helped reach these children, but there are still immunity gaps.

Dr. Combiescu reiterated that some ethnic subpopulations have a different way of life and can be very hard to reach. Dr Imamovic questioned the coverage in the first round of the Albanian special campaign since cases continued. Dr Sallabanda indicated that international observers had evaluated the coverage and confirmed the reported data and that the effect of even one round was striking. A discussion arose again about immunization certificate requirements for border crossings: Drs Greco and Roure indicated that such requirements have proven ineffective for many diseases and is not recommended by international health code. Again, regarding coverage, the routine coverage figures can suggest no problem because of the way data are collected but surveys can indicate a coverage problem. Dr Combiescu closed the session by making the analogy of OPV vaccination as a damn, and that, like in the Netherlands, good surveillance for holes in the damn is necessary to prevent ‘floods’ of wild poliovirus and allows early repairs.

**Current status and control of EPI diseases in Europe: hepatitis B, measles, pertussis**

Dr Roure made a presentation on the current status of hepatitis B disease and immunization policy in the Region. Within Europe, there are subregions where the incidence of disease and prevalence of surface antigen carriers varies, with an increasing gradient across Europe of North to South and West to East.
### subregion HBsAg carrier prevalence

<table>
<thead>
<tr>
<th>Subregion</th>
<th>HBsAg carrier prevalence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northwest</td>
<td>&lt;0.1%</td>
</tr>
<tr>
<td>Midwest</td>
<td>0.1–0.5%</td>
</tr>
<tr>
<td>Southwest</td>
<td>1–5%</td>
</tr>
<tr>
<td>East (highest in CAR)</td>
<td>2–7%</td>
</tr>
</tbody>
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A vaccination strategy directed at vaccinating only persons at high risk has not changed the incidence of disease, or rate of increase. The most effective policy is in medium to high risk endemic areas, universal immunization in infancy.

Measles policy was discussed indicating that those countries with a 2-dose strategy and >95% coverage were nearing elimination of measles. Overall the Region has experienced a 98% decline in reported incidence, with 5–10 countries approaching the opportunity for elimination. However, three countries do not collect notifications of measles, in 1994 the overall coverage with one measles vaccine dose for the Region was 82%, with 12 countries under 80%. Outbreaks continue to occur in many countries with high coverage.

**Country experiences**

Professor Magdzik presented the measles incidence trends in Poland with changing immunization policy. In 1992, a 2-dose policy was introduced and second dose coverage reaching 97% overall in 1995. Nonetheless, disease continues at 1.9/100 000 with the highest risk in the second year of life. Data by district from 1991 indicated variation of coverage by district which had decreased by 1995. In 1997, it is hoped to begin laboratory confirmation of cases.

Dr Popova presented the plan of hepatitis B elimination in Bulgaria by 2020. With an HBsAg carriage rate of 3–5% and 23% of carriers HBeAg positive, selective vaccination began in 1988. There were some decreases in infant cases, but increases were seen above 15 years of age. Immunization began of sexually active adolescents. In 1991, universal infant immunization began, reaching 100% by 1995. Overall disease has continued to increase in 20–29-year-olds. With vaccination now also targeted at older cohorts, the projection is low endemicity by 2020.

Dr Greco presented on the experience of acellular vaccine use in Italy following the recent clinical trial, and the historical basis for low whole-cell coverage in Italy, which was due to a general impression by physicians that the vaccine caused side effects too frequently to be worth routine use and due to the vaccine not being included in the mandatory vaccination programme. When questioned about the incidence in children under one year of age, Dr Greco indicated that Italy experienced the typical non-vaccinated population age distribution. A question was raised about acellular vaccines in combination, and comment was made of apparent negative interaction on Haemophilus influenzae type b antibody titers in combined vaccination with acellular pertussis vaccine, suggesting that ideal combination vaccines may not be easy to derive and immediately available.

Many participants discussed their country’s pertussis vaccine (wholecell vaccine) policy and experience, particularly indicating low risk of reported adverse events in the Czech Republic, Slovakia and Romania and all experiencing a reported incidence of pertussis under 0.5/100 000. Dr Bukumirovic indicated that in Yugoslavia, from 1986 through 1995 the incidence was 2.2/100 000 with a high peak in 1987. Dr Sallabanda indicated that until 1991, Albania produced
its own DTP. With UNICEF-supplied vaccine since 1992, the incidence was 3.5/100 000 in 1995. Representatives from Bosnia and Herzegovina indicated dropping coverage during the war but no apparent outbreak; low coverage persists in some areas. Other representative reported high coverage and low levels of reported adverse events.

**Monitoring of adverse events following immunization**

The topic then turned to monitoring of adverse events following vaccination. Dr Salmaso (ISS, Rome) began by indicating that monitoring is helpful in establishing the frequency of given adverse events, which can be useful in formulating and modifying vaccination policy. She discussed the experience of studying data on adverse events following whole-cell DTP immunization in the clinical trial (62 sites, 15 601 children) compared with data from an ad hoc surveillance of adverse events following open use of licensed whole-cell vaccines by the same nurses (36 sites, 1700 children) and with data from routine passive surveillance to the Ministry of Health representing millions of children.

The differences in the approaches of surveillance in this comparison can be indicated as follows:

<table>
<thead>
<tr>
<th>Double-blind trial</th>
<th>Ad hoc surveillance</th>
<th>Passive monitoring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selected population</td>
<td>Selected population</td>
<td>General population</td>
</tr>
<tr>
<td>Fixed schedule</td>
<td>Flexible schedule</td>
<td>Flexible schedule</td>
</tr>
<tr>
<td>Non-routine vaccine</td>
<td>Routine vaccines</td>
<td>Routine vaccines</td>
</tr>
<tr>
<td>Double-blind</td>
<td>Open label</td>
<td>Open label</td>
</tr>
<tr>
<td>Trained staff</td>
<td>Trained staff</td>
<td>General staff</td>
</tr>
<tr>
<td>Audited active surveillance</td>
<td>Non-audited active surveillance</td>
<td>Passive surveillance</td>
</tr>
</tbody>
</table>

Differences found include differences in the reporting of common events, which are of course underreported to the passive surveillance but also the reporting of hypotonic-hypo-responsive episodes following DT in the trial whereas no such events following DT were reported to the passive system. These finding indicate that monitoring of adverse events must be focused on the questions that can be answered; specifically, how much does one want to know? Monitoring is appropriate for improving the quality of services and assuring the safety of licensed products. Such a system, as shown in this comparison, will not detect local and many common systemic events, find a low reporting even of some serious events, may lack a precise denominator, suffer from inconsistencies due to non-training of the reporter, may have a lack of follow-up information (although this could be added), and may have a lack of feedback unless efforts are made to use the data. A question was raised of the role of the paediatric associations in discussing results of monitoring and vaccine safety.

Dr Salmaso indicated that paediatricians in Italy are fundamentally important in the vaccination of children, as their opinions sway the opinions of parents in accepting non-compulsory vaccines. In Italy, with the freedom of individual choice, mothers see the state taking responsibility with the compensation system for adverse events following mandatory vaccinations and unless the paediatricians persuaded parents to use non-mandatory vaccines, their use is low.
Dr Popova indicated that in Bulgaria, refusals to vaccination are approached vigorously. Journalists are eager to investigate rumors of adverse events being due to immunization. Also, the ethnic minorities require a special approach in easing fears once rumors of adverse events begin. Professor Madgzik also indicated a comparison of active and passive surveillance systems in Poland indicated similar results. He indicated the frequency of adverse events following DTP was not found as frequent as reported elsewhere, and that monitoring systems are useful for vaccination policy regarding voluntary versus mandatory vaccination. Paediatric associations are involved at the national level, and should be at the European level in setting vaccine policy. Further discussion indicated that in several countries, further education of physicians is needed on the known safety of vaccines in use, so that the objectives of vaccine use are clear for optimal policy.

Dr Wassilak gave an overview WHO recommendations on surveillance systems for monitoring adverse events following immunization and setting reasonable expectations for what objectives can be reached with such monitoring. Using the availability of controlled studies and high quality surveillance results, the Institute of Medicine in the United States had made a classification of illness purported to be associated with immunization into categories in which the available controlled studies and other evidence supports or establishes a causal relationship. This review has been very helpful to in the discussion of vaccine safety for many immunization programmes.

A discussion was begun on the monitoring systems for adverse events already in existence in each country, with a focus on whole-cell DTP and OPV events. The discussion went on to include some issues of AFP surveillance in general. Dr Bukumirovic from Yugoslavia indicated experiences with the reporting of vaccine-associated paralytic polio or clinical poliomyelitis of unknown source and the problems of completing viral investigations, even the problems of collecting all the relevant epidemiological data up to recently. Reported vaccine-associated paralytic polio has occurred at a rate of 2–3 cases per year.

Dr Ion-Nedelcu from Romania reported some experiences with the AEFI monitoring system overall there. Since 1992 there has been as system of AFP surveillance, previously VAPP was detected only as suspected polio. They have instituted a monitoring system for AEFI based on the WHO model for one year with multiple reporting sites and including zero monthly reporting, and have found programmatic errors with BCG vaccination. The passive system for AEFI for measles and DTP vaccination may be extended to a more active system.

Bulgaria has a national institute for drug control, with investigation by a team of reported adverse events. This was recently tested by the investigation of a death following HBV vaccine. A more active monitoring system is planned.

**Programme evaluation**

Dr Roure presented on the means of assessing coverage, with issues raised on the system of vaccine delivery, assessment of the appropriate numerator and denominator, data collection, analysis, use of the data, accuracy and validation. Programmes use various means to estimate coverage, which makes precise comparison between programmes difficult. With various possible decisions for the source of the numerator and denominator, what is particularly important in consistency within each programme, and adherence to guidelines on the inclusion of all children in the denominator.
Dr Guérin presented a discussion on vaccine efficacy and its field evaluation. The proportion of cases reported with a history of vaccination will increase by increasing vaccine coverage and/or lower vaccine efficacy. One must be concerned of non-biased case detection and reporting and the specificity of the case definition, but the field evaluation of vaccine efficacy is a useful screening method for considering potential problems in vaccine delivery. Dr Salmaso gave an example in which the field evaluation of mumps vaccine efficacy in the same community as measles vaccine efficacy indicated a high estimate for measles vaccine but a low estimate for mumps vaccine. This suggested an accurate history and surveillance for clinical measles cases, but limitations in the clinical case definition for mumps.

Dr Ciotti discussed the uses of surveillance data and assessment of the quality of surveillance. WHO had some recent experiences in applying a protocol for the evaluation of EPI surveillance systems in Hungary, the Russian Federation and Kazakstan. The most effective surveillance systems are those that link the collection of reported data with action and policy, in which the data are collected in timely and complete manner and providing feedback to the reporting sources. Targets can be set for monitoring the timeliness and completeness of reporting and performance indicators have been recommended. Performance indicators can not only evaluate reporting, but can also have other value in indicating the application of appropriate secondary prevention and therapeutic activities, including the provision of antibiotics and antitoxin in diphtheria cases. When presenting the performance criteria for AFP surveillance, questions were posed on the appropriate denominator, again with a focus on children under 15 years of age; however, some countries have applied AFP surveillance to the entire population. Country experiences in AFP surveillance were given for Romania and Bulgaria, concerning the recruitment of reporting sites and improving indicators.

VACCINE SELF-SUFFICIENCY AND SUSTAINABILITY

Self-sufficiency

Ms A. Batson, WHO/GPV/HQ, started the session by specifying the objective of vaccine self-sufficiency is a sustainable and reliable supply of existing and new vaccines of high quality. She emphasized that the cost-sharing of vaccines within the programme is increasing. She reviewed the estimated number of deaths due to vaccine-preventable and potentially vaccine-preventable diseases which are prevented by vaccination. These illness range from smallpox which has been eradicated, the EPI Target Diseases and then those diseases for which vaccination is not included in all programmes, and those diseases where vaccines are mainly not available, and research and development is still on-going. She emphasized that in the future, 8–10 million deaths could be prevented if and when these new vaccines become available, which may be 10 to 15 years. In order to gain sustainability, it was absolutely crucial that the financing was organized through individuals governments, as donor support cannot be relied upon into the long-term. Therefore, government commitment is the most important issue in vaccination and it is necessary to look into what was affordable in each country. The key at present to vaccine availability and self-sufficiency is that different vaccines be available at different prices for different markets.

The plot of the log of Gross Domestic Product per capita and log of population, with lines drawn separating countries into different four bands (A, B, C and D) was presented. Band ‘A’ countries will require continual financial support. Band ‘B’ countries will require partial financing for many years before reaching self-sufficiency. Band ‘C’ countries will be more rapidly self-sufficient and those of Band ‘D’ should already be self-sufficient. Countries with representatives participating in
this meeting are generally in Bands B and C. In Bands ‘B’ and ‘C’, procurement training is the most important and these countries are estimated to need at least 2 to 3 years to become sustainable. She emphasized that those countries which are farthest away from sustainability should not introduce hepatitis B, in spite of its overall cost-effectiveness in order to focus on the primary EPI targets.

On a global level, new vaccines are much more expensive than the current EPI vaccines. She emphasized the relevance of targeting; with countries in Band ‘A’ the first target for donors, countries in Band ‘B’ should take more responsibility, maybe share lending, where the first year 80 per cent is donor financed and 20 per cent governmental, and then gradually a larger share of the vaccines costs should be government financed. Countries in Bands ‘C’ and ‘D’ do not need further donor support. For hepatitis B vaccine, donors should not substitute for government support but fill gaps. For the standard EPI vaccines, different prices for different markets has worked quite well, but that for the new vaccines, it has been much more difficult to negotiate different prices for different markets. It is therefore a real issue how to ensure lower prices for countries in Band ‘A’. The manufacturers’ current argument is that, in order for the research and development to be financed, rich countries have to pay the real price and that the UNICEF price is a false price. It appears that manufacturers will give better prices to countries in Band ‘A’ if the international community ensures that the grouping is realistic.

She emphasized the dilemma of the two questions: how much vaccine do we need versus how much money do we have? The vaccine price gets lower by the greater amount you can order, but you cannot give the price to the financing institution as the price of the vaccine is going to depend on the volume ordered. A minimum of five-year funding is needed in order to start a new vaccine programme. Since it is often difficult for the Ministry of Health to convince the Ministry of Finance of the importance of different vaccination programmes, cost-effectiveness software is being developed by WHO, which will be available after about 8 to 9 months as field testing is still ongoing. Ms von Kohl, UNICEF Romania, then summarized the status of the countries around the table: countries in Band ‘A’ who most need external support are Albania and Bosnia and Herzegovina. The countries in Band ‘B’ who need 80–100 per cent of the financing are Croatia, the Federal Republic of Yugoslavia, Romania and The Former Yugoslav Republic of Macedonia. Those countries in Band ‘C’ and ‘D’ who finance vaccines with 100% government funds are the Czech Republic, Hungary, Poland and Slovakia.

In discussion, Dr Balladelli, WHO Croatia, asked about the criteria which were used to decide the lines between ‘A’ and ‘B’. It was explained that some judgment was used; World Bank’s estimations are used for GDP and that some of the Bands could perhaps shift a bit. Of course, changes in status could occur, for example by renewed conflict. Dr Greco stated that vaccine is only a small cost of the whole health budget. He would therefore like to diminish the emphasis on vaccine cost. Vaccines are very cheap compared to other medical supplies. If vaccine prices were frozen to the UNICEF prices, no research and development would take place. For the upper Band countries, since vaccine prices have been released to market prices, much more research and development has occurred.

**Quality of vaccines**

Dr Milstien discussed quality of vaccines. To improve vaccine quality, she especially emphasized the importance of the National Control Authorities independent of the vaccine source. Developing regional control networks will strengthen the National Control Authorities. She stated that there are six critical functions of NCAs – license vaccine, evaluate clinical performance, release
vaccines by lot, perform lab testing, post-marketing surveillance of field performance, and inspect facilities and processes. Although an NCA is necessary for all countries, not all NCAs need to perform all six functions.

Of the NCA functions in vaccine producing countries, quite a lot of progress had been made from 1994 to 1996 in the number of countries who fulfill the six functions, with post-marketing surveillance as the function which was fulfilled by fewest countries. In order for vaccines to get the status “known good quality vaccines” (KGQ) the NCA controls the production and all six functions are done. Of the 23 countries producing vaccines in Europe, there were four countries which did not have all six functions. For those 27 countries which are not producing, the countries who are producing have some responsibilities. For those countries where the NCA is not present, it needs to be installed. Ms von Kohl commented that often inspection and surveillance are the weakest areas and there seems to be need for some fieldwork. Every step of manufacture needs to be reviewed. She also emphasized that surveillance was taken much more seriously in drug productions than in vaccine production. AEFI surveillance is often solely the EPI Programme Manager’s responsibility. The Romanian participant commented that a NCA is new viewpoint, that traditionally, those who produced vaccines perform internal controls, which is not acceptable any more.

**Vaccine procurement**

Mr Wasselin discussed vaccine procurement; he emphasized that as vaccines are biological products, the consequences are that every batch is not the same. Control testing alone is not sufficient, but also “good manufacturing practices” are necessary. He also emphasized that the customer was quite captive in that vaccination in most places is mandatory and that the market is quasi-monopoly in that there are only 20 major producers in the world. Another issue particular to vaccines is the cold chain. He emphasized that on the issue of quality, there were no compromises accepted – either vaccines are good and can be used or they are not good and they should not be.

It is crucial to work on the cold storage and custom procedures beforehand in order to ensure no wastage. Vaccine should only be bought from pre-qualified sources. The NCA in each country should register the vaccines coming into the country. WHO-recommended sources should be used and there are 20 pre-qualified manufacturers in the world. If bidding processes are used, (which is often donor forced, e.g. by the World Bank) these normally take six to eight months to come to a result and after the offer has been received pre-qualifications are necessary to obtain. On an international competitive bidding, there is a need to involve the NCA, or WHO. It is important that the vaccines are licensed in the country of origin. An important issue is to look at whether the supplier is a true supplier, not only a package agency. It is important not to take the vaccines for granted, a statement of quality is always needed.

Mr Wasselin then went to talk about contracts with the manufacturer, for which there is a WHO document. It is important that the contract has certain minimal specifications: 1) the packaging and shipping of vaccines; 2) shipment terms. [There are two shipping requirements: one in which the provider is responsible for the quality of the vaccines to your door; the other in which the manufacturer only has responsible for the quality of the vaccines until they are on the plane transporting them]; 3) delivery date, which should be clearly specified as is the delivery point. Delivery information needs to be received with the arrival of the vaccines. Vaccine cold chain monitor cards are absolutely necessary and should not cost the procurer anything. The supplier should be pre-qualified and registered with the NCA at country level. Supplier performance can evaluated by whether the delivery is timely, in the right place, on the right date. The cold chain needs to be ensured not only on national level but also throughout the country. For the process of
procurement entity, he recommended a five-year forecast, NCA action and internal bidding. Countries are supposed to be rapidly self-sustainable on vaccine procurement. Many governments have been provided free with vaccines for many years, and so techniques for procurements are therefore not in place. Vaccine procurement is "business", not always understood by the people doing procurement. Vaccines are considered drugs, therefore responsibility for procurement is often given to pharmacists; generally this is good as pharmacists are used to procuring drug supplies.

Dr Martin emphasized that a training manual and guidelines on international procurement exist and that training workshops are planned for next year on this issue. Dr Greco inquired about vaccine vial monitors (VVM). Mr Wasselin informed the meeting that vial monitors are being developed by WHO and UNICEF, which should be on every vial. This is a small sticker which changes with time exposure to increased temperatures. With polio vaccine, all suppliers recently accepted to have this on every vial, which is extremely important when it comes to limiting wastage. Discussion indicated that the VVM system is working but that national staff are often not familiar with cold chain and further help is needed from UNICEF or WHO on this issue. Dr Milstien stated that it only takes one hour to train people in using the VVMs.

Poland informed the meeting that they were following WHO policy for open vials. Discussion indicated that there remains some confusion on the open vial policy. They also informed the meeting that they had been told by their manufacturer that the vaccines would be 10 per cent more expensive if the VVM was on them. Mr Wasselin emphasized that Poland would need to negotiate this and refer to an agreement which has been made with the manufacturer, that this vial monitor should not increase the price of vaccines. Dr Ciotti asked whether licensing inspection would have any affect on price and delivery. The reply was that licensing was no cost to the suppliers, they just had to open the facilities for inspection.

Vaccine delivery

Mr Wasselin then discussed vaccine delivery. In his opinion, the cold chain is a less important issue in Europe than in Africa and that problems in relation to climate and temperature in Europe are more related to the cold climate, where heating is needed instead of cold box, as certain vaccine cannot be frozen (hepatitis B, DTP and TT). Normal refrigerators are not usable for vaccine storage, only those designed for such use. The availability of energy has to be stable, which is a problem in many areas. For transport, passive refrigeration could sometimes be used, not for refrigerated trucks. Active refrigeration was essential for the storage of vaccine on the local, regional and national level. He emphasized the cold chain monitors were the most useful tools to ensure quality vaccine at user delivery points. He then went on to talk about safe injections and the safe disposal of needles. He talked about the auto-destruct syringes developed by WHO which are currently costly. Those were initially distributed 5 million syringes per year, but now there are 60 million of auto-destruct syringes distributed per year. There is a high workload injector, which requires expertise to use. He also mentioned the low workload injector, which is being developed and should be available by the year 2000, could provide vaccine in powder form without needles, and would be inexpensive.

The chairperson emphasized needs for training in vaccine delivery. She also emphasized the problem of low temperature protecting refrigerators, that there was only one manufacturer in the world. She also reminded people of WHO guidelines for safe injection and protection of the injector. UNICEF and WHO have a close collaboration and have recognized that cold chain
management in general needs to be improved and training modules are available. The turnover of trained staff is a very important issue at country level.

CONCLUSIONS AND RECOMMENDATIONS

Drs Roure and Ramsay presented the conclusions and discussed the recommendations with the participants; modifications were made accordingly.

1. Consensus statement

1.1 Vaccine-Preventable Diseases represent one area of communicable diseases for which highly effective and cost-beneficial measures exist for prevention and control. The routinely administered vaccines are included in the Expanded Programme on Immunization, and within the European Region have been included in public health programmes for over 30 years.

1.2 Within the Health For All in the Year 2000 objectives adopted by the Members States of the European Region of the World Health Organization, target 5 of the regional strategy included the elimination of indigenous measles, mumps, congenital rubella, diphtheria, poliomyelitis and neonatal tetanus from the Region by the year 2000. Targets currently include goals for reduced morbidity and operational targets on immunization coverage, disease surveillance and when necessary, outbreak response.

1.3 Based on improvements in routine immunization coverage globally and the progress in polio elimination in the Americas, the World Health Assembly resolved to globally eradicate poliomyelitis due to wild poliovirus by the year 2000. Based on progress in Member States, the European Advisory Group in 1994 was confident that the Region could eliminate indigenous poliomyelitis due to wild poliovirus by the year 1997.

1.4 Within central and eastern Europe, strong public health programmes have been responsible for the delivery of vaccines to children and have been supported by institutions that have developed and manufactured vaccines of high quality. However, political/economic changes which occurred in the 1990s have placed challenges on all of these programmes. In particular, new countries were formed within central and eastern Europe and armed conflict occurred in some areas placing particularly severe burdens.

1.5 The economic situation placed on the countries of central and eastern Europe has been a challenge to existing vaccination programmes, despite humanitarian aid and the assistance of the international community. Achieving the targets will clearly be much more difficult than previously believed, thus elimination/eradication of the vaccine-preventable diseases in the Region will require firm political commitment and additional financial and technical support from countries and the international community.

1.6 During the 1990s, a large outbreak of diphtheria developed and spread in the NIS, posing a threat to the programmes of central and eastern Europe. In addition, despite successes in control of poliomyelitis in members states of the Region, introduction in 1996 of wild type 1 poliovirus into an area previously polio-free for many years has caused an outbreak affecting Albania, the Federal Republic of Yugoslavia and Greece, to date. This has reinforced the message that “communicable diseases don’t stop at borders”.
1.7 The meeting stressed the issue of EPI programme sustainability but stressed that governments must take increased responsibility for financing their programmes. As donor funds are limited, they will increasingly be targeted at the most neediest countries. Based on the WHO/UNICEF global breakdown of countries into tiered categories reflecting their ability to be financially self-sufficient. Countries in category A need to finance 10–25% of their routine vaccine and EPI cost and be the target of donor support. Countries in category B need to cover 80–100% of their EPI programmes within 3–4 years. Countries in category C need to cover 100% of their EPI costs. Ministries of finance and government decision makers need to be convinced that immunization programmes are a priority by using strong arguments made on the basis of cost-effectiveness studies.

1.8 WHO has defined six essential functions of National Control Authorities (NCAs) which each country should exercise to ensure vaccine quality. Of the 50 member states in the European Region, there are 23 vaccine producing countries and all but four of the NCAs in these countries are performing all 6 functions. Of the remaining 27 non-producing countries, however, only 3 NCAs are performing all the necessary functions.

2. General recommendations

2.1 This workshop provided an opportunity to discuss similarities and differences in the approach to EPI programmes. With the challenges continuing to be faced by many programmes, progress is being made. It is clear that cooperative bilateral efforts by external governments in vaccine-preventable diseases is beneficial and welcome. Western European countries are strongly recommended to continue to work with UNICEF and WHO in investing in the support of these programmes for humanitarian aid and mutual benefit.

2.2 The subregional nature of this workshop indicates the epidemiological reality of shared borders and shared subpopulations. Geographic groupings of countries for similar workshops on communicable diseases is a sound concept to be continued, particularly focusing on vaccine-preventable diseases.

3. Recommendations to countries

Review of the current operational targets indicate that some targets are generally unlikely to be met in individual countries. These include the targets for measles, congenital rubella syndrome and hepatitis B. The constraints to meeting those targets include vaccine sustainability and laboratory support services as well as political and epidemiological barriers.

3.1 The participants of the workshop reviewed many facets of immunization programmes. Although there is variability in the immunization schedules used in the participants’ countries, there are basic similarities. Current policies and practices should be reviewed on the contraindications to vaccination to see if they are consistent with WHO recommendations, as some countries continue to miss some opportunities for timely vaccination of children on the basis of perceived contraindications.

3.2 The coverage of the target infant population with the vaccines used is a critical part of the operational targets. Participants acknowledged the challenges in delivering vaccines to ethnic minorities and other hard-to-reach groups, often involving migrations across borders. The data on coverage should be critically reviewed to assess the accuracy of current methods of estimation, analyzed for each district at a country level, and validated by one or more additional means. In
particular, delivery of vaccination and data on coverage levels in hard-to-reach subgroups must be critically reviewed.

3.3 Current approaches used in disease surveillance should be reviewed in order to reach common case definitions and laboratory confirmation of vaccine-preventable diseases. The timely and efficient reporting of illnesses and epidemiological data and use of these surveillance data for action can be reviewed for further improvement in several countries. In particular, laboratory confirmation of measles, pertussis and hepatitis B need to be strengthened.

3.4 Where necessary, all necessary measures (including regulatory change) should be taken to ensure adequate surveillance of neonatal tetanus, congenital rubella syndrome and hepatitis B in particular.

3.5 The importance of an emerging private sector of health care delivery in many countries requires a continuing assessment of how such services can be integrated into overall public health programmes and practitioners informed of current EPI recommendations.

3.6 The current poliomyelitis situation has been met with rapid responses with supplemental immunization activities on the part of the affected countries and many neighboring countries. Requirements for showing proof of immunization at border crossings are, in general, ineffective control measures. Instead, more effective means of poliomyelitis control and prevention involve cooperative efforts among neighboring countries in their policies and approaches to vaccinate hard-to-reach subpopulations.

3.7 Combined, coordinated immunization efforts using OPV (either National Immunization Days or sub-NIDs) are planned in many countries in early 1997 at the same time as Operation MECACAR. WHO and UNICEF strongly recommend that all area countries and those of non-participants should consider holding NIDs or sub-NIDs or mopping up activities to join this concerted campaign. This coordinated effort will be a highly effective tool of simultaneously breaking the transmission of wild poliovirus in the area and in forming a barrier against reintroduction of the virus in the near future. Despite the current challenges, participants are confident that, with the planned appropriate control measures, the eradication of poliomyelitis will be achieved by the year 2000 or before. As well as this, continued efforts to ensure high routine vaccine coverage must continue.

3.8 Surveillance for acute flaccid paralysis, including the logistic and laboratory support needed, requires further attention in all countries. This surveillance is necessary in order to detect any possible cases of polio due to wild poliovirus in order to target future control efforts, and to prepare for eventual certification of each country being polio-free.

3.9 Countries are urged to promote vaccination programmes to ensure commitment at the highest political level. Adequate training and development of health care workers involved in immunization should be established and public health education programmes need to be strengthened.

3.10 For the introduction of new vaccines, the meeting agreed that before introducing a new vaccine, the government should develop a financing plan and should be assured of at least five years funding at the national level.
3.11 Countries should have a National Control Authority performing the six essential functions, depending on the source of vaccine.

3.12 Countries should ensure the continued training of trainers in cold chain management, and ensure that resources are in place to continue monitoring and management of the cold chain after the withdrawal of external agencies.

3.13 Safe injection practice should be maintained and improved to conform to WHO guidelines in order to protect the care provider, the recipient, and the community.

4. Recommendations to WHO

4.1 WHO should coordinate the development and expansion of the laboratory network for polio, measles, pertussis and diphtheria.

4.2 WHO should organize intercountry workshops and training on the surveillance of EPI diseases (including AFP), vaccination policies and EPI programme evaluation.

4.3 WHO should convene an intercountry meeting on vaccine quality control and work with countries to ensure that the six essential functions of National Control Authorities are being performed.

4.4 WHO should take a coordinating role in working with other partners in development to secure technical and programmatic support for training, surveillance and prompt epidemic response.

5. Recommendations to partners in development

The technical and programmatic assistance provided by the Italian Co-operation, the Istituto Superiore di Sanità, WHO and UNICEF and NGOs is greatly appreciated by participants.

5.1 Partners in development should assist countries, when and where necessary, in the implementation of their national plans to achieve the targets in the procurement of vaccines, programme evaluation and training. Donor support should be targeted at countries in categories A and B, who most need financial aid.

5.2 UNICEF, WHO and other partners in development should organize special training courses on vaccine procurement and quality control.

5.3 WHO/UNICEF should organize intercountry workshops and training on EPI programme management, including distribution of vaccine and cold chain.

5.4 WHO/UNICEF should assist countries in developing methods to assess the accuracy and effectiveness of routine coverage data reporting and analysis.

5.5 WHO/UNICEF should assist countries in developing strategies to ensure safe injection practice, in line with the WHO guidelines.
Annex 1

PROGRAMME

Wednesday, 23 October 1996

18.00 – 19.00  Registration

Thursday, 24 October 1996

08.30 – 09.00  Registration
09.00 – 09.30  Official opening
               Italy, WHO, UNICEF

1st Session: Management of immunization programmes and policies

09.30 – 10.00  Overview of immunization programmes in Europe          C. Roure
10.00 – 10.30  Immunization schedules                               C. Roure
10.30 – 10.45  Coffee break
10.45 – 11.15  Contraindications: case study                      N. Guérin
11.15 – 11.45  Introduction of new antigens and booster doses policy in immunization schedules C. Roure
11.45 – 12.30  Discussion
12.30 – 14.00  Lunch

2nd Session: Surveillance for action

14.00 – 14.20  Principles of surveillance: case definition, laboratory, monitoring, reporting M. Ramsay
14.20 – 14.40  EPI surveillance in Europe                           M. Ciotti
14.40 – 15.10  Polio eradication in Europe: current status and strategies S. Wassilak

Polio control strategy: country experience

15.10 – 15.30  Albania                                          A. Sallabanda
15.30 – 15.45  Coffee break
15.45 – 16.00  Yugoslavia                                      Bukumurovic
16.00 – 16.15  Bosnia and Herzegovina                         Z. Puvacic
16.15 – 16.30  The Former Yugoslav Republic of Macedonia     Kismanova
17.00 – 17.30  Discussion

Friday, 25 October 1996

09.00 – 09.30  Current status of control of EPI diseases in Europe: measles, pertussis, hepatitis B C. Roure

Surveillance and control of EPI diseases: country experience

09.30 – 09.50  Measles: Poland                                    W. Magdzik
09.50 – 10.10  Hepatitis B: Bulgaria                             S. Popova
10.10 – 10.30  Pertussis: Italy                                  D. Greco
10.30 – 10.45  Coffee break
10.45 – 11.15  Discussion on control of EPI diseases
11.15 – 11.30  Monitoring of adverse events following pertussis trials and public health practice in Italy S. Salmaso
11.30 – 12.30  Discussion on monitoring of adverse events     S. Wassilak
12.30 – 14.00  Lunch
Programme evaluation
14.00 – 14.20  – Vaccination coverage       C. Roure
14.20 – 14.40  – Vaccine efficacy           N. Guérin
14.40 – 15.00  – Quality of surveillance    M. Ciotti
15.00 – 15.15  Discussion
15.15 – 15.30  *Coffee break*
15.30 – 17.30  Country working groups
               Achievability of EPI targets in Europe

Saturday, 26 October 1996

3rd Session: Vaccine self-sufficiency and sustainability

09.00 – 12.00  Vaccine procurement           J. Wasselin
               Vaccine delivery                   J. Wasselin
               Quality of vaccines                J. Milstien
               Vaccine self-sufficiency            A. Batson
12.00 – 12.30  Conclusions and recommendations C. Roure
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