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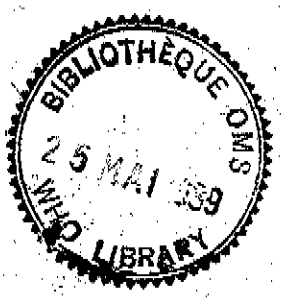
EXPANDED PROGRAMME ON IMMUNIZATION

Report of the Meeting of National Programme Managers

Budapest
26–29 April 1988



1989

EUR/HFA target 5

TARGET 5

Eliminating seven specific diseases

By the year 2000, there should be no indigenous measles, poliomyelitis, neonatal tetanus, congenital rubella, diphtheria, congenital syphilis or indigenous malaria in the Region.

Index:

IMMUNIZATION
COMMUNICABLE DISEASE CONTROL %MT%
NATIONAL HEALTH PROGRAMS
EUR

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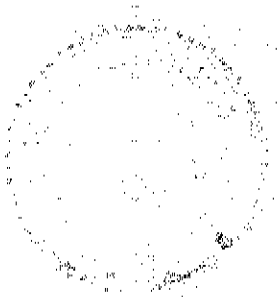

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Introduction

The second meeting of the European Advisory Group (EAG) on the Expanded Programme on Immunization (EPI) was held in Rome in December 1987. One of its recommendations was that a meeting should be organized early in 1988 for national programme managers to discuss the steps required to achieve target 5 of the strategy for health for all by the year 2000 and the objectives established at the Second Conference on Immunization Policies in Europe, held in Karlovy Vary in 1984.

The meeting of national programme managers for EPI was held in Budapest from 26 to 29 April 1988 at the National Institute of Hygiene. The meeting was attended by representatives of 25 countries (see Annex 4) and was chaired by Professor S. Dittmann; Dr A. Vass served as Vice-Chairman; Dr D. Salisbury and Dr W. Orenstein served as rapporteurs and Dr B. Bytchenko as secretary.

The objectives of the meeting were to help national programme managers to develop and then implement strategies necessary to:

- substantially reduce morbidity and mortality from diphtheria, pertussis, tetanus, measles and viral hepatitis B, and to eliminate poliomyelitis by providing continuous immunization against these diseases for every child in the Region by 1990;

- reduce morbidity from mumps and rubella by immunizing children with the measles-mumps-rubella vaccine;

- promote self-sufficiency in the provision of immunization services in the context of comprehensive health care services;

- promote regional self-sufficiency in the production and quality control of the vaccines needed for the programme.

Some children are denied immunization because of false contraindications. To achieve high coverage and hence eliminate disease, the use of such false contraindications must be overcome. The recommendations of the EAG on contraindications, both genuine and false, to EPI vaccines were discussed and adopted by the meeting (Annex 2). These recommendations provide a framework for each European country to use according to its own circumstances.

The report of the second meeting of the EAG served to focus the discussions of the present meeting, particularly with regard to the eradication of poliomyelitis, the introduction of the measles-mumps-rubella vaccine and certain managerial issues.

To provide the meeting with the most up-to-date information, a questionnaire was sent to each national programme manager to complete before attendance at the meeting. Information was sought on the most recent coverage data, methods of measurement, surveillance systems, disease incidence, impediments to achieving targets and evaluation of the cold chain (that ensures that vaccines are kept in good condition and at the right temperature).

The working papers supporting the plenary presentations are listed in Annex 3.

Results of the survey

All 32 countries in the Region submitted replies. In general, substantial progress in national immunization programmes has been made since the 1984 Karlovy Vary meeting. This progress includes:

- the reaching of national and WHO targets in some countries;
- more accurate assessment of vaccine coverage;
- the introduction of new vaccines (measles-mumps-rubella and rubella) in a number of countries;
- improvements in the cold chain;
- the use of computers and other managerial aids;
- a national campaign and follow-up in Turkey;
- management initiatives in the United Kingdom; and
- a programme review in the USSR.

Nevertheless, substantial impediments to progress were identified and must be overcome. These impediments include:

- financial constraints (including vaccine costs);
- the absence of accurate data on the prevalence of EPI diseases in some countries;
- a lack of political will to support immunization;
- suboptimal vaccines and lack of diagnostic abilities.

Some lessons have been learnt from the efforts made to reach immunization goals. They include the importance to a successful programme of individual accountability for implementation, performance review from the local to the national level, feedback of information to all levels and clear guidance on contraindications.

Thirteen countries have agreed to participate in a cold chain study: ten have been visited and a protocol is available; the study is in progress in five countries and in three the results are already being analysed.

The regular reporting of immunization coverage occurs in 22 countries and is supplemented by coverage surveys in 8 and serological surveys in 11; only 7 countries use estimates of coverage. While 29 countries reported coverage for poliomyelitis (20 in excess of 90%), 9 reported more than 90% coverage for measles. Only two countries, however achieved greater than 90% coverage for rubella by 2 years of age.

Considerable progress has been made towards the elimination of poliomyelitis in the Region. Eleven countries reported fewer than 10 cases each per year between 1980 and 1988. Only four countries have reported over

10 cases per year during this period. While some countries accept only laboratory confirmed cases, in others cases were reported based only on clinical criteria. Twenty countries included imported cases in the total notifications and 17 countries included vaccine-associated cases. Oral (live) poliomyelitis vaccine (OPV) is used exclusively in 16 countries, inactivated poliomyelitis vaccine (IPV) alone in three; both OPV and IPV are used routinely in six.

Measles is notifiable in 22 countries, four countries have sentinel systems (whereby only selected people or centres report on the disease) and one uses surveys. The incidence is not known in four countries. Eleven countries have reported "very low" incidence. Eighteen countries use single antigen measles vaccine, 3 use measles-mumps and 11 use measles-mumps-rubella.

Reporting of rubella is carried out in 25 countries but information on rubella incidence is not available from seven countries. Only seven countries made information available on the number of cases of congenital rubella syndrome; these ranged from 0 to 88 between 1985 and 1987.

Neonatal tetanus has already been eliminated from most of the Region. In 1987, no cases were reported from 25 countries and 16 cases were shared between 3 countries. Diphtheria is also close to elimination in many European countries, 20 countries reporting no cases in 1987 and 11 countries fewer than 10 cases. However, one country reported significant problems with diphtheria elimination.

Pertussis appears to be common in much of the Region; only 14 countries report low incidence. Considerable under-notification occurs.

A summary of the replies to this survey of immunization programmes is attached as Annex 1.

Programme management and monitoring

Generally, encouraging progress has been made across the Region in meeting the objectives set at the Karlovy Vary conference in 1984. Countries in the developing parts of the Region have been very active in setting targets and establishing programmes. There are some indications of problems, however, with regard to the level of commitment to the EPI in some areas. Countries with well established systems reported that they had only relatively few and minor technical problems.

In many instances there is a lack of insight and motivation among health personnel, particularly physicians, regarding the importance of the EPI. Improving the situation will require more intensive education programmes for all health personnel, especially physicians and decision-makers, as well as for the general public. Immunization policies and practices and the cold chain should be covered in all medical school and nurse training curricula.

A critical review of the present extended lists of contraindications to immunization is needed. It is essential that publicity be given to the real contraindications and that false contraindications be exposed as such (see Annex 2).

In the various types of health system, centrally formulated EPI policy may not be properly implemented at the local level. This suggests a need to foster better coordination and cooperation between different agencies and administrative levels. A lack of resources, including financial and manpower, affects the implementation of policy in a number of countries.

A number of countries reported difficulties in maintaining contact with, and surveillance of, minority groups known to be at high risk.

Some countries also reported problems with the cold chain relating to the transport and storage of vaccines. Southern European countries may anticipate more problems than northern countries. Interest was expressed in low-cost solutions to cold chain difficulties.

The primary objective of the EPI is to reduce morbidity and mortality from the vaccine-preventable diseases of childhood. With the progressive reduction in incidence of these diseases, it becomes increasingly important to improve diagnostic accuracy to differentiate these diseases from other conditions with similar manifestations. Standardized case definitions therefore facilitate the measurement of disease reduction targets, the development of effective surveillance systems, and the investigation of outbreaks.

Few country programmes have evaluated the completeness of their disease-reporting systems. Most countries believe that the reporting of diseases such as poliomyelitis and diphtheria is close to complete, while the reporting of diseases with a high incidence such as rubella, pertussis and measles is still very incomplete. In several countries in the Region, it has been documented that fewer than 25% of cases of measles and/or pertussis are reported. Although sentinel surveillance systems can be quite useful for monitoring trends in disease incidence and assessing the completeness of reporting by other means, programmes aimed at eliminating diseases will require complete reporting of suspected cases of the target diseases.

Elimination of poliomyelitis

Coverage

High vaccine coverage is a pre-condition for the elimination of poliomyelitis. Countries should also be able to monitor coverage by district, or equivalent geopolitical area, and take special measures where coverage is found to be less than 90% with three doses.

The few countries in the Region with coverage still below 90% will probably achieve this target rapidly. Special action, such as mass campaigns and reinforcement, should be taken in areas with low coverage and low immunity.

Case definition

The health authorities find the WHO case definition useful for analysing reported suspected cases of poliomyelitis. Any case of flaccid paralysis should be considered as suspected poliomyelitis and investigated thoroughly as soon as possible to contain potential outbreaks.

Reporting cases

All countries preferred reporting confirmed poliomyelitis cases to WHO. Any probable case with residual paralysis persisting for more than 60 days and with no other diagnosis, and cases not otherwise followed up, should be considered confirmed. Confirmed cases should be divided into four categories depending on the type of virus isolated and the epidemiological characteristics: vaccine-associated, indigenous wild virus, imported virus, or unknown origin.

Laboratory aspects

Only specialized laboratories have the ability to carry out the molecular biological analysis of virus isolates and the Regional Office should develop and distribute a list of European laboratories with such facilities. The National Institute for Biological Standards and Control in London should organize a meeting of staff from these specialized laboratories to promote further collaboration between them and to standardize the use of reagents and methods. These laboratories should also consider producing diagnostic antisera and distributing them to local laboratories.

Outbreak containment

Every country should have guidelines specifying measures that reflect their own particular circumstances.

In areas where endemic or epidemic cases of poliomyelitis have occurred within the preceding three years, outbreak control procedures should be activated following the occurrence of any single probable case of poliomyelitis. In areas where there has been no poliomyelitis due to wild viruses within the preceding three years, outbreak control measures should be initiated only if a confirmed case of poliomyelitis occurs in an individual without a history of foreign travel, recent vaccination with OPV, or contact with a recent recipient of OPV. The control measures should include a search for additional cases, an assessment of immunization levels, and rapid vaccination of all the children in the area. Vaccination will usually involve all children under five years of age, but epidemiological circumstances may indicate that a broader age range should be targeted.

Serological studies

Serological surveys may be performed periodically to guarantee that high levels of protective immunity persist in the community and to alert health personnel to a possible need for action.

Virus surveillance

If a country is approaching the eradication of poliomyelitis, monitoring of the circulating virus strains in the environment (e.g. in sewage) may be useful for surveillance purposes, especially for countries using IPV.

Management training

A number of countries expressed the need for a manual, such as those developed by PAHO,[a] for managerial and training purposes. They proposed the preparation of EPI learning modules for epidemiological, prevention and other public health measures. They reaffirmed the importance of including courses on the prevention of infectious diseases in medical school and nurse training curricula. They strongly recommended that meetings such as the present one should be regarded as an essential opportunity to assist national programme managers in their tasks.

Certification

The certification of the elimination of poliomyelitis from a country, or part of a country, is not considered important at this time. On the other hand, criteria defining the elimination of indigenous poliomyelitis (by strains) from a country are needed. The EAG is requested to prepare a draft model for consideration at the next national programme managers' meeting.

Immunization against measles-mumps-rubella (MMR)

The introduction of the MMR vaccine has received widespread support in most countries of the European Region. The USSR is still considering the desirability of a rubella immunization programme. Meanwhile, some countries have not yet begun to use the MMR vaccine because of cost restrictions and supply difficulties and/or for epidemiological reasons. Unless high levels of coverage are achieved rapidly after the introduction of the MMR vaccine, more cases of congenital rubella syndrome could occur than without a programme. If the circulation of rubella is reduced but not eliminated, more women entering the childbearing years may still be susceptible, being neither vaccinated nor previously exposed to the natural disease. Some countries report coverage rates of under 50% in children under two years of age. Initiatives must be taken in these countries to achieve high coverage rapidly. Those countries introducing the MMR vaccine in the future should ensure that they attain a high coverage quickly.

One of the national programme manager's responsibilities is to supervise the elimination of measles and congenital rubella syndrome. National plans outlining strategies should be developed, listing the resources required, and giving year-by-year targets for coverage, morbidity and the implementation of surveillance. These national plans should be submitted to the Regional Office by the end of 1988 wherever possible.

The strategy for elimination consists of the achievement and maintenance of high coverage, careful surveillance, including age-stratified data, and aggressive outbreak control. High coverage is the most important component and other parts of the strategy are best implemented when high coverage has been achieved.

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[a] Polio eradication field guide. Washington, DC, Pan American Health Organization, 1988 (Technical Paper, No. 6).

Procedural guide for polioviruses and enteroviruses isolation, identification and serology. Washington, DC, Pan American Health Organization, 1987 (unpublished document, EPI/TAG/86/006).

Some countries were adamant that two doses of MMR vaccine for each child were necessary to achieve sufficiently high immunity levels to eliminate measles. This view was not shared by other countries who were committed to regimes of a single dose of MMR vaccine for each child (France, the Federal Republic of Germany and the United Kingdom have schoolgirl rubella programmes as well). Lack of resources will restrict many countries to a policy of a single dose of MMR vaccine. There was widespread support for the need for catch-up campaigns to reduce susceptibility rapidly. These may comprise two age-points for MMR vaccination, for example at 15 months old and either before school entry or at 11-12 years of age. The catch-up point may be discarded when the first 15-month-old cohort reaches it. Catch-up campaigns including the immunization of adult women and other susceptible groups are especially important for countries planning to introduce the MMR vaccine in the future.

Where legislation for compulsory vaccination exists, this could incorporate the requirements for MMR vaccination. While some countries are able to achieve very high coverage without legal compulsion, others without compulsion will need to make special efforts to achieve the necessary high coverage. Over 95% coverage will be required to eliminate measles.

Immunization against viral hepatitis

The control of hepatitis B depends on hygienic measures, special care with blood donations, and vaccination.

The importance of implementing hygienic measures that have been routinely used for many years must be reemphasized. For instance, unprotected skin or mucous membranes must not come into contact with blood that may be infected.

Any blood donations that contain hepatitis B surface antigens (HBsAg) should not be used for transfusion or as non-inactivated blood products. Testing for antibodies to hepatitis B core antigen (without differentiation into immunoglobulin classes) as an additional safety measure is being discussed and has been introduced in at least one country outside Europe (the United States). This would not only prevent hepatitis B but also at least some hepatitis non-A, non-B infections (up to 40%).

In populations with fewer than 2% HBsAg carriers, selective vaccination should be carried out of the following risk groups: medical/dental personnel; haemophiliacs; patients with chronic renal disease; patients and personnel in homes for the handicapped; newborn babies of HBsAg-positive mothers (passive-active immunization if possible); homosexuals and bisexuals who frequently change sexual partners; drug addicts; prostitutes; the sexual partners of HBsAg carriers; all the family members of hepatitis B virus carriers (depending on local circumstances); travellers to areas with a high prevalence of hepatitis B; non-immune individuals who are known to have been exposed, by needle stick, etc. (passive-active immunization).

In populations with more than 2% and fewer than 10% HBsAg carriers, the above risk groups and all infants should be vaccinated.

In populations with more than 10% HBsAg carriers, general vaccination programmes should be developed, depending on the local situation.

Note that the vaccination of medical and dental personnel will have little or no effect on the persistence of hepatitis B virus in the general population. Therefore, under certain circumstances, the vaccination of newborn babies might be given the highest priority.

Whether or not pregnant women should be tested for HBsAg or all newborn babies vaccinated will depend on the rate of HBsAg carriers in the population and the evaluation of local cost-benefit analyses.

Both plasma-derived and recombinant vaccines are equally effective and they can be used interchangeably even in the same person, but only vaccines conforming with WHO standards should be used.

Antibody levels should be checked in high-risk groups (where possible) after completion of the basic course of immunization, to determine the need and timing for additional vaccinations. In general, one additional vaccination 5-7 years after the original course of immunization should be considered.

The need to develop a hepatitis A vaccine was reemphasized and various approaches were discussed. There does not seem to be a sufficient need to develop a vaccine against hepatitis delta which would only be used in HBsAg carriers.

The agents of hepatitis non-A, non-B(e) and hepatitis non-A, non-B(p) have not been characterized sufficiently for vaccine development to start. Development of a vaccine against hepatitis non-A, non-B(e) may start in the near future, if the agents currently being investigated prove to be causative.

The report of an international group that met in Ising, Federal Republic of Germany, on 26 February 1988 gives further information.[a]

Conclusions

Although much progress has been made, a considerable amount of work needs to be done to reach the health for all target 5.

Steps must be taken to improve coverage, including the development of interim targets, the assignment of responsibilities at the national, intermediate and local levels, the identification of problem areas and solutions, and regular programme reviews down to the local level. The results of these reviews must be made known to all the parties concerned in the immunization process.

Surveillance is a vital tool for identifying programme problems, an aid to designing solutions, and a measure of success. Disease surveillance is an integral part of the programme as an indicator of outcome, while coverage is an indicator of performance.

All countries need to establish accurate measurements of coverage and of disease incidence. They should assess the adequacy of both coverage and surveillance systems.

[a] Immunisation against hepatitis B. Lancet, I: 875-876 (1988).

Recommendations

The Regional Office should consider holding annual meetings of national programme managers dedicated to a country-by-country review of strategies and initiatives for the achievement of target 5.

Countries' plans for acceleration should be submitted before such meetings, allowing the EAG the opportunity to review them and advise individual countries. Special emphasis can then be given to those countries farthest from the achievement of target 5 to assist their progress. Hosting the meeting should be viewed as an opportunity to increase the political will needed for a successful EPI.

Unless there is significant acceleration of EPI in the European Region, the real possibility of failure is likely.

Annex 1

SUMMARY OF REPLIES TO EVALUATION QUESTIONNAIRE ON EPI

Respondents to the questionnaire

Dr I. Cipuri	Albania (ALB)
Dr D. Liebeswar & Dr H. Halbich	Austria (AUT)
Dr A. Berwaerts	Belgium (BEL)
Dr M.V. Mirchev	Bulgaria (BUL)
Dr I. Masar	Czechoslovakia (CZE)
Dr H. Zoffmann & Dr T. Roenne	Denmark (DEN)
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Dr C. Roure	France (FRA)
Dr S. Dittmann	German Democratic Republic (DDR)
Dr J. Hallauer	Federal Republic of Germany (DEU)
Dr T. Stefanou	Greece (GRE)
Dr A. Vass	Hungary (HUN)
Dr O. Olafsson & Dr T. Blondäl	Iceland (ICE)
Dr J.H. Walsh	Ireland (IRE)
Dr S.C. Costin	Israel (ISR)
Dr D. Ballada	Italy (ITA)
Dr P. Huberty-Krau	Luxembourg (LUX)
Dr J.N. Cachia	Malta (MAT)
Dr D.L. Gastaud	Monaco (MON)
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Dr A. Lystad	Norway (NOR)
Dr W. Magdzik, Poland (POL)	
Dr J. Bandeira Costa	Portugal (POR)
Dr P. Ciobanu	Romania (ROM)
Dr O. Tello Anchuela	Spain (SPA)
Dr N. Narkevic	USSR (SSR)
Dr M. Böttiger	Sweden (SWE)
Dr H.P. Zimmermann	Switzerland (SWI)
Dr F. Aydiner & Dr A. Biliker	Turkey (TUR)
Dr D. Salisbury	United Kingdom (UNK)
Dr D. Bobarevic & Dr N. Georgievski	Yugoslavia (YUG)

Replies summarized by

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Acknowledgements to Mrs L. Colatosti and Mrs E. Nivaro for their assistance

The questionnaire was sent to the 32 Member States in the European Region and replies were received from all of them.

Achievements

Policy

Since 1984, all the Member States have adopted target 5 of the strategy for health for all by the year 2000. The recommendations of the Second Conference on Immunization Policies in Europe, held in Karlovy Vary in 1984, have been supported officially by 12 Member States in their special declaration to the WHO Regional Office for Europe and have been included in the health strategies of CZE, DDR, HUN, SPA, TUR and YUG.

Positive changes in programme structure have included:

- the creation of committees on vaccination (FRA, USSR); and
- the appointment of medical officers, responsible for immunization at the district level (UNK).

Surveillance has been improved in the following ways:

- the itntroduction and use of WHO/EPI case definitions (ALB, BUL, CZE, DDR, DEU, FIN, FRA, HUN, ISR, LUX, MAT, NET, NOR, POL, POR, ROM, SPA, YUG);
- the compulsory notification of neonatal tetanus, congenital rubella (ITA, POR), measles and mumps (POR, ROM) and rubella (POR, SWI);
- the introduction of sentinel surveillance (BEL, FRA, ROM, SWI, UNK);
- the computerization of the immunization programme (BEL, FRA, MAT, NET, UNK); and
- the introduction of serology for the confirmation of pertussis cases (CZE, NET, SWE).

The introduction of new vaccines and positive changes in the calendar of immunization include the following:

- the introduction of, or decision to introduce, the MMR vaccine (CZE, DEU, FRA, GRE, ICE, ISR, LUX, MAT, NET, NOR, POR, SWE, SWI, UNK);
- the immunization of adults against diphtheria and tetanus (LUX, SSR);
- revaccination of children against measles (CZE, DDR, HUN, ROM);
- the decision to introduce routine immunization against viral hepatitis B in areas with high-risk incidence (ITA, MAT), or to extend immunization with hepatitis B vaccine to certain groups of the population (LUX, POL, SSR);
- campaigns of immunization in problem areas (ISR, MAT, ROM, SSR, TUR) or of adults (LUX, SSR);

- review and introduction of a reduced list of contraindications to EPI vaccines (ALB, CZE, DDR, DEN, FRA, POL, SSR, TUR, UNK).

- compulsory immunization against measles and rubella (ITA); and

- a plan to implement MMR vaccination free of charge, through public health services and private practitioners (DEU).

Six countries have developed a surveillance system on side-effects associated with vaccination (CZE, DDR, NET, SPA, SSR, UNK)

Trends in the incidence of diseases

Progress towards the eradication of poliomyelitis in the Region has been made. Between 1980 and 1988, 22 countries became free of poliomyelitis (ALB, AUT, BEL, BUL, CZE, DDR, DEN, FIN, GRE, HUN, ICE, IRE, ITA, LUX, MAT, MON, NET, NOR, SMR, SWE, SWI, YUG). The total number of reported poliomyelitis cases dropped from 547 to 220, almost by two thirds (Table 1). Six countries reported fewer than 10 cases of the disease (DEU, FRA, POL, POR, SPA, UNK). Only four countries (ISR, ROM, SSR, TUR) have reported over 10 cases per year (Table 1). The trend of morbidity from poliomyelitis was favourable universally.

Measles is reported on by 27 countries (Table 2) and the incidence is not known in 4 countries (AUT, BEL, DEU, SMR). At least one country (ALB) claims not to have measles in the population. Ten countries have reported very low incidence (CZE, DDR, FIN, HUN, ICE, MAT, MON, NET, POL, SWE).

Reporting on rubella and mumps was carried out in 25 countries (Tables 3 and 4) whereas the incidence was not known in seven. Since 1985 the total number of reported cases of congenital rubella syndrome in the only seven countries reporting on it was 215 (DDR - 16; DEN - 7; FRA - 84; HUN - 15; ISR - 5; SWE - 0; UNK - 88).

Tetanus is reported on routinely by 28 countries. No cases have been reported in ICE or MON for the last 10 years and MAT and SMR had no cases in 1987. Fourteen countries reported fewer than 10 cases in 1987 (ALB, BEL, BUL, CZE, DDR, DEN, GRE, ISR, LUX, NET, NOR, SWE, SWI, UNK), three countries fewer than 50 cases per year (DEU, HUN, ROM), five countries fewer than 100 cases per year (ITA, POL, POR, SPA, YUG) and three countries fewer than 200 cases per year (FRA, SSR, TUR). No information on tetanus has been submitted from AUT (Table 5).

Neonatal tetanus has already been eliminated from most of the Region (Table 6). In 1987, no cases were reported from 25 countries and the 16 cases reported in 1987 came from just three countries.

Diphtheria is also close to elimination in many European countries. In 1987, 20 Member States reported no cases of diphtheria (AUT, BEL, BUL, CZE, DEN, FIN, GRE, HUN, ICE, IRE, ISR, LUX, MAT, MON, NET, NOR, SMR, SPA, SWI, YUG) and can therefore be considered free from the disease. Additionally, 11 countries reported fewer than 10 cases each in 1987 and can be classified as low infected areas approaching the goal (ALB, DDR, DEU, FRA, ITA, POL, POR, ROM, SWE, TUR, UNK). Only one country (SSR) reported a high number of cases annually (Table 7).

Table 1. European Region - reported annual number of poliomyelitis cases

Country	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	Nil cases for more than (years)
ALB							1	1	0	0	0	1	0	0	0	3
AUT	0	0	0	1	1	2	1	0	0	0	0	0	0	0	0	8
BEL	0	1	1	0	1	1	1	0	0	1	0	0	1[c]	1[a]	0	1
BUL	0	0	0	0	0	0	15	0	1	1	1	0	0	0	0	4
CZE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	28
DDR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15
DEN	0	0	1	0	0	0	0	1	0	1	0	0	0	0	0	12
DEU	15	24	41	20	16	9	6	11	4	7	1	5	3	3	1[a]	1
FIN	0	0	0	0	0	0	0	0	0	0	7	1	0	0	0	3
FRA	19	18	9	9	26	14	10	9	14	3	5	2	4	2	1	
GRE	0	0	7	3	0	0	0	2	4	0	0	1	1	1	0	1
HUN	1	2	3	3	1	1	1	1	0	1	1	1[a]	1[a]	2[a]	0	1
ICE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	28
IRE	0	0	0	5	0	0	1	0	1	0	0	0	0	0	0	6
ISR	28	13	9	97	19	34	11	8	5	4	1	2	0	2	16	
ITA	9	4	9	10	2	2	1	1	3	3	2	1	0	1	0	1
LUX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	26
MAT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15
MON	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15
NET	0	0	0	1	110	0	0	1	0	1	1	0	0	0	0	4
NOR	3	0	1	0	0	0	0	1	1	0	0	0	0	1[c]	0	6
POL	22	9	14	10	6	1	3	1	7	2	2	3	2[a]	3[a]	4[a]	3
POR	3	7	2	0	1	1	0	0	1	0	0	0	0	1	1[b]	1
ROM	10	31	15	23	22	0	125	125	39	16	15	11	16	11	11	
SMR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15
SPA	191	261	41	39	82	17	17	17	21	27	2	8	0	11	4	
SSR	139	133	106	264	152	214	165	307	257	181	115	138	174	173	165	
SWE	1	0	1	3	0	1	0	0	0	0	0	0	0	0	0	9
SWI	0	1	0	0	2	1	1	3	1	0	1	0	0	0	0	4
TUR	348	368	500	328	261	223	182	148	219	165	81	88	32	7	14	
UNK	6	3	11	19	3	6	2	2	3	5	6	5	7	0	3[a,c]	2
YUG	36	7	6	141	20	5	4	0	6	12	2	0	3	1	0	1
Total	831	882	777	976	725	532	547	639	587	430	243	267	244	220	220	

Blank indicates no data available
[a] vaccine-associated case
[b] 6-year-old male from Faro, vaccine-associated imported case
[c] imported case

Table 2. European Region - reported annual number of measles cases

Country	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
ALB									3	17	0	0	0	0
AUT	not notifiable													
BEL	not notifiable												55500[a]	11600[a]
BUL	41335	20162	16877	806	423	249	10763	9239	281	326	292	972	1369	1560
CZE	13046	20230	28153	5335	3135	6561	3535	8800	33	31	2968	33	10	4
DDR	400	1493	3694	1067	941	2128	28745	5290	2029	9798	11759	568	199	189
DEN	54581	14167	57756	52308	18593	66493	28249	35651	15656	33242	21188	13187	22490	6268
DEU	not notifiable													
FIN	11353	3384	8706	2837	2325	2396	2147	3813	5402	4751	729	614	733	635
FRA	5235	1813	2607	2106	2026	1603	1244	1132	462000[a]		..	184000[a]	283000[a]	486000[a]
GRE	5357	8931	8027	15717	2169	7822	13464	1389	3417	23723	1200	1484	1050	1891
HUN	46790	638	243	130	334	216	1198	10573	2521	124	98	20	17	23
ICE	37	11	36	2994	240	32	13	24	14	39	162	374	132	14
IRE	2040	2957	1651	1501	1585	1668	1106	1075	1897	6180	5725	9903		
ISR	871	4795	73	89	400	553	215	228	7864	129	137	3005	1951	423
ITA	24714	52033	55493	42112	67360	23270	23827	64894	21820	25271	77362	70389	21753	15963
LUX	171	288	41	424	263	121	63	214	243	21	35	62	27	153
MAT	784	23	38	472	3348	30	14	121	1530	620	58	175	1768	46
MON								12	0	0	0	0	0	0
NET			2512	1812	133	56	178	77	95	480	82	24	90	227
NOR	15570	3636	3204	13407	15942	2724	1322	4586	10974	6181	1775	1312	1219	563
POL	70857	146664	125168	44949	84073	30653	24882	35283	7620	11271	54403	35680	6806	1286
POR	not notifiable													813
ROM	122470	110703	113907	124227	110124	66371	10476	21584	61682	4723	2108	5007	34037	11833
SMR	not notifiable													
SPA	147793	179638	133060	129375	129712	93608	145322	146689	159562	30139	38913	80662	220109	35146
SSR	374066	363784	320844	315304	545392	382647	355654	342819	466210	233812	252510	272807	164672	190568
SWE	7464	7841	8774	10313	6908	8668	1786	3540	6223	4626	1003	326	173	..
SWI														7400[a]
TUR	17036	24317	21740	16123	12517	11747	8618	26858	8778	31515	29996	14695	2267	946
UNK	118672	158619	68422	190393	133811	93371	147962	61779	105642	114948	67632	104774	90214	42065
YUG	24340	31782	31487	27918	27667	18596	37441	20878	13826	12967	20233	25219	14148	8639
Total	1104982	1157909	1012513	1001719	1169421	821583	848224	806548	1365322	554934	590368	825292	923734	824255

Blank indicates no data available
[a] estimated
[b] preliminary figure
.. pending

Table 3. European Region - reported annual number of mumps cases

Country	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
ALB										1134	1265	1166	2054	3412
AUT						not notifiable								
BEL						not notifiable						120000[a]	120000[a]	
BUL	22491	34954	15646	2715	1787	1546	6573	8619	3416	1064		1170	68358	33628
CZE	4122	128002	88153	56882	123508	62897	63383	117251	84965	69978	90298	83888	46969	57025
DDR	83855	49656	58855	146212	60872	38648	103385	103385	26849	90027	191033	44397	19138	216562
DEN	30051	57137	5861	5306	38875	67135	14096	5227	25566	31253	6404	2526	14320	26080
DEU						not nofifiable								
FIN	7162	8949	8790	5076	4462	22324	12026	2942	2182	1468	514	414	555	124
FRA						not notifiable							350000[a]	350000[a]
GRE	10961	6124	4166	7076	7387	8380	5675	4438	8387	8363	7027	6695	8395	7988
HUN	26035	38936	44718	39006	47904	41849	46034	56979	40250	41986	50102	34493	29127	43877[b]
ICE	1024	1058	411	295	747	3644	868	103	1814	1814	569	207	1843	2479
IRE														
ISR						2883	3041	5956	5092	3904	6584	2113	865	2238[b]
ITA	37479	45700	17437	39666	68123	17343	25094	44478	54606	22147	42680	59693	57041	34420
LUX												2	7	..
MAT													13	..
MON														
NET			1129	1550	1105	470	1117	753	405	822	306	310	458	433
NOR		26652	22394	12947	10230	22081	27096	8615	6761	8682	11945	5076	3170	..
POL	99788	138118	82493	97847	170529	105072	116851	115362	56220	146511	214516	98350	156683	113727[b]
POR														2161
ROM										40106	67159	57086	47913	69315
SMR	49	127	266	39	221	116	24	472	7	10	..	..	..	..
SPA									80399	255908	286762	135669	51023	40393
SSR							965047	839884	979321	751543	409445	439512	510780	332272
SWE	8878	22195	10694	4323	8618	23195	17240	4869	5356	11020	9230	1325	709	
SWI														11000
TUR						not notifiable								
UNK						not notifiable				22583[a]	27549[a]	15660[a]	..	..
YUG												28062	25363	27276
	331895	557608	361013	418940	544368	417583	1407550	1319333	1381596	1510323	1423388	1187814	1514784	1373410[b]

Blank indicates no data available
[a] estimated
[b] preliminary figure
.. pending

Table 4. European Region - reported annual number of rubella cases

Country	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
ALB										0	0	78594	0	0
AUT						not notifiable								
BEL						not notifiable								
BUL	43858	37482	7604	5495	10885	48763	69042	12485	17523	12882	24737	29383	8556	14345
CZE	4469	6724	86332	126645	18787	20451	106681	55851	22868	17968	93740	106725	25603	18545
DDR									12635	22830	63583	69230	21907	27808
DEN	13510	15842	31385	44255	13592	21952	41329	10169	6650	5937	21556	13684	6648	4036
DEU						not notifiable								
FIN	1027	2378	2672	2792	1830	6418	12200	3700	3259	2254	1005	1881	784	130
FRA					only congenital rubella is notifiable[a]									
GRE	741	965	450	1352	4899	752	914	742	806	18173	3053	2741	6609	3530
HUN	115333	16360	4916	4000	23132	149766	6128	7922	17419	28661	48927	25545	15484	20726
ICE	507	127	104	121	3689	2879	119	62	54	109	324	903	96	91
IRE	189	134	179	96	208	426	201	97	166	2395	2060	668		
ISR	200	200	638	478	5429	36334	881	451	602	2302	7189	566	287	4264[c]
ITA	6525	3569	8936	22253	51055	13798	6297	5043	17008	12644	56410	56985	15692	9073
LUX												11	5	
MAT					165	40	20	54	102	57	58	3466	269	60
MON														
NET	529	1325	4365	768	854	3007	706	505	873	335	842	128	91	320
NOR		14499	4180	4316	7055	23521	6091	3063	2920	3658	6385	8644	3132	1529[d]
POL	40411	51956	127650	68678	49575	52318	143120	207029	14036	18602	24456	74705	462593	19129[c]
POR														637
ROM	25396	28604	23176	23580	26978	26386	28916	40997	39607	9357	14404	26679	50029	65391
SNR	8	24	10	28	932	45	33	19	11	3				
SPA									74803	161772	150517	144288	74109	32897
SSR							310469	304879	413219	457810	430979	606660	725985	584129
SWE	13013	5898	3480	2509	4602	12090	5389	3780	3196	2669	1995	4952	1483	..
SWI														6500
TUR					not notifiable									
UNK					not notifiable					257488[b]	145064[b]	88146[b]	..	..
YUG												75983	20428	19111
	265716	186087	288377	307366	223667	418946	738536	656839	647757	1057906	1097284	1420567	1439790[c]	832251[c]

Blank indicates no data available
[a] 22 cases in 1985
[b] estimated
[c] preliminary figure
[d] including 250 females older than 15 years

Table 5. European Region - reported annual incidence of total tetanus cases

Country	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
ALB							5	3	1	4	2	4	5	6
AUT						not reported								
BEL			9	5	7	3	4	3	10	2	2	1	2	4
BUL		24	28	29	19	21	18	18	27	26	13	12	8	5
CZE	40	23	10	12	18	11	11	9	6	8	8	4	4	2
DDR	18	23	27	6	13	10	6	8	9	7	6	6	9	3
DEN	6	8	14	8	8	4	2	4	5	2	0	1	3	4
DEU		46	34	34	27	24	15	14	16	15	15	12	19	12
FIN	12	18	13	3	5	16	4	12	11	11	6	5		
FRA	276	317	289	268	263	183	208	158	142	120	114	124	88	106
GRE	31	21	47	53	38	48	24	30	31	25	32	9	4	3
HUN	64	69	56	48	54	57	48	44	41	31	41	37	31	36
ICE		0		0	0	0	0	0	0	0	0	0	0	0
IRE										0	0	0	?	?
ISR	0	4	2	3	4	1	2	3	3	2	2	3	1	2
ITA				256	218	166	176	197	193	188	133	167	131	82
LUX			2	1	2	0	0	1	0	0	0	1	1	1
MAT				0	8	5	8	4	1	5	3	1	1	0
MON	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NET	7	9	4	7	2	2	8	2	1	9	1	3	5	2
NOR		2	0	3	1	2	3	0	1	3	4	1	1	2
POL	99	111	112	120	106	101	81	92	126	111	87	86	76	75
POR	194	169	122	115	105	94	73	82	83	62	50	83	48	59
ROM		47	52	48	48	34	33	39	42	23	39	23	30	36
SMR	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SPA							500		47	91	89	74	69	65
SSR	539	490	427	421	361	412	304	346	345	355	334	281	261	194
SWE			6	5	6	3	4	5	5	0	1	2	4	1
SWI			2	1	1	0	2	2	1	4	2	0	0	1
TUR	846	804	1076	1109	1981	1051	48	69	110	162	160	113	210	116
UNK	16	24	15	16	15	20	18	15	20	6	6	12	11[a]	9[a]
YUG	215	236	167	169	127	124	99	112	113	101	93	66	68	68
Total	2363	2445	2514	2740	3437	2392	1704	1272	1390	1373	1243	1131	1098	894

Blank indicates no data available
[a] not notifiable in Scotland and Northern Ireland.

Table 6. European Region – reported annual number of neonatal tetanus cases

Country	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	Nil cases (for years)
ALB							0	0	0	0	0	0	0	0	8
AUT					not reported					0	0	0	0	0	5
BEL								0	0	0	0	0	0	0	≥ 7
BUL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	> 20
CZE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	> 20
DDR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	> 14
DEN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	> 18
DEU					not reported separately										
FIN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	> 14
FRA											0	0	0	0	4
GRE							0	0	0	0	2	0	0	0	3
HUN	0	0	0	0	1	0	0	0	0	0	0	0	0	0	9
ICE	0	0	0	0	0	0	0	0	0	0	0		0	0	> 14
IRE										0	0	0	0	0	5
ISR	1	2	2	0	0	0	0	1	2	1	0	0	0	1[a]	
ITA					not reported separately										
LUX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	> 14
MAT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	> 14
MON	0	0	0	0	0	0	0	0	0	0	0	0	0	0	> 14
NET	0	0	0	0	0	0	0	0	0	0	0	0	0	0	> 14
NOR								0	0	0	0	0	0	0	> 7
POL									0	0	0	0	0	0	> 6
POR	63	53	28	23	20	12	9	6	2	0	0	3	3	0	1
ROM											0	2	1	1	
SMR									0			0	0	0[b]	3
SPA						14		0		10	14	..	..	..	
SSR												0	0	0	3
SWE								0	0	0	0	0	0	0	> 7
SWI												0	0	0	3
TUR												45[b]	85[b]	14[b]	
UNK	0	0	0	0	0	0	0	0	0	0	0	0	0	0	> 14
YUG	63	67	59	37	31	20	17	11	25	15	12	6	8	..	
Total	127	122	89	60	52	46	26	18	29	26	28	56	97	15[b]	

Blank indicates no data available
[a] preliminary figure
[b] provisional
.. pending

Table 7. European Region - reported annual number of diphtheria cases

Country	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	Nil cases (for years)
ALB							3	6	2	1	3	3	4	4	
AUT	9	1	5	9	1	1	0	1	0	0	0	1	0	0	2
BEL	16	14	5	3	3	0	1	0	0	3		0	0	0	> 3
BUL	2	0	0	0		0	2	0	0	0	0	0	0	0	7
CZE	2	3	1	1	3	2	2	0	0	0	0	3	0	0	2
DDR	0	0	0	0	0	0	0	0	0	0	0	0	1	2	
DEN	0	0	0	0	0	0	0	0	0	0	0	1	0	0	2
DEU	17	46	85	26	20	13	19	7	30	17	8	4	6	5	
FIN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	> 14
FRA	22	19	26	20	14	8	3	6	3	4	2	4	4	2	
GRE	9	5	6	2	0	1	0	0	2	0	0	0	0	0	5
HUN	10	6	17	2	3	2	6	1	0	0	0	1	2	0	1
ICE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	> 14
IRE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	> 14
ISR	0	1	0	0	0	0	0	0	0	0	0	0	0	0	12
ITA	258	256	194	173	97	46	30	34	19	10	7	5	3	1	
LUX	0	0	0	0	0	0	0	1	0	0	0	0	0	0	6
MAT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	> 14
MON	0	0	0	0	0	0	0	1	0	0	0	0	0	0	> 6
NET	0	0	0	2	1	1	0	0	0	2	1	0	1[a]	0	3
NOR	0	0	1	0	0	0	0	0	0	0	0	0	0	0	11
POL	6	0	3	0	1	0	0	1	0	1	0	0	0	2	
POR	187	382	672	296	249	154	90	18	16	36	10	51	3	6	
ROM	5	8	0		9	8	12	0	1	12	19	1	1	2	
SMR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	> 14
SPA	22	23	10	4	8	17	7	8	7	1[a]	1[a]	0	0	0	3
SSR	285	199	198	238	270	270	345	560	917	1411	1609	1511	1156	1081	
SWE	0	0	1	0	2	5	4	4	0	0	14	10	10	3	
SWI	3	12	6	4	4	6	1	3	0	2	0	0	0	0	4
TUR	470	265	170	142	93	107	86	136	131	361	155	145	36	3	
UNK	3	12	2	3	0	0	5	2	4	4	4	4	4	4	
YUG	10	8	15	4	0	8	2	0	0	1	0	0	0	0	4
Total	1336	1260	1417	929	778	649	618	789	1132	1866	1833	1744	1231	1120	

Blank indicates no data available
.. pending
[a] imported case

Information suggests that pertussis is common in most of the Region; only 14 countries report low incidence (ALB, AUT, BEL, BUL, CZE, DDR, HUN, ISR, LUX, MAT, POL, POR, SWI and TUR). Considerable under-notification occurs (Table 8).

Between 1974 and 1986, the absolute number of pulmonary tuberculosis cases reported on regularly by 29 Member States (excluding ALB, SMR, SSR) had decreased threefold (Table 9).

Generally, encouraging progress has been made across the Region in meeting the objectives of target 5, i.e. a further decrease in the incidence of poliomyelitis, measles, diphtheria and neonatal tetanus. The situation of congenital rubella syndrome remained uncertain owing to obvious underreporting.

Immunization against pertussis with whole-cell vaccines continued routinely in all European countries except in Sweden where it was suspended in 1979. As a result, a record incidence of the disease was reported in Sweden in 1985 - 10 839 cases, compared with the lowest number achieved in 1976 of 1190 cases (this is a ninefold increase).

The recent introduction of the MMR vaccine in 11 Member States is a good move towards the eradication of measles, mumps and rubella, provided the immunization coverage rate is close to 100%.

Immunization coverage rates

Data were provided by 29 countries (Tables 10 and 11). They were based on reporting in 22 Member States while 7 Member States (AUT, BEL, DEU, FRA, ITA, SSR and UNK) had no accurate data on coverage rates and therefore could produce only estimated figures. Serological surveys on the state of immunity of the population have been conducted in 11 countries (ALB, BUL, CZE, DDR, FIN, HUN, ITA, POL, ROM, SSR, UNK). Some of these surveys show a marked difference between reported and actual coverage rates.[a]

Cold chain evaluation

Fourteen countries claimed that they had already evaluated the cold chain, and at least five countries had no intention of doing so. A cold chain (EPI) thermometer was used in five Member States only.

Impediments

The relatively high morbidity from measles, mumps, rubella and pertussis, in most European countries, owing to low immunization coverage rates, and from occasional outbreaks of diphtheria and poliomyelitis, is due to serious impediments in both national and regional EPI.

[a] Salmaso, S. et al. Bulletin of the World Health Organization, 65: 841-846 (1987).

Table 8. European Region - reported annual number of pertussis cases

Country	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
ALB							137	280	312	126	89	172	115	112
AUT	1051	388	311	313	376	425	186	264	433	181	176	301	177	215
BEL						not notifiable						3	5	15
BUL	7738	486	141	1393	909	145	154	391	169	66	226	40	53	54
CZE	151	49	141	130	59	108	84	55	154	123	199	251	41	165
DDR	1069	360	171	598	197	149	258	209	217	207	187	306	76	60
DEN	1555	1457	16385	11453	4056	3510	4970	4365	1333	1777	3368	1832	1139	2891
DEU						not notifiable								
FIN	159	168	105	99	84	97	187	116	379	740	245	308	239	498[b]
FRA	326	372	353	184	163	170	100	66	137	112	57	10000[a]	10000[a]	10000[a]
GRE	3913	6398	7777	2230	2430	6416	3083	1351	2082	5470	1504	1020	1728	2784
HUN	50	59	55	27	67	46	22	27	22	9	24	21	12	18[c]
ICE	54	138	91	58	234	566	41	26	258	535	59		35	162
IRE	460	355	308	1149	831	588	547	997	1073	1728	3061	3689	..	..
ISR	101	101	82	31	155	144	19	25	62	78	7	24	73	84[c]
ITA	8204	10397	19246	8076	12680	17741	13605	6646	16955	25791	12416	15269	20112	25879
LUX	49	20	28	56	37	50	46	16	21	20	6	17	6	0
MAT	133	36	150	15	83	34	2	68	144	15	4	140	210	7
MON														
NET			4	25	1	26	30	50	80	200	534	1522	2159	2709
NOR	1541	2198	1074	1053	1812	2059	2003	2017	2110	2696	1375	1225	789	653
POL	2675	1156	512	1068	633	508	232	281	452	185	326	304	122	295[c]
POR	254	132	150	32	66	95	71	69	59	124	62	54	326	190
ROM	14564	13646	15602	13471	5614	12734	11441	7350	6566	4346	5896	1810	1841	4762
SMR	107	21	18	6	18	23	7	3	5					
SPA									50463	35347	35937	60564	55846	26958
SSR	30895	14885	33022	22610	17180	25153	13908	25637	27484	19321	25985	53871	17663	20191
SWE	3196	2172	1190	6494	8612	4105	5221	2256	4787	9778	4743	10839	5746	6747[c]
SWI			5	10	13	7	12	7	3	16	52	62	97	232[b]
TUR	2851	3036	2440	1739	2267	3094	1520	2661	5063	5706	3145	2678	1048	145
UNK	18264	9946	4392	18729	70509	33200	22924	21461	70928	21589	6419	24244	39939	17371
YUG	6142	6068	6706	5829	6187	6369	6710	4593	5321	5395	4666	3744	2978	4610
Total	105502	74044	110459	96887	135273	117562	87520	81287	197072	141951	110768	194310	162575	127807

Blank indicates no data available
[a] estimated
[b] laboratory reports
[c] preliminary figure
.. pending

Table 9. European Region - reported annual number of tuberculosis cases (pulmonary)

Country	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
ALB														
AUT	2462	2366	2506	2311	2240	2200	2191	2061	1942	1825	1765	1442	1317	1170
BEL	3110	4301	5118	6531	2546	2819	2623	2479	..	2108	..	3005	2934	2353
BUL	4860	4273		3475	3575	3396	3280	3007		434		1884	1926	405
CZE	8549	8186	17912	7469	7012	5528	6674	5975		5603	5249	4684	3935	..
DDR	6648	6163	5742	4988	4798	4189	4067	3725	3670	3390	3319	3101	2230	2924
DEN			400	375	303	343	325	311	288	273	246	257	229	285
DEU	36551	34070	32857	31617	29536	27845	25924	23358	21727	19587	17137	..	14976	..
FIN	3581	3497	3095	3027	2757	2508	2247	2204	1307	1476	1032	1376	1202	1134
FRA	3126	2843	19660	20917			17199		15425	14096	12302	11290	10535	10241
GRE	8331	7955	8101	7981	8160	8022	5412	7334	5193	3880	1956	1556	1566	1193
HUN	6728	6333	5790	5431	5509	5120	5412	5322	5181	5028	4472	4582	4522	..
ICE							24	21	26	22	26	13	13	..
IRE	1204	1154	1061	1145	1151	1099	1152	1019	975	837	843	..	..	..
ISR	460	416	308	266	239	242	249	227	232	160	201	284	181	141
ITA	4309	4189		4516	4316	4105				2351	3718	3647	3501	2520
LUX	79	88	100	84	62	98	71	45	41	41	46	42	45	48
MAT	39	53	38	28	24	42	31	34	25	24	15	11	14	16
MON	0	0	0	0	1	0	1	0	0	0	0	1	2	2
NET	2119	2230	2081	1974	1911	1765	1701	1763	1552	1452	1408	1346	1235	1333[a]
NOR	455	497		427	352	378	403	376	360	323	376	374	343	307
POL	79763	62410	26761	26796	26801	26857	25807	24087	23685	23411	21233	20490	20603	19534
POR	7099	6304	6002	7498	7651	6635	6873	7249	7309	7052	6908	6889	6624	7099
ROM	22746	21036	17893	15893	13101	12628	12093	12093		10856	10512	10418	10741	11238
SMR														
SPA	3558	3131	3335	3685	3642	4165	4859	5552	7961	8987	10078	10749	13755	9468
SSR	12455		11581	..	..	..	..	..	..	..	..	..	..	..
SWE	1625	1478	1307	1105	1127	991	926	875	784	832	754	712	650	..
SWI	1871	2091	1823	1648	1575	1447	1397	1389	1388	1295	1133	1178	1106	1003
TUR	98000	20314			100808	39927	36716	39992		28634	27589	30960	31030	30531
UNK	12496	12620	11781	11156	11204	10722	10488	9290	8452	7795	7043	6647	6855	5157
YUG	94065	86930	19358	19188	18830	17701	16645	16745	16806	16301	16627	16404	15895	..
Total	426249	304928	204610	189531	259231	190772	194790	176533	124329	168073	155988	143342	157965	108102

Blank indicates no data available
[a] preliminary
.. pending

Table 10. Immunization coverage rates (%) by Member State (1986-1988)

Member State	(year)	BCG[a]	DPT[b]	Measles[c]	Polio[d]	Rubella[e]
ALB	(1987)	92	96	96	94	n.d.
AUT[f]	(1987)	90	90	60	90	82
BEL[f]	(1987)	0	95	50	97	n.d.
BUL	(1987)	99.9	99.8	99.8	99.9	91.5**
CZE	(1987)	99.4	98.7	97.9	98.4	98.2*
DDR	(1987)	99.8	97.4-93.9	97.5	93.9-98.2	n.d.
DEN[g]	(1987)	a few (?)	94.0	82.0*	100	82.0*
DEU	(1987)	<50	95.0	50.0	95.0	5.0**
FIN	(1986)	79.5	n.d.	n.d.	95.0	n.d.
FRA[f]	(1986)	96	97	55	97	40**
GRE	(1987)	0.29	82.0	81.0	97.0	25.0**
HUN	(1987)	99.5	99.8	99.7	98.6	n.d.
ICE	(1987)	0	99.0	95.4	99.0	n.d.
ISR[f]	(1987)	n.d.	87.0	n.d.	88.0	n.d.
ITA[f]	(1987)	30	88.0	21.0	81.0	50.0**
LUX	(1987)	n.d.	68.0[h]	67.8	90.0	67.8*
MAT	(1987)	79.4	87.3	58.5	86.5	n.d.
NET	(1987)	n.d.	37.0-95.8	41.4	95.8	n.d.
NOR	(1987)	n.d.	80.0	87.0	80.0	87.0*
POL	(1986)	94.8	97.0	95.0	99.0	n.d.
POR	(1987)	71.0 (1986)	81.0	74.0	80	36**
ROM	(1987)	95.0	90.0	89.0	90.0	n.d.
SPA	(1987)	n.d.	88.0	83.0	80.0	80.0**
SSR	(1987)	n.d.	56-98	48-99	54-97	n.d.
SWE	(1986)	11.6	(99.4) DT	93.6	98.2	93.6*
SWI	(1986)	[i]	92-98	70*	98	70*
TUR	(1987)	34.0	71.0	50.0	70.0	n.d.
UNK	(1987)	96.3	73.0-87.0	70.0	87.0	87.0**
YUG	(1987)	86.6	90.4	92.2	90.2	n.d.

[a] Children under one year of age
[b] Children under 3 years of age
[c] Children under 2 years of age
[d] Children aged 1-3 years
[e] Infants immunized with rubella vaccine or MMR*, schoolgirls**
[f] Estimated
[g] Pertussis vaccine as indicator
[h] 89% were immunized with DT only
[i] Since 1987 recommended only for children at risk
n.d. No data
DT Diphtheria and tetanus toxoids

Table 11. Immunization coverage rates (%) in the Region (1986-1987)
29 countries

Number of countries	Name of vaccine	Number of countries[c] where coverage rates were			
		<50%[a]	50%-79%	80%-89%	90% +
29	BCG	15	3	1	10
28	DPT[b]	2	4	7	15
29	Measles	5	10	5	9
29	Polio	0	2	7	20
29	Rubella	18	3	5	3

[a] less than 50% or no information available
[b] Sweden is excluded as only DT toxoid is used for routine immunization
[c] if the range was indicated, the lower limit has been taken into consideration

These impediments are as follows:

- lack of national consensus in some countries on the eradication of poliomyelitis and other diseases preventable through immunization;
- lack of public demand for EPI;
- insufficient political and financial support from the state;
- lack of resources for purchasing or developing new or conventional vaccines (MMR, hepatitis B, hepatitis A, DPT, meningococcal vaccines, Haemophilus influenzae B vaccine, etc.);
- lack of managerial skill;
- poor surveillance (resulting in underreporting) on the incidence of certain diseases (rubella, mumps, measles, tetanus, pertussis and tuberculosis);
- insufficient support of national programmes with health legislation, health education and health information;
- poor cooperation of the private health sectors with national immunization programmes (AUT, BEL, DEU, FRA, GRE, ITA);
- the inertia of the public health services, and lack of initiative and innovation in the further development of immunization programmes;
- a lack of interest in the cold chain (AUT, BEL, DEU, ICE, SWE, SWI).

Some Member States do not report the incidence of measles, mumps, rubella, pertussis and tetanus at all. Others do not report neonatal tetanus separately.

The major impediment to the Regional EPI is the almost complete lack of resources.

Lessons learnt

Despite the impediments to the national programmes, certain lessons have been learnt from their implementation:

- WHO's experience in EPI is gradually being recognized;
- people are beginning to understand the managerial principles involved in setting targets, reviewing the situation, fund-raising, developing strategies, planning activities, monitoring immunization, evaluating coverage rates, and so on;
- they are also gaining a better understanding of the role of: the standard case definition in the surveillance of infectious diseases; reliable information on the incidence of diseases and immunization coverage rates; the monitoring of immunity; the mass media and communication science in the social mobilization of the population; WHO in giving clear guidance on contraindications; the cold chain in preserving the quality of vaccines; training in improving the efficacy of health personnel;
- and finally public demand for immunization is being created.

Approaches to target 5

Poliomyelitis

All countries officially report the disease to the Regional Office. The standard case definition is used by 18 countries. Of 194 indigenous cases of the disease in 1987 in the Region, the overwhelming majority (173 cases) occurred in the USSR, particularly in Turkmen SSR (44 cases), Uzbek SSR (39 cases) and Azerbaijan SSR (35 cases). Recent outbreaks of the disease occurred in Israel (1988) and Spain (1987-1988). Imported cases were reported in 1987 by four countries and vaccine-associated cases by six countries. Of 32 Member States, 22 (66.7%) were using OPV, 5 were using IPV and 5 were using OPV and IPV. All but 3 Member States (MAT, SSR and TUR) reported immunization coverage rates of 80% or more.

A document entitled Eradication of poliomyelitis - European plan of action has been prepared in the Regional Office and distributed to Member States.

An estimated US $2 000 000 are required for coordination and intercountry activities to attain the goal by the year 1990.

Measles

The disease is not yet notifiable in four Member States (AUT, BEL, DEU and SMR). The standard case definition was used only by 15 countries. The estimated degree of underreporting varied from 95% (NET) to 0 (ALB). Three countries used serological tests to confirm clinical diagnoses.

Recent outbreaks of the disease occurred in CZE (1984), DEN (1986), HUN (1988), ITA (1984-1985), ROM (1986), SPA (1985-1986).

The MMR vaccine has been introduced in 11 countries and measles-mumps vaccine in three countries. The rest of the Member States use measles vaccine.

High coverage rates ($\geq$ 90%) were reported by 10 countries (ALB, BEL, BUL, CZE, DDR, HUN, ICE, POL, SWE, YUG), mean coverage rates ($\geq$ 80% $<$ 90%) by 5 countries (DEN, GRE, NOR, ROM, SPA) and low rates ($<$ 80%) by 12 countries (AUT, DEU, FRA, ITA, LUX, MAT, NET, POR, SWI, SSR, TUR, UNK).

The information collected indicates the necessity for a radical improvement in the quality of vaccine (HUN, ROM, SSR), in immunization coverage and in surveillance in order to achieve target 5. There is no provision of resources in the planned Regional Office programme for measles eradication.

Mumps

Although this is not a target 5 disease, its eradication is possible owing to the introduction of the MMR vaccine.

Data on the incidence of mumps were available from 25 Member States through routine reporting, including the sentinel system which is used by five countries and surveys which are used by one. Five countries claimed to use the standard case definition. No information on the disease was available from six countries (AUT, DEU, IRE, MON, TUR, UNK). One country has not reported on this disease to the Regional Office since 1984 (SMR).

Recent outbreaks of the disease have occurred in BUL (1986), DDR (1987), DEN (1987), HUN (1987), ISR (1987), POL (1986) and ROM (1987).

The reporting of mumps in the Region is as poor as for measles. The same stands true for immunization coverage. A rapid improvement of many national immunization programmes is needed to control the disease.

Rubella

In view of the practical difficulties associated with the reporting and control of congenital rubella syndrome, the strategy for eradicating the disease has recently been changed completely. This has involved the introduction of the MMR vaccine and the acceptance of a new policy aimed at immunizing all children, adolescents, and susceptible women. This strategy is

described elsewhere.[a] Reporting on rubella is similar to reporting on mumps: 24 Member States provide data on the absolute number of cases, including the sentinel system which is used by four countries and surveys which are used by two. Eight countries provide no data. The standard case definition is claimed to be used by seven countries. Only seven Member States reported on the incidence of congenital rubella (DDR, DEN, FRA, HUN, ISR, SWE, UNK), which makes this indicator unreliable. Recent outbreaks of the disease have occurred in BUL (1984-1985), CZE (1984-1985), DDR (1984-1985), HUN (1984), IRE (1983-1984), ISR (1984), ITA (1984-1985), MAT (1985), POL (1985), ROM (1986-1987), SPA (1983-1985). In order to eradicate rubella from the Region, a radical improvement in the surveillance and immunization coverage rate (close to 100%) with MMR and rubella vaccines is required.

Tetanus

Only neonatal tetanus is included in target 5, but 31 countries routinely report on the total number of tetanus cases. Two of them also have sentinel surveillance and two others gather data through surveys.

Seventeen countries claim they use standard case definitions for diagnostic purposes and reporting. Immunization coverage rates (Table 10) against tetanus are the same as for diphtheria.

Neonatal tetanus

At least 25 out of 32 Member States reported no cases of neonatal tetanus in 1987. The accuracy of this information needs validation, but the trend of the incidence since 1974 and earlier is good evidence of the gradual disappearance of the disease. As mass immunization campaigns took place inonly a few countries or areas (BUL, ROM, SSR, TUR), the decrease in the incidence was associated mainly with two factors: the growing proportion of women who were immunized in their childhood (since the mid-1960s) and the growing proportion of children delivered under medical care.

Problem areas are mainly in the southern part of the Region (SPA, POR, ROM, TUR, YUG). The state of immunity of adult women to tetanus is unknown in most European countries. Achievement of target 5 is possible within a few years.

Diphtheria

The standard case definition was used by 19 Member States. In view of the low incidence of diphtheria in the Region, each suspected case must be thoroughly investigated to confirm the disease, i.e. an attempt should be made to isolate Corynebacterium diphtheriae and determine its toxigenicity and the patient's serum should be tested for diphtheria antitoxin.

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[a] European Advisory Group on the WHO Expanded Programme on Immunization: report on a WHO meeting. Copenhagen, WHO Regional Office for Europe, 1986 (unpublished document ICP/EPI 012).

Expanded Programme on Immunization: report of the Second Meeting of the European Advisory Group. Rome, Istituto Superiore di Sanità, 1988 (Rapporti Istisan, Sixth report).

It goes without saying that countries should inform WHO about all cases of diphtheria including imported ones. Seven countries are using DPT (diphtheria-pertussis-tetanus)-polio vaccine, two countries DT (diphtheria-tetanus)-polio vaccine and the remaining countries DPT vaccine.

Immunization coverage (Table 10) with DPT vaccine ranged from 90% or more in 16 countries and 80-89% in seven countries, to under 80% in five countries (MAT, NET, SSR, TUR, UNK).

Pertussis

As for rubella, mumps and tuberculosis, this disease is not included in target 5. Despite this fact, most Member States are immunizing their infants with DPT or pertussis vaccines. Nevertheless, a low incidence has been achieved by immunization in only 14 countries. The standard case definition is claimed to be used in 12 countries. In the Netherlands, serology is used to confirm the clinical diagnosis of pertussis. Routine reporting on the disease is carried out in 29 countries but considerable under-notification occurs. Pertussis is not notifiable in BEL and DEU. No data on the incidence are available from MON and there have been none since 1982 from SMR. LUX was the first and only country to report no cases of pertussis, in 1987. Three countries collect data on pertussis incidence through sentinel surveillance, while one country (FRA) estimates the annual number of cases. Recent outbreaks of the disease have occurred in ITA (1986-1987), MAT (1985-1986), NET (1986-1987), SWE (1985), SWI (1987), UNK (1982). At least two countries (ALB and TUR) have had some problems in the production and supply of a sufficient quantity of DPT vaccine.

Immunization coverage rates with DPT vaccine (or pertussis vaccine in DEN) are close to those rates indicated for diphtheria: 90% or more in 15 countries; 80-89% in seven countries and under 80% in five countries. One country (SWE) had less than 10%. A new type of pertussis vaccine, pertussis toxoid, is expected to be commercialized worldwide within five years. An improvement in national immunization programmes is needed in most Member States if the elimination of pertussis is to be accelerated in the Region.

Tuberculosis

New cases of tuberculosis (pulmonary) are routinely reported on by 29 countries. The quality of the data has not been validated in the Region as a whole but the incidence of the disease is decreasing steadily. Data on immunization coverage were obtained from 29 countries. Although the incidence of tuberculosis depends on many factors not necessarily related to immunization, at least 19 Member States continue to use BCG (Bacillus Calmette Guérin) vaccine routinely in their programmes (ALB, AUT, BUL, CZE, DDR DEU, FIN, FRA, HUN, ITA, MAT, POL, POR, ROM, SWE, SSR, TUR, UNK, YUG). Eleven of them reported a 90% or more coverage rate (ALB, AUT, BUL, CZE, DDR, FRA, HUN, POL, ROM, SWI, UNK) and one country reported an 84% coverage rate (YUG). In the remaining countries, the coverage rate was unknown (8 countries) or varied from 0 (ICE) to 79.5% (FIN). In Finland, the surveillance of tuberculosis has been intensified recently by screening, and supported with laboratory findings. No information is available on whether Finland regularly immunizes against tuberculosis.

Conclusions

The data collected during this survey show a great variation in the quality and efficiency of the national immunization programmes in Europe. Some of these programmes are well advanced, this being due mainly to the enthusiasm and experience of the programme managers (DEN, FIN, CZE, HUN, DDR, POL, NOR, etc.). Others are ineffective or less effective due to various impediments. WHO must give clear guidance and coordination to make all national immunization programmes successful and help them achieve target 5 in good time. This can only be realized if adequate resources are provided in support of the regional EPI.

Annex 2

CONTRAINDICATIONS FOR VACCINES USED IN EPI[a]

Introduction

No child should be denied immunization without carefully weighing the benefits to the child and to the community from disease prevention against the rare severe adverse events temporally associated with vaccines.

Genuine vaccine contraindications are few, and the number of individuals to which they apply are fewer still. Yet in many cases immunization is delayed or denied because of conditions falsely believed by the health worker to constitute a contraindication.

These recommendations are provided for the consideration of national authorities, to be adapted to national circumstances as appropriate.

It is recommended that each country establish an advisory mechanism so that:

(a) a national list of contraindications is established and continuously reviewed and updated;

(b) expert advice is available to any health workers involved in immunization for individual cases where doubt occurs.

Contraindications to immunization

Acute illness

Immunization should be postponed if the subject is suffering from acute illness accompanied by fever or systemic upset considered clinically significant by the health worker. Such children should be immunized as soon as possible after recovery. Where the target diseases remain serious risks, immunization should be delayed only in the face of life-threatening illness. Minor illnesses, such as upper respiratory infections or diarrhoea, with temperature below 38.5° C, are not contraindications.

Altered immunity

Live virus vaccines, in general, should not be given to individuals with:

(a) immune deficiency diseases such as combined immunodeficiency, agammaglobulinaemia or hypogammaglobulinaemia;

(b) immunosuppression due to malignant disease, such as lymphoma, Hodgkin's disease, other tumours of the reticulo-endothelial system or leukaemia;

(c) immunosuppression due to therapy such as systemic corticosteroids at high dose (e.g. prednisolone 2 mg/kg/day for more than a week), antimetabolites, alkylating agents or irradiation.

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[a] Source: Weekly epidemiological record, 37: 279-281 (1988).

For children in the above categories, their siblings and contacts, inactivated polio vaccine (IPV) should be used instead of oral polio vaccine (OPV).

HOWEVER:

(d) HIV positive individuals (asymptomatic or symptomatic) may receive live virus vaccines. For example, risk of measles disease for such children is greater than any vaccine-associated risk. IPV may be given at the discretion of the responsible clinician as an alternative to OPV, particularly in the case of symptomatic individuals.

(e) Routine HIV testing is not recommended as part of immunization practice.

Although a theoretical risk exists, evidence for an increased rate of adverse reactions after BCG immunization among asymptomatic HIV-infected individuals remains inconclusive. HIV testing for the purposes of BCG immunization is NOT recommended. If a known HIV-positive individual is asymptomatic, however:

- where the risk of tuberculosis is high, BCG is recommended at birth or as soon as possible thereafter in accordance with standard policies for immunization of non-HIV infected children;

- where the risk of tuberculosis is low but BCG is recommended as a routine immunization, it may be withheld.

BCG should be withheld from symptomatic HIV-infected individuals and should not be given to individuals with other defects of cell-mediated immunity.

Severe adverse events after a previous dose

Children with a history of anaphylaxis, collapse or shock, encephalitis/encephalopathy or non-febrile convulsion following a previous dose should not receive subsequent doses of the same vaccine. If such an event follows DPT, then the use of DT or T should be considered to complete the course. If a simple febrile convulsion follows vaccination, further vaccination should not be withheld. Advice should be given to prevent its recurrence with the use of antipyretic or anticonvulsive measures.

Children with neurological disorders

Vaccines containing pertussis antigens should not be given to children with evolving neurological diseases (e.g. uncontrolled epilepsy, infantile spasms, progressive encephalopathy). Children with a personal history of non-febrile convulsions should be referred for expert advice.

Pregnancy

Live virus vaccines should not be administered to pregnant women because of the theoretical possibility of harm to the fetus. However, where there is a significant risk of exposure to poliomyelitis, the need for vaccination

outweighs any risk to the fetus and OPV or IPV should be given. Inadvertent rubella vaccination during pregnancy should not ordinarily be a reason for termination of pregnancy.

Anaphylaxis to egg protein and antibiotics in vaccines

Persons with a history of anaphylactic reaction (generalized urticaria, difficulty in breathing, swelling of mouth and throat, hypotension, shock) following egg ingestion should not receive some vaccines prepared on hens' egg tissues (e.g. yellow fever and influenza). Vaccine viruses propagated in chicken fibroblasts ordinarily can be used in such individuals. These include the currently available measles/mumps/rubella vaccines. Known severe hypersensitivity to particular antibiotics is a contraindication to the use of vaccines containing them.

False contraindications

The following are examples of conditions which are NOT contraindications to immunization:

- minor illnesses, such as upper respiratory infections or diarrhoea, with temperature below 38.5° C;
- allergy, asthma or other atopic manifestations, hay fever or "snuffles";
- family history of convulsions;
- treatment with antibiotics, low dose corticosteroids or locally-acting (e.g. topical or inhaled) steroids;
- dermatoses, eczema or localized skin infection;
- chronic diseases of heart, lung, kidney and liver;
- stable neurological conditions (such as cerebral palsy), and Down's syndrome;
- history of jaundice after birth;
- prematurity, small-for-dates infants;
- malnutrition;
- child being breastfed;
- mother pregnant;
- previous history of pertussis, measles, mumps or rubella infection;
- in incubation period of illness.

Some conditions increase the risk from infectious diseases and such children should be vaccinated as a matter of priority. These conditions include the following: asthma, cystic fibrosis, coeliac disease, chronic lung and congenital heart disease, Down's syndrome, stable neurological conditions,

malnutrition, small-for-dates and premature infants. This last group should be immunized according to the recommended schedule, irrespective of the extent of prematurity.

Annex 3

WORKING PAPERS FOR THE PLENARY PRESENTATIONS

ICP/EPI 018/6	Global EPI, its role in the WHO health for all strategy Dr R. Henderson
ICP/EPI 018/7	EPI in the European Region as one of the most feasible programmes of the regional HFA targets: an overview Dr B. Bytchenko
ICP/EPI 018/8	Reporting and surveillance of selected preventable diseases in the European Region (diphtheria, pertussis, tetanus, poliomyelitis, measles, mumps, rubella, tuberculosis, viral hepatitis) Dr D. Greco
ICP/EPI 018/9	Prototype of national programmes: United Kingdom Dr D. Salisbury
ICP/EPI 018/10	Pluralist programme: France Dr M. Rey
ICP/EPI 018/11	Management of national immunization programme (NIP) in Czechoslovakia Dr G. Walter and Dr I. Masar
ICP/EPI 018/12	Eradication of indigenous transmission of wild poliomyelitis virus in the Americas Dr C. de Quadros and Dr A. Hinman
ICP/EPI 018/13	Serosurveys for poliomyelitis virus antibodies Dr T. Hovi
ICP/EPI 018/14	The Swedish experience of two dose vaccination programme aiming at eliminating measles, mumps and rubella Dr M. Böttiger
ICP/EPI 018/15	The cold chain in Europe - safe and sound? Mr A. Battersby
ICP/EPI 018/16	Elimination of DPT Dr I. Masar
ICP/EPI 018/17	Vaccine quality control: recent developments Dr E. Griffiths
ICP/EPI 018/18	Viral hepatitis vaccines Dr F. Deinhardt

ICP/EPI 018/19	New bacterial vaccines in national immunization programmes P. Helena Mäkelä
ICP/EPI 018/20	Molecular biological approaches to improvement in differentiation of poliomyelitis strains and properties of live poliomyelitis vaccine Dr Y. Ghendon
ICP/EPI 018/21	Identifiying the issues in national management programmes Dr K. Barnard

Annex 4

PARTICIPANTS

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