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## *OPERATIONAL TARGETS FOR EPI DISEASES*

1996

EUR/HFA target 5

## 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

Target 5 of the regional strategy for health for all included the elimination of indigenous measles, congenital rubella, diphtheria, poliomyelitis, neonatal tetanus, syphilis and malaria from the European Region by the year 2000. In 1984, the Second Conference on Immunization Policies in Europe endorsed the target and set operational targets up to 1990. In 1991, the WHO Regional Committee for Europe added mumps to the list of diseases to be eliminated and removed syphilis and malaria. Expert group meetings added operational targets on EPI diseases in 1992 and pertussis in 1993. This paper sets out the targets as they now stand and the rationale for the revisions.

## Keywords

COMMUNICABLE DISEASE CONTROL  
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## INTRODUCTION

Target 5 of the regional strategy for health for all included the elimination of indigenous measles, congenital rubella, diphtheria, poliomyelitis, neonatal tetanus, syphilis and malaria from the European Region by the year 2000. In 1984, the participants at the Second Conference on Immunization Policies in Europe, held in Karlovy Vary, endorsed the target and set operational targets for the period up to 1990. The WHO Regional Committee for Europe modified target 5 in 1991, adding mumps to the list of diseases to be eliminated and removing syphilis and malaria. Any new targets that are set must be realistic and achievable. Experience has shown that the previous targets were too optimistic. Setting such targets undermines the credibility of WHO and risks damaging the confidence and support of national programme managers. The targets that are proposed are based first and foremost on current scientific knowledge of the diseases and the vaccines available to protect people against them. The targets include goals for reduced morbidity and operational targets on immunization coverage, disease surveillance and, where necessary, outbreak response.

Since the HFA targets were set, the circumstances in the Region have changed considerably. For these reasons, the EPI operational targets were reviewed by an expert group in 1992, by the European Advisory Group (EAG) on EPI in February 1993 and December 1993 (pertussis), and by national programme managers at their meeting in June 1993. As a result, the revised targets for the European Region are:

**By the year 2000,**

- **there should be no neonatal tetanus and no indigenous cases of diphtheria in the Region;**
- **indigenous poliomyelitis due to wild poliovirus should be eradicated from the Region;**
- **there should be no deaths from indigenously acquired acute measles in the Region and the annual incidence of confirmed cases of measles and mumps in each country should be less than 1 per 100 000 population;**
- **no indigenous cases of congenital rubella syndrome and no laboratory confirmed rubella infections in pregnant women should occur in the countries of the Region; and**
- **the annual incidence of reported cases of pertussis in each country in the Region should be less than 1 per 100 000 population.**

## RATIONALE

### Measles

Most of the targets on measles set at Karlovy Vary were not reached. The average immunization coverage for the Region is only 80%, lower than in three other WHO regions. Only eight countries in the European Region have achieved 95% coverage, and coverage remains below 80% in several others.

Even countries that have achieved very high coverage for many years have not eliminated measles. Outbreaks have been reported in populations with vaccination rates as high as 99%. Two-dose strategies have also failed to eliminate the disease.

The only approach that has not been used in the Region is mass immunization with the aim of interrupting transmission. To be effective, it would have to be carried out simultaneously in all countries and achieve high coverage. The exercise would have to be repeated periodically to prevent the reaccumulation of susceptibles, which would inevitably occur even at very high levels of coverage. Such campaigns could be extremely disruptive and expensive.

Eliminating measles will clearly be much more difficult than previously believed. Even if the financial resources existed, it is doubtful that the supply of high-quality vaccine would be adequate to achieve elimination in the short term (by the year 2000). Thus, while measles elimination should remain the long-term goal, it is more realistic and practical to set a target for the year 2000 of a substantial reduction in morbidity.

### **Congenital rubella**

Similarly, most countries in the Region have failed to achieve targets for the elimination of congenital rubella. Surveillance is inadequate or nonexistent in several countries, and rubella vaccine has yet to be formally introduced in the national programmes of 12 Member States. Where the vaccine has been introduced, the coverage levels reported range from 25% to 100%

The principles for the elimination of congenital rubella are clear.<sup>1</sup> The first imperative is to protect women of childbearing age, and the second is to interrupt rubella transmission in young children. The new targets for the elimination of congenital rubella are designed to match those set for measles, as young children should be immunized against both with MMR vaccine.

### **Mumps**

Mumps is less infectious than measles and transmission may be interrupted at relatively lower coverage levels. Nevertheless, the coverage targets for mumps match those for measles and rubella, as the MMR vaccine is used against all three. The cost-effectiveness of immunization against mumps justifies the inclusion of the disease in target 5.

### **Diphtheria**

The widespread immunization of infants and pre-school children with diphtheria toxoid since the 1940s has resulted in a dramatic decline in both clinical disease and carriage rates. Eliminating the disease should be possible. Human beings are the only known reservoir; the disease is seasonal and thus lends itself to outbreak control, and diphtheria toxoid is safe, effective and inexpensive.

There are also obstacles to elimination, however. The immunity gained from vaccination is not life-long and wanes unless boosted. Serological surveys have demonstrated gaps in immunity to diphtheria, particularly in adult populations. An asymptomatic carrier state exists, even in vaccinated populations. The disease is readily misdiagnosed in countries with a low incidence. The Expert Group considered these obstacles in proposing targets.

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<sup>1</sup> Hinman, A.R. et.al. Rational strategy for rubella vaccination. *Lancet*, 1: 39-41 (1983).

Diphtheria incidence reached an all-time low in 1980, when only 623 cases were reported in the Region. At that time elimination seemed imminent. Two upsurges of diphtheria occurred, however: one during 1981–1985 and a second that began in 1990 and continues. This increase can be attributed almost entirely to the situation in the former USSR, from which 97% of the cases in the Region are now reported.

### **Poliomyelitis**

Following the success of poliomyelitis control in the Region of the Americas, WHO set a target of global eradication by the year 2000. Many countries in the European Region have already eliminated the disease and have high levels of vaccination coverage. Thirteen countries have recently reported cases, however, and there are persistent foci of endemic wild poliovirus transmission in Bulgaria, Romania, Turkey, the former Yugoslavia, and the central Asian and trans-Caucasian countries of the former USSR. Interrupting transmission in these areas is the first priority. This requires a strong political and financial commitment, which has not been forthcoming. In contrast to the European Region, no confirmed case of wild poliovirus infection has been reported in the Americas for almost a year.

The reporting of poliomyelitis is well established throughout the Region. Active surveillance of acute flaccid paralysis will be essential to prove that the disease has been eradicated, but is still poorly developed. The ability to detect acute flaccid paralysis at a rate of not less than 1 per 100 000 in children is an indicator of the sensitivity of surveillance. Most countries now have laboratories capable of isolating and classifying polioviruses, although the strains can be typed as wild or vaccine-like in only a few countries. A European bank of polioviruses has been established.

### **Neonatal tetanus**

The elimination of neonatal tetanus requires the achievement of tetanus immunity in women of childbearing age, along with improved maternity care, which includes the attendance of a trained person at every delivery.

A target has been set for the global elimination of neonatal tetanus by 1995. The disease has already been eliminated in most countries in the European Region, although surveys of immunity to tetanus in several countries have demonstrated gaps in women of childbearing age. The high proportion of institutional deliveries is the main reason for the absence of neonatal tetanus in most countries of the Region. Only 69 cases were reported during 1990, 67 of which occurred in Turkey. In Turkey, Portugal and the former Yugoslavia, a significant proportion (more than 5%) of deliveries takes place without a trained attendant.

### **Pertussis**

Provision for elimination of pertussis is not included in the revised regional targets. In many countries the disease has been progressively coming under control and the future availability of acellular vaccines may well provide an incentive for even better control in those countries able to afford them. However, there is a danger of pertussis epidemics, as has been seen with diphtheria, because of widely reported decreases in coverage due to public fears about the safety of the vaccine. The re-emergence of pertussis epidemics in the United Kingdom in the late 1970s and 1980s serves as a reminder of what happens when immunization coverage declines.

## OPERATIONAL TARGETS

### Measles

1. The new target should be:

*By the year 2000, there should be no deaths from indigenously acquired acute measles in the Region and the annual incidence of confirmed cases of measles in each country of the Region should be less than 1 per 100 000 population.*

2. Countries that have achieved an immunization coverage of 90% should achieve more than 95% coverage by 2 years of age by 1995, and all other countries should do so by 1997.

No eligible child should remain unimmunized, as valid contraindications to measles vaccine<sup>2</sup> apply to less than 1% of children,<sup>3</sup> over 95% is a feasible operational target. High coverage in young children must be the first priority, although countries with high coverage at 2 years of age may wish to consider introducing a second dose of vaccine at 6–12 years to prevent outbreaks in adults or older children.

3. By 1997, no district in any country should have less than 95% immunization coverage at 2 years of age.
4. Measles should be a routinely notifiable disease in all countries of the Region. Countries where this is not the case should introduce surveillance of measles by the end of 1993.

Rash and fever occurring 5–14 days after vaccination should not be notified as they are usually associated with the vaccine and of no significance to public health.

5. By 1997, all countries in the Region should have efficient surveillance to identify all cases of measles. Reaching this target will require additional active measures to detect cases through death certificates and hospital and laboratory records, in addition to routine reporting.
6. Laboratory confirmation should be sought for all sporadic measles cases by 1995 in countries reporting less than 1 case per 100 000 population, and by 1997 in all other countries.
7. From 1997, susceptibility to measles should be less than 10% in all age groups.

Reaching this target will require serological surveillance; infants aged 6–11 months should be included in such surveys. Susceptibility in this age group may be expected to increase as a consequence of being born to women with vaccine-acquired immunity.

8. By 1997, all outbreaks of measles (this is, where two or more generations of transmission have occurred) should be investigated and appropriate control measures taken. These measures may include the identification and vaccination of susceptibles and lowering the age at which people are vaccinated.

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<sup>2</sup> Expanded Programme on Immunization. Contraindications for vaccines used in EPI. *Weekly epidemiological record*, 37: 279–281 (1988).

<sup>3</sup> Hewitt, M. Incidence of contraindications to immunization. *Archives of diseases in childhood*, 64: 1052–1053 (1989).

### **Congenital rubella**

9. The new target should be:

*By the year 2000, no indigenous cases of congenital rubella syndrome and no laboratory-confirmed rubella infections in pregnant women should occur in the Region.*

10. Countries that have already achieved immunization coverage of 90% by 2 years of age should achieve more than 95% coverage in both sexes by 1995; all other countries should do so by 1997.
11. By 1997, no district in any country should have less than 95% coverage at 2 years of age.
12. By 1995, every country in the Region giving rubella vaccine to schoolgirls should achieve 95% coverage.

It is essential that high coverage be achieved in young children, as low coverage will result in an increased number of cases in older children and adults, possibly with more cases of congenital rubella syndrome. Countries introducing rubella immunization in young children should ensure that the vaccine is also used to protect girls before puberty and women of childbearing age.

13. By 1995, every country in the Region should have a surveillance system capable of detecting all cases of congenital rubella syndrome.

In countries using only a selective vaccination strategy, rubella re-infections in pregnant women are likely to be detected as the sensitivity of surveillance improves.

14. By 1995, all pregnant women with rashes and all pregnant women in contact with rubella should be investigated serologically.

In countries where abortion is legal, rubella-associated terminations of pregnancy are a sensitive proxy for the impact of maternal rubella infections and should be routinely monitored.

### **Mumps**

15. The new target should be:

*By the year 2000, there should be no indigenous cases of mumps in the Region.*

16. Countries that have already achieved 90% immunization coverage by 2 years of age should achieve more than 95% coverage by 1995; all other countries should do so by 1997.
17. By 1997, no district in any country should have less than 95% immunization coverage at 2 years of age.

As with rubella, high immunization coverage for mumps is essential, as low coverage will result in an increased age at infection and thus more complications.

18. Mumps should be a notifiable disease in all countries of the Region. Countries where this is not the case should introduce surveillance of mumps by the end of 1993.

Parotitis occurring in the third week after vaccination should not be notified, as it is associated with the vaccine and of no significance to public health.

19. By 1997, all countries in the Region should have efficient surveillance to identify all cases of mumps.

### **Diphtheria**

20. The new target should be:

*By the year 2000, there should be no indigenous cases of diphtheria in the Region.*

21. By 1995, every country in the Region should achieve 95% coverage with the primary immunization by 2 years of age.
22. By 1997, no district in any country should have less than 90% coverage with the primary immunization at 2 years of age.
23. By 1995, every country should include a booster dose of a diphtheria-containing vaccine in children of school age (5–14 years) and achieve either 95% coverage or an immunity rate of 90% as determined by appropriate serological studies.

Countries not currently giving such a booster could consider the use of low-dose diphtheria vaccine in conjunction with tetanus vaccine at school-leaving age. In this situation, the resulting immunity would have to be assessed in young adults (aged 20–30 years).

24. All countries should have effective surveillance to ensure that no cases are missed, and laboratories able routinely to differentiate toxigenic from non-toxigenic strains.
25. By 1995, all reported cases of diphtheria should be classified as indigenous or imported.
26. By 1995, appropriate serological studies should assess the diphtheria immunity status of the adult population in all countries.

If the immunity rate in any ten-year age band, or social or ethnic group is found to be less than 75%, one or more booster doses should be given as appropriate.

27. The occurrence of a single case of diphtheria requires immediate control measures, such as isolation of the patient and the vaccination and chemoprophylaxis of contacts. During an outbreak, special measures must be taken, including mass immunization.

### **Poliomyelitis**

28. The new target should be:

*By the year 2000, or earlier if possible, indigenous poliomyelitis due to wild poliovirus should be eradicated from the Region.*

29. By 1993, every country should have access to laboratory facilities for isolating, typing and characterizing polioviruses as wild or vaccine-like. A regional laboratory network is essential to support this virological activity.
30. By 1993, any country still having areas with cases due to wild virus should implement aggressive control strategies in addition to routine immunization activities.
31. In countries reporting less than 10 cases per annum, all people suspected of having poliomyelitis and their contacts should be fully investigated by viral culture of faeces by 1993; this must be achieved by all countries by 1995.
32. By 1995, all countries in the Region should have either surveillance of acute flaccid paralysis or other means of ensuring the detection of any case of poliomyelitis in any age group.
33. By 1995, every country in the Region should achieve 95% coverage with the primary immunization by 2 years of age.
34. By 1997, no district in any country should have less than 90% coverage for the primary immunization at 2 years of age.

### **Neonatal tetanus**

35. The new target should be:

*By 1995, there should be no neonatal tetanus in the Region.*

36. All pregnant women should be able to deliver with the help of a trained attendant. In areas where this cannot yet be achieved, women of childbearing age, including pregnant women, should be targeted for immunization with tetanus toxoid.
37. By 1995, every country in the Region should achieve 95% coverage with the primary immunizations by 2 years of age.
38. By 1997, no district in any country should have less than 90% coverage with the primary immunizations by 2 years of age.
39. By 1995, every country should include a booster dose of tetanus-containing vaccine, in conjunction with diphtheria vaccine, in children of school age (5-14 years) and achieve 95% coverage.
40. All countries should report cases of neonatal tetanus separately from cases of tetanus.
41. By 1995, all countries should analyse all cases of tetanus by the age and sex of patients. This will allow the identification of risk factors for neonatal tetanus, that is, whether cases are occurring in women of childbearing age.

## **Pertussis**

42. The new target should be:

*By the year 2000, the annual incidence of reported cases of pertussis in each country of the Region should be less than 1 per 100 000 population.*

43. Until there are data that confirm the same or better efficacy for acellular pertussis vaccine, conventional whole-cell vaccine should continue to be used in routine programmes.

44. All immunization schedules should include a three-doses primary course of pertussis containing vaccine, preferably as DTP, administered before 6 months of age. The primary series should be reinforced by a fourth dose given before school entry. The need for additional booster doses should be assessed by individual national programmes.

45. By the year 1995, every country in the Region should achieve 95% coverage with three primary doses in infancy. By the year 1997, no district in any country should have less than 90% coverage.

46. Pertussis should be a routinely notifiable disease in all countries of the Region; countries where this is not the case should introduce surveillance of pertussis by the end of 1995.

47. Countries should collect information on the epidemiology of pertussis, including the age distribution, in order to have data on which to base recommendations regarding a pertussis booster dose policy in older age groups. Countries should use an active surveillance programme with agreed case definitions for reporting.

48. Outlined criteria for case definitions are:

- *suspected cases* (which should be reported):
  - history of severe cough and history of any one of:
    - cough equal or more than 14 days duration
    - paroxysms/spasms of coughing
    - cough with vomiting
- *confirmed cases*:
  - suspected cases with positive culture or positive serology
  - or suspected cases with linkage to a confirmed case.

49. Countries should ensure that they have access to facilities for effective laboratory diagnosis for infections due to *Bordetella pertussis*. There are advantages in having available to each country a reference laboratory for serology and strain identification.

50. Routine monitoring of vaccine efficacy is recommended. Epidemiological data suggesting low vaccine efficacy provide a danger signal for possible use of low quality vaccine, or inadequacies of vaccine storage, transport or administration. Such possibilities should be investigated.