# VACCINE MODERNIZATION IN THE BALTIC COUNTRIES

WORLD HEALTH ORGANIZATION
Regional Office for Europe
COPENHAGEN

## TARGET 5

## REDUCING COMMUNICABLE DISEASE

*By the year 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.*

*The Forty-fifth World Health Assembly, May 1992, calls on organizations of the United Nations system, other intergovernmental agencies, and governmental and nongovernmental organizations to support the achievement of the goals and operational targets for immunization for the 1990s, to promote efforts to ensure the universal use of vaccines meeting WHO requirements, and to participate in initiatives with donors to ensure the increased financial support necessary to meet both current and future vaccine needs.*

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# VACCINE MODERNIZATION IN THE BALTIC COUNTRIES

## Report on a WHO Consultation

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# ABSTRACT

To explore ways in which the five Nordic countries and the Netherlands could assist Estonia, Latvia and Lithuania, WHO organized a Consultation on Vaccine Modernization in the Baltic Countries. The participants first discussed reports on conditions and needs in the Baltic countries, the types of activity undertaken by the Nordic countries and the Netherlands, and the role of the United Nations Children's Fund (UNICEF), and then formed working groups to address the issues of vaccination programmes, vaccine supply and quality control in the Baltic countries. The participants concluded their work by looking forward to the needs of the Baltic countries in 1993. They supported better coordination of the activities of the WHO Expanded Programme on Immunization (EPI) in the Baltic countries. WHO will establish contact between the Baltic countries, the UNICEF Supply Division and the World Bank to ensure that UNICEF procurement services could be made available for the purchase of vaccines for the EPI, and the participants from the Nordic countries and the Netherlands agreed to explore the types of assistance their institutes and governments could provide.



## *Keywords*

VACCINES – supply and distribution
IMMUNIZATION

CCEE

# CONTENTS

# INTRODUCTION

The current work of WHO includes efforts to improve the vaccine situation in the former republics of the USSR. The Nordic countries and the Netherlands are already cooperating on some vaccine issues, and some of them have expressed a special interest in providing health-related assistance to the Baltic region and perhaps to some of the north-western regions of the Russian Federation. To encourage action to follow up this interest, the WHO Regional Office for Europe organized a Consultation on Vaccine Modernization in the Baltic Countries. There were participants from the three Baltic countries (Estonia, Latvia and Lithuania), the Russian Federation, the five Nordic countries and the Netherlands, two observers and a staff member of the WHO Regional Office for Europe.

Dr B. Hareide was the Chairperson, Dr U. Banders, the Vice-Chairperson, and Dr T. Rønne served as Rapporteur. In Riga, the Consultation was organized by the Institute of Microbiology, Latvian Academy of Sciences. The working papers and the participants are listed in Annexes 1 and 2, respectively.

The participants were to exchange information on how vaccine programmes were currently structured and supplied, including how the needs for vaccines were being met, and the problems that needed to be solved for 1993. The participants also discussed other issues in the future development of immunization activities.

# DISCUSSION

Activities and conditions in countries were reported, and then three working groups reviewed particular topics.

## Reports from the Baltic countries

In Estonia, the immunization coverage against diphtheria by the third year of life had reached 90% by the end of 1991. Despite mass vaccination of adults in the middle 1980s, only 35% had appropriate protection in 1991, and eight cases of diphtheria were diagnosed that year. Immunity against tetanus was satisfactory. Owing to contraindications, the coverage of immunization against pertussis was not satisfactory. By the end of the third year of life, 90% of children were vaccinated against poliomyelitis, and coverage was 94% in the group aged 1 – 14 years.

Measles occurred periodically and shifted to older age groups. Nevertheless, immunization coverage by 3 – 4 years of age reached 90%. Seroconversion took place in 80 – 85% of the people vaccinated. More cases of mumps were reported in 1992 than in previous years; 71% of the group aged 1 – 14 years were vaccinated.

The vaccines in stock and those provided by the United Nations Children's Fund (UNICEF) and Finland met the needs for 1992. The immunization programme for 1993 was to be modernized, and the main problem was securing supplies of vaccines and syringes.

In Latvia, immunization coverage decreased, owing to the interruption of the supply of vaccines from the Russian Federation. Vaccines against diphtheria, tetanus, poliomyelitis, measles, rubella, mumps, tuberculosis and rabies were bought through Pasteur-Mèrieux or provided by UNICEF. The vaccine supply was the main problem for 1993.

In Lithuania, a Republican Immunization Centre was established in 1991 to strengthen the central organization of the immunization programme. The programme was modernized, and implemented through the existing primary health care infrastructure and by municipal medical institutions. Means to educate health care personnel, mobilize society and evaluate the programme were introduced.

Immunization coverage had decreased since 1988; seven cases of diphtheria were diagnosed in 1992. The vaccines in 1992 used were produced by the State Serum Institute, Denmark (BCG and DT) and Pasteur-Mèrieux (DPT, OPV and rubella). The main source of funds

for these vaccines was the Danish Government. In addition, UNICEF donated some vaccines.

## Reports from the Nordic countries, the Netherlands and UNICEF

In Denmark, the State Serum Institute had worked closely with the Republican Immunization Centre in Lithuania since 1991 to modernize the country's childhood immunization programme. An agreement on collaboration was signed in February 1992. Funding from the Danish Ministries of Health and Foreign Affairs covered the supply of some vaccines to Lithuania. In 1992, this assistance amounted to more than DKr 4 million, about three quarters of which was spent on vaccines, syringes and other equipment. Denmark intended to extend this collaboration to Latvia and perhaps to Estonia.

Finland provided training for vaccine quality control and donated some vaccines to Estonia. Finland proposed to train three people from the Baltic countries in the quality control of DPT vaccines, and to carry out the day-to-day work involved in quality control. Finland could produce enough DPT vaccine to meet the needs of Estonia; the Ministry of Health might be willing to support this work.

Sweden suggested cooperation with the Baltic countries on the diagnosis of measles, mumps, rubella and hepatitis B, and study visits of people from these countries to the National Bacteriological Laboratory in Stockholm for training in laboratory methods. Sweden also invited Latvia and Lithuania to join Estonia in a programme to train scientists in the diagnosis of infectious disease in general.

Iceland had committed about US $5000 to buy vaccines for Latvia and proposed collaboration on *Haemophilus influenzae* and pneumococcal vaccination programmes.

Norway expressed interest in collaboration on or support of quality control, especially in relation to the batch release of selected products, and was willing to discuss assistance with technology transfer. Funding could perhaps be secured through a new agreement

between Norway and the European Bank for Reconstruction and Development to support the Baltic countries.

The Netherlands had much experience in international cooperation on vaccine development and supply, and would seek government support for cooperation with the Baltic countries.

UNICEF provided emergency supplies of vaccines for the Expanded Programme on Immunization (EPI) in 1992 (Table 1). In the future, UNICEF could provide procurement services on behalf of the Baltic countries to secure WHO-approved vaccines at the lowest cost.

Table 1. Vaccines supplied by UNICEF for the Baltic countries in 1992 (as of 31 October 1992)

| Country | Type of vaccine | Doses | Month shipped |
|---|---|---|---|
| Estonia | Measles | 10 000 | March |
| | BCG | 16 000 | April |
| | DPT | 40 000 | April |
| | DT | 40 000 | April |
| | OPV | 180 000 | April |
| Lithuania | Measles | 10 000 | March |
| Latvia | Measles | 10 000 | March |
| | BCG | 44 000 | April |
| | DPT | 84 000 | April |
| | DT | 42 000 | April |
| | OPV | 240 000 | April |

## Vaccination programmes

*Important vaccines*

Six vaccines on the EPI list are important for children: BCG, pertussis, diphtheria, tetanus, measles and poliomyelitis. When mumps vaccine has been used in a large portion of infants, it is desirable to continue providing this vaccine. The Jeryl Lynn strain is strongly preferred, if it can be obtained.

If supplies of rubella vaccine are available, giving it as a monovalent or combined vaccine at 15 – 18 months is recommended. Including rubella only at 15 – 18 months, however, is to be avoided. The first priority is to vaccinate girls aged 11 – 12 years. Giving a dose of combined measles-mumps-rubella vaccine to all 12-year-olds (in addition to immunization against measles at age 1 – 2 years) is the optimal approach to prevent congenital rubella syndrome, measles and the complications of mumps in adolescent males. Measles-mumps-rubella vaccine could be a part of the vaccination programme, if financial resources are available. Special attention must be paid to vaccination coverage if this vaccine is included.

The use of hepatitis B vaccine is desirable. It might first be used to vaccinate infants born to mothers with hepatitis B antigen, if appropriate diagnostic tests can be done.

In 1993, it is important to continue the use of vaccines already in the vaccination programme for children. New vaccines can be used only when the necessary resources are available.

Diphtheria and tetanus revaccination is important for adults. It is important, however, to determine not only the population in need through serological surveys but also the funds available for the revaccination of adults.

Some vaccines are important for groups with special needs, including:

- hepatitis B vaccine for risk groups, particularly medical workers;
- tickborne encephalitis vaccine for groups such as workers in forests and people living in high-incidence areas; and

– influenza vaccine.

Influenza vaccine has been used in Lithuania for medical risk groups and health personnel. The results will show whether this should continue.

### *Schedule*

The vaccination schedule proposed here (Table 2) is compatible with the existing knowledge and schedules in the Baltic countries. It might be changed when more information has been gathered from current serological studies. Modifications may also be necessary to take account of children with partial completion of their vaccination schedule with formerly available vaccines.

Paediatricians (and in future general practitioners) and nurses, acting on doctors' indications, give vaccinations. This is done in polyclinics, schools and special clinics. As the existing organization seems to be suitable for efficient vaccinations, no changes are needed except extensive training for health personnel.

### *Training and education*

Both health care professionals and the general public, particularly parents, need extensive training and education on vaccination issues. All types of professionals must be trained: teachers in medical schools, doctors (particularly paediatricians and general practitioners), nurses and students.

Doctors should take training courses, and participate in brief exchange programmes to change their thinking, to gain experience from other countries and to discuss problems. Nurses need retraining in vaccination and professional training in statistical data analysis.

Table 2. Proposed vaccination schedule for children

| Vaccine | Age |
|---|---|
| BCG | < 3 months |
| DPT-1 | 3 months |
| DPT-2 | 4.5 months |
| DPT-3 | 6 months |
| DPT-4[a] | 15 – 18 months |
| DT booster | 9 years |
| OPV-1 | 3 months |
| OPV-2 | 4.5 months |
| OPV-3 | 6 months |
| OPV-4 | 15 – 18 months |
| OPV-5 | before school entry |
| Measles-mumps-rubella-1[b] | 15 – 18 months |
| Measles-mumps-rubella-2 | 12 years |

[a] For reasons of vaccine supply logistics, DPT can be used for the booster, but DT may be needed to reduce side effects in some children.

[b] If combined vaccine available for both doses. Otherwise, monovalent or bivalent vaccines may be used. Rubella vaccine must be given first to 12-year-old girls when supplies of rubella-containing vaccines are limited.

Parents need to understand the real need for vaccination and contra-indications. It is important to start this work in 1993 through:

- separate training meetings for nurses working in vaccine centres, doctors working in vaccination units and regional hospitals, and medical workers at schools and daycare centres; and
- health education of parents through the mass media.

If new vaccines are used, other groups involved in the vaccination process must also be trained.

*Surveillance*

Vaccination coverage is now followed through an obligatory notification system. Its completeness must be evaluated, and alternative systems introduced that comply with EPI guidelines to include reports by district or other administrative unit.

Groups should be established in each country to deal with post-vaccination complications. Adverse effects should be defined clearly enough so that nurses and doctors know what they are expected to report. Further, vaccinators must be encouraged to report actively on true adverse reactions.

Serological surveys in the Baltic countries should be carried out in collaboration with experts from other countries. If possible, the results should be published in a form that permits international comparison. As a start, existing data from the three Baltic countries will be collected in one location in Lithuania.

It is desirable to create a common system for all Baltic countries to use in collecting data on infectious diseases preventable by vaccination. The EPI system could facilitate this process. Special attention should be paid to laboratory verification of the diagnoses.

In brief, surveillance can be improved in 1993 by:

- creating a harmonized system for data collection on vaccine-preventable diseases in the Baltic countries (using common data collecting forms);
- planning the serological surveillance of vaccine-preventable diseases (using a joint protocol for collecting data from three Baltic countries); and

– defining uniform criteria for adverse reaction to be followed.

## Vaccine supply

Vaccines for Estonia, Latvia and Lithuania had been obtained from within the former USSR, and immunization schedules were similar to those in the USSR. The need for vaccines and disposable syringes from other sources was calculated for 1993 (Table 3). A simplified immunization system was used as a basis, as in Table 2.

Table 3. Vaccine needs (in doses) for the Baltic countries in 1993[a]

| Vaccine | Total doses[b] | Total syringes |
|---|---|---|
| BCG | 116 000 | 116 000 |
| DPT x 4 | 464 000 | 464 000 |
| DT booster | 116 000 | 116 000 |
| OPV x 5 | 580 000 | 0 |
| Measles-mumps-rubella x 2 | 232 000 | 232 000 |
| or | | |
| Measles-rubella x 2 | 232 000 | 232 000 |
| Mumps (Jeryl Lynn strain) x 1[c] | 116 000 | 116 000 |

[a] Based on the following birth rates: 20 000 per year in Estonia, 40 000 per year in Latvia, and 56 000 per year in Lithuania.

[b] Not accounting for wastage. Figures accounting for wastage can be obtained by multiplying by 2 for BCG and by 1.33 for other vaccines.

[c] Other strains accepted by WHO may be used, depending on the best available information on safety and efficacy.

## Quality control of vaccines

At present, there is no organization or authority to assess the quality of vaccines in the Baltic countries, or to review any quality control

protocols to be issued in the Baltic countries in the future. Hence the responsibility for the registration and licensing of vaccines in the Baltic countries is not yet assigned. Although not the most immediate priority, establishing the necessary authorities would be beneficial. The first step in this process could be a training programme for scientists from all three Baltic countries.

The programme should preferably be organized in conjunction with WHO and should be concerned with the quality control of vaccines and the assessment of quality control protocols. The training should be conducted in well equipped laboratories under the supervision of experts, in institutes cooperating with the Dutch-Nordic consortium. To facilitate training, experts from the Baltic countries should integrate their activities as much as possible. Joint effort by the Baltic countries will facilitate cooperation with institutes of the Dutch-Nordic consortium. Cooperative activities could form the basis for joint quality control facilities, and support the establishment of a joint regulatory body for the Baltic countries.

It is hoped that the governments of the Baltic countries will support the process of integration, and will assign trained experts to positions in which they will have the authority to assess quality control protocols and release vaccines for use in one or all of the countries. Taking account of the considerable costs of establishing specialized laboratories for quality control, maximum use should be made of the existing know-how and facilities in the Baltic countries.

## CONCLUSIONS AND RECOMMENDATIONS

1. The participants supported improved communication and coordination of EPI activities in the three Baltic countries, and requested a meeting in 1993 to follow up the Consultation.

2. WHO will establish contact between the Baltic countries, the UNICEF Supply Division and the World Bank to ensure that

UNICEF procurement services could be made available to purchase vaccines for the EPI in 1993.

3. Participants from the Nordic countries and the Netherlands will explore with their institutions and governments the types of technical and financial assistance that can be provided for EPI in the Baltic countries in 1993. WHO will transmit information between all parties as necessary.

*Annex 1*

## WORKING PAPERS[a]

| | |
|---|---|
| ICP/EPI 030/A/6 | Report on Danish activities regarding prevention of infectious diseases in the Baltic states<br>by T. Rønne |
| ICP/EPI 030/A/7 | Cooperative activities between the Finnish National Public Health Institute (KTL) and Baltic Countries<br>by J. Eskola |
| ICP/EPI 030/A/8 | Vaccination policy and status in Iceland<br>by O. Olafsson |
| ICP/EPI 030/A/9 | Possible contributions from NIPH, Norway<br>by B. Hareide |
| ICP/EPI 030/A/10 | Surveillance and diagnosis of vaccine-preventable viral diseases. Suggestion for future cooperation<br>by M. Grandien |
| ICP/EPI 030/A/11 | Surveillance and considerations in connection with the general recommended vaccination programme<br>by M. Böttiger |
| ICP/EPI 030/A/12 | Overview of production and organization of manufacturing and quality control at the National Bacteriological Laboratory (Sweden) |
| ICP/EPI 030/A/13 | Paper from the National Institute of Public Health and Environmental Protection (RIVM), Bilthoven (Netherlands) |

[a] Copies can be obtained from the Expanded Programme on Immunization unit of the WHO Regional Office for Europe, 8 Scherfigsvej, DK-2100 Copenhagen Ø, Denmark.

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|---|---|
| ICP/EPI 030/A/14 | Estonia: update on the current epidemiological situation, immunization activities and needs for 1993<br>by A. Jogiste |
| ICP/EPI 030/A/15 | Latvia: management and administration of preventive immunization in Latvia<br>by N. Schubin |
| ICP/EPI 030/A/16 | Lithuania: national programme on immunization of the Republic of Lithuania 1992 – 1996<br>by J. Olekas |
| ICP/EPI 030/A/17 | Karelia: report on the situation (cold chain, vaccine supply, vaccination programme EPI)<br>by N.A. Gratcheva |
| ICP/EPI 030/A/18 | Kaliningrad: the situation with regard to preventive immunization in the Province of Kaliningrad |
| ICP/EPI 030/A/19 | Latvia: incidence of vaccine-preventable diseases and vaccine coverage |

*Annex 2*

# PARTICIPANTS

*Estonia*[a]

Dr Ants Jogiste
Associate Head, National Centre for Health Protection, Tallinn

Dr Juta Ruut
Epidemiologist, Tallinn

Dr Vitali Pool
Epidemiologist, National Centre for Health Protection, Tallinn

Dr Ene Tomberg
Ministry of Health, Tallinn

Dr Irene J. Zolotukhina
Head, Laboratory of Bacterial Infections, Institute of Preventive Medicine, Tallinn

*Latvia*

Dr Anna Auzinia
Department of Health, Ministry of Welfare, Labour and Health of the Republic of Latvia, Riga

Dr U. Banders
Director, Institute of Microbiology, Latvian Academy of Sciences, Riga *(Vice-Chairperson)*

Dr Natalia Gorodkova
Institute of Microbiology, Latvian Academy of Sciences, Riga

Dr Rita Kukaine
Institute of Microbiology, Latvian Academy of Sciences, Riga

Dr Vija Rimsha
Paediatrician, Republic Children's Hospital, Riga

[a] Became a Member State of WHO on 31 March 1993.

Dr Nikolay Schubin
Chief, Epidemiology of Infectious Diseases, Department of Health, Riga

Dr Regina Svirska
Secretary, Scientific Affairs, Institute of Microbiology, Latvian Academy of Sciences, Riga

*Lithuania*

Dr Vytautas Bakasenas
Director, Republican Immunization Centre, Ministry of Health of the Republic of Lithuania, Vilnius

Dr Leonas Kaletinas
Deputy Minister, Ministry of Health of the Republic of Lithuania, Vilnius

Dr Bronius Morkunas
Deputy Director, Republican Immunization Centre, Ministry of Health of the Republic of Lithuania, Vilnius

Dr Danguole Jankauskiene
Head, Department of Mother and Children Care, Ministry of Health of the Republic of Lithuania, Vilnius

*Russian Federation*

Dr Nadezda Aleksandrovna Gratcheva
Republican Sanitary Epidemiological Centre, Karelia, Petrozavodsk

Dr Zoja Mihajlovna Kuzovleva
Chief Epidemiologist, Provincial Government Sanitary and Epidemiological Centre, Health Board, Murmansk

Dr Nikolaj Nikolaevic Cerkes
Deputy Chief Physician, Provincial Government Sanitary and Epidemiological Centre, Kaliningrad

## Temporary Advisers

Dr Peter A. Bootsma
Coordinator, International Health Programmes, National Institute of Public Health and Environmental Protection (RIVM), Bilthoven, Netherlands

Professor Margareta Böttiger
National Epidemiological Officer, Department of Epidemiology, National Bacteriological Laboratory, Stockholm, Sweden

Dr Juhani Eskola
National Public Health Institute, Helsinki, Finland

Ms Marite Gailis-Salenstedt
National Bacteriological Laboratory, Stockholm, Sweden

Dr Monica Grandien
Department of Virology, National Bacteriological Laboratory, Stockholm, Sweden

Dr Bodolf Hareide
Director, National Institute of Public Health, Oslo, Norway *(Chairperson)*

Dr Manfred Krasselt
Director, Vaccine Production, National Institute of Public Health and Environmental Protection (RIVM), Bilthoven, Netherlands

Dr Olafur Olafsson
Chief Medical Officer, Reykjavik, Iceland

Dr Tove Rønne
Chief, Department of Epidemiology, Serum Institute, Copenhagen, Denmark *(Rapporteur)*

Dr Carl-Rune Salenstedt
National Bacteriological Laboratory, Stockholm, Sweden

## Observers

Ms Dagnia Spuntelis
Merck Vaccine Division, Rahway, New Jersey, USA

## UNICEF

Mr Hyuk-Soo Kwon
Procurement Officer, Health & Nutrition Supply Division, UNICEF, Copenhagen, Denmark

## WHO Regional Office for Europe

Dr Alan P. Kendal
Immunization Programme Officer