



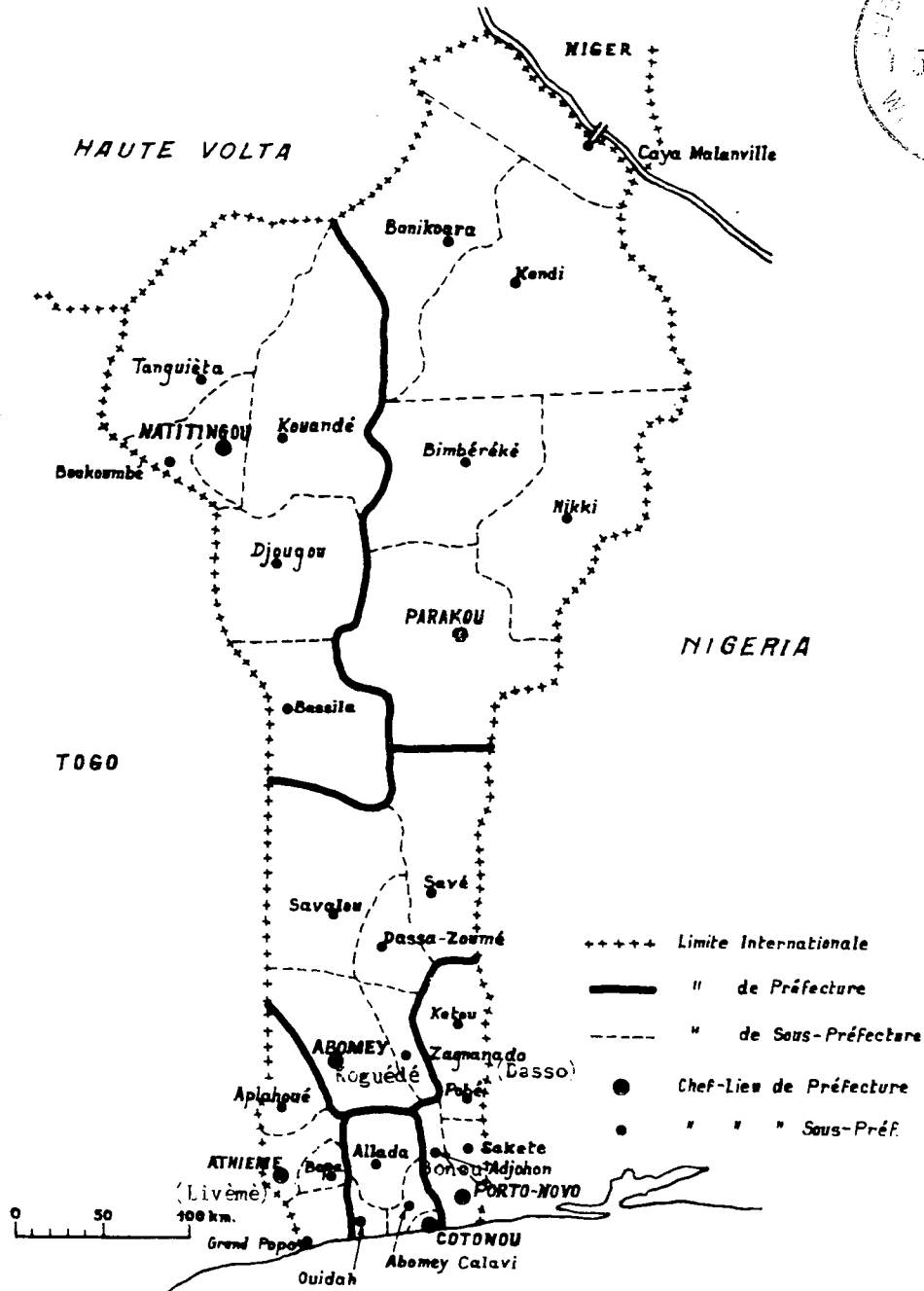
BENIN

INDEXED

Area: 112 600 km²; Population: 3 112 000; Population density: 28/km²

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Title: Director, Communicable Diseases Service



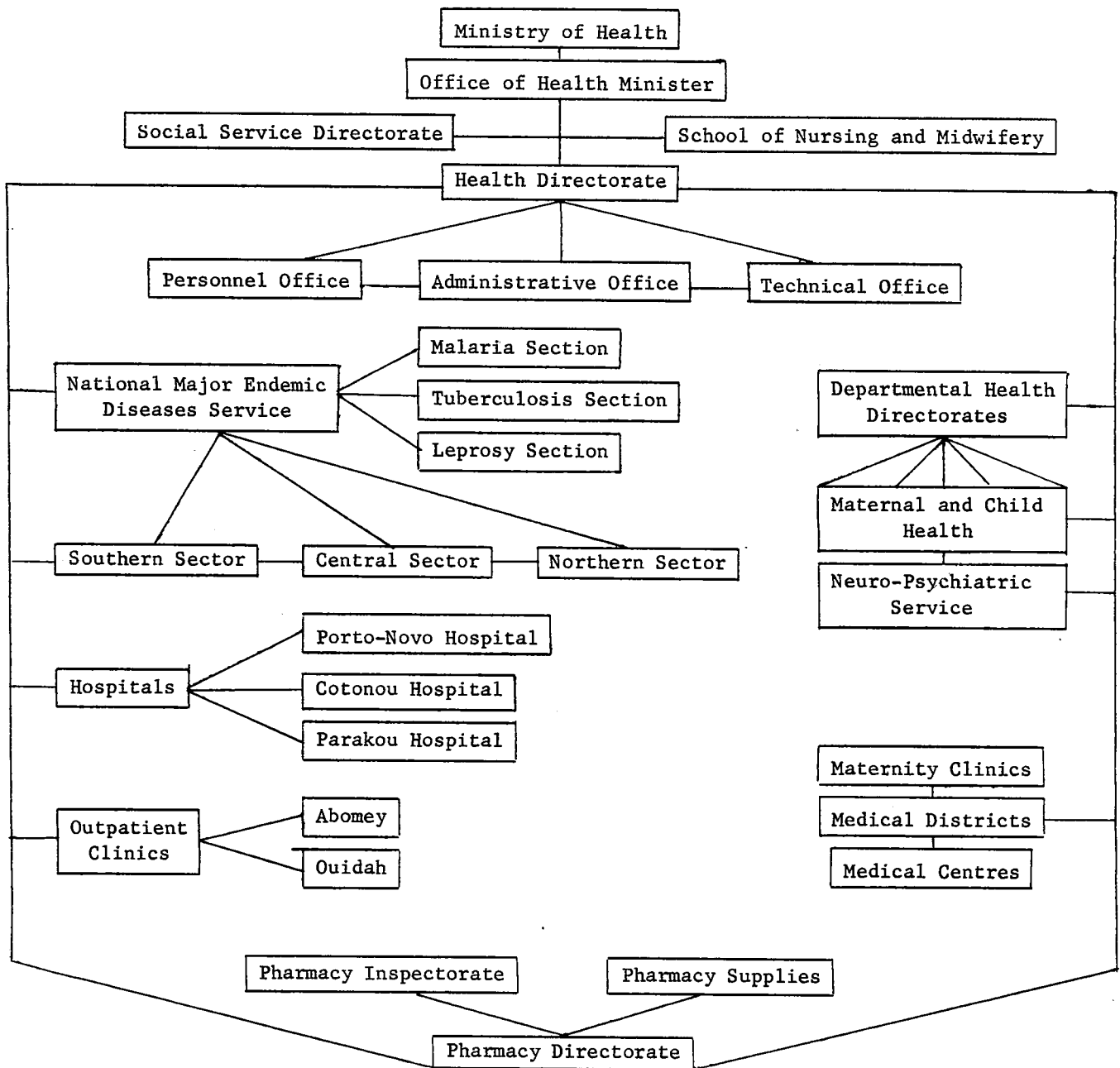
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1. PROGRAMME PERFORMANCE 1967-1971

1.1 Organization

1.1.1 Diagram of organizational structure employed for the programme



1.1.2 Static and mobile health units, by province

I. Ouémé Province

- 1 hospital
- 6 health centres
- 35 dispensaries
- 1 MCH centre
- 1 welfare centre
- 1 major endemic diseases sector, with mobile team and leprosy units
- 1 tuberculosis centre

II. Atlantic Province

- 2 hospitals
- 4 health centres
- 32 dispensaries
- 2 MCH centres
- 7 welfare centres
- 1 major endemic diseases sector, with mobile team and leprosy units
- 1 tuberculosis centre
- 1 leprosarium

III. Mono Province

- 7 health centres
- 29 dispensaries
- 8 MCH centres
- 1 welfare centre
- 1 major endemic diseases sector, with mobile team and leprosy units
- 1 leprosarium

IV. Zou Province

- 1 hospital
- 6 health centres
- 46 dispensaries
- 3 MCH centres
- 1 welfare centre
- 1 major endemic diseases sector, with mobile team and leprosy units
- 2 leprosaria

V. Borgou Province

- 1 hospital
- 7 health centres
- 35 dispensaries
- 1 MCH centre
- 3 welfare centres
- 1 major endemic diseases sector, with mobile team and leprosy units
- 3 leprosaria

VI. Atakora Province

- 1 hospital
- 6 health centres
- 35 dispensaries
- 1 MCH centre
- 2 welfare centres
- 1 major endemic diseases sector, with mobile team and leprosy units
- 2 sleeping sickness and leprosy hospitals

Total units

- 6 hospitals
- 36 health centres
- 212 dispensaries
- 16 MCH centres
- 15 welfare centres
- 2 tuberculosis centres
- 9 leprosaria
- 6 major endemic diseases sectors, with 7 mobile teams and 58 leprosy units

Total: 302

1.2 Vaccination programme

The large-scale smallpox control campaign was launched in Benin on 24 April 1967 with a radio broadcast by the Minister of Health. Assured of United States assistance as defined in an agreement signed on 23 November 1966, and assisted by the World Health Organization, Benin embarked upon this enormous programme with all its health personnel.

1.2.1 Description of programme

Five vaccination teams worked from the south towards the north, while two teams in Upper Dahomey worked from the north towards the south. The first meeting between two teams took place at Savè in about April 1969.

Special attention was devoted to the preparation of the publicity and health education programme. Fifteen days before the teams left on their circuits, their itinerary was notified to the appropriate authorities, which distributed it to all the villages. The week before the departure of the teams was devoted to a tour of information and meetings (with loudspeakers) in the villages concerned. This tour ended at the chief town of the region, where a working meeting with the administrative authorities, village chiefs, leading citizens (including traditional healers) and the campaign authorities was used to explain the purposes and benefits of the control campaign. The tour sometimes closed with a cinema showing of a film on smallpox and a demonstration of the vaccination technique using the jet injector; this made it possible to obtain the cooperation of the public and to overcome some of the hostility towards vaccination.

By showing the disease on white skins, the film helped to combat the erroneous belief that smallpox is a god to be worshipped and that animals and poultry need to be sacrificed to obtain its mercy and to appease its wrath.

Press and radio bulletins and sermons at religious services helped actively to motivate and mobilize the population.

The vaccination teams consisted of three nurses, two unskilled workers and a driver. They were equipped with a Dodge vehicle supplied by USAID.

The vaccine used was manufactured by Wyeth International Inc., Philadelphia. It was administered by jet injector (Ped-O-Jet), also supplied by USAID (34).

The fixed health units took part in the campaign, using freeze-dried vaccine (administered by multiple puncture).

Number of vaccinations performed

1967 = 791 403
1968 = 1 029 813
1969 = 1 024 485
1970 = 850 139
1971 = 380 291

Assessment for the period 1967-1971

Although the total number of vaccinations is higher than the population, these figures do not indicate the true coverage since many inhabitants were vaccinated several times during the mass campaign

1.3 Surveillance - containment programme

1.3.1 Units providing reports

In 1969 there were 300 surveillance units (hospitals, health centres, dispensaries etc.). Special mention must be made of the leprosy units, which comb the entire country, treating lepers in all the villages. The leader of each of these teams inquired among the populations he treated about any suspected smallpox cases and passed the information on immediately. This system of surveillance provided us with most useful results.

TABLE I. EVALUATION OF VACCINATION PROGRAMME, 1971-1972

Province	No. of localities visited	No. of people assessed	Assessment coverage												Total	
			0-4 years			5-14 years			15-44 years			45 years +			No. vacc.	% vacc.
			No. exam.	No. vacc.	% vacc.	No. exam.	No. vacc.	% vacc.	No. exam.	No. vacc.	% vacc.	No. exam.	No. vacc.	% vacc.		
OUEME	630	4 701	777	327	42	1 337	1 117	84	2 024	1 745	86	563	420	75	3 609	77
ATLANTIC	312	2 662	537	218	41	697	541	77	1 048	842	80	380	265	69	1 866	70
MONO	389	3 039	467	257	55	886	838	95	1 307	1 234	94	379	348	92	2 677	88
ZOU	606	4 940	832	471	57	1 395	1 231	88	2 062	1 829	89	651	573	88	4 104	83
BORGOU	387	3 719	614	252	41	1 041	917	88	1 557	1 409	90	507	449	89	3 027	81
ATACORA	390	3 512	546	291	53	1 010	898	89	1 526	1 412	93	430	321	75	2 922	83
TOTAL	2 714	22 573	3 773	1 816	48	6 366	5 542	87	9 524	8 471	89	2 910	2 376	82	18 205	81

1.3.2 Method of reporting

The information collected at the primary level was passed on to the provincial directorate by the following methods: runner, bicycle courier, telephone, telegram. The provincial directorate took the initial measures and informed the central administration by the most rapid means.

Cases were notified by the weekly bulletin of diseases subject to the International Health Regulations. This information was summarized in the monthly health information bulletin.

Moreover, at the end of 1967, a special form, the monthly report of smallpox vaccinations and cases, was introduced. This was completed in duplicate by the various units. One copy was sent direct to the Minister of Public Health, Post Box 882, Cotonou; the other was sent to the chief town of the medical district for the overall monthly summary. This form was used until 1970.

1.3.3 Smallpox in Benin

1.3.3.1 Situation prior to 1967

The practice of variolation, the hostility of the inhabitants to vaccination, the population density in southern Benin and the existence of fetishist rites concerning smallpox are all factors that promoted the spread of epidemic outbreaks in recent decades. The following table shows smallpox cases and deaths between 1957 and 1966.

Year	Number of cases	Number of deaths
1957	414	41
1958	1 002	93
1959	1 708	212
1960	768	119
1961	119	21
1962	132	21
1963	149	28
1964	703	38
1965	168	44
1966	490	39

1.3.3.2 Number of smallpox cases reported from 1967 to 1971

1967: 813 cases, 99 deaths

1968: 431 cases, 19 deaths

1969: 55 cases, 15 deaths

It was not until 1969 that Benin saw the last of the disease, with only 55 cases and 15 deaths. These cases mostly occurred in the Adjohoun sub-prefecture (Ouémé province) and seemed to be related to the small-scale outbreaks in the Zagnanado sub-prefecture.

In 1970 Benin reported 19 cases, with one death, but these cases were not confirmed by the smallpox eradication service. We regard the 1970 notifications as false, and confirm October 1969 as the date of the last case of smallpox in the country.

1.3.3.3 Villages which recorded one or more smallpox cases during 1969-1970

- Bonou (Lokossa district)
- Livèmè (Athiémé)
- Koguédé (Bohicon-Covè road)
- Dasso (Zagnanado)

1.3.3.4 Epidemiological information on the last two outbreaks

The last two outbreaks of smallpox in Benin were:

- (a) at Bonou (Lokossa) in June 1969
- (b) at Koguédé in October 1969

Smallpox epidemic at Bonou (Lokossa district)

Lokossa is a district of the village of Bonou, Adjohoun sub-prefecture, Ouémé province, about 90 km north-east of Cotonou. It has 521 inhabitants. The villagers had been vaccinated during the mass campaign, but none of those who contracted smallpox (mainly children) had been vaccinated.

The health authorities were alerted on 16 June 1969 by the Adjohoun sub-prefecture "about the outbreak of an epidemic with many deaths".

The responsible national official carried out a survey on 17 June 1969. Smallpox was diagnosed in a number of patients. The outbreak totalled 20 cases (with 12 deaths, 11 of them before action was taken). The patients are listed in the following table. It will be noted that the younger age groups (unvaccinated) paid a heavy toll to this epidemic.

An attempt was made to link this outbreak with the cases that occurred in Dasso in early 1969.

The following measures were taken:

- examination of the entire population;
- isolation and treatment of smallpox victims;
- taking of scab and serum samples for laboratory analysis;
- revaccination of the entire population of the village and the surrounding villages, including newborn.

Good surveillance was carried out in the area, and the outbreak finally died out at the end of June 1969.

BONOU EPIDEMIC (JUNE 1969)

Serial No.	Name	Sex		Comments
		Male	Female	
1	Aitèdji Azontondji		10 years	
2	Akomènou Azontondji	12 years		Serum + scab
3	Assiba Houénagnon		18 months) } Three sisters
4	Agbalè Houénagnon		14 years	
5	Zahi Houénagnon		13 years	
6	Dewa Ahoton		18 years	
7	Dââ Ahlidenou Bodjrènou	9 years		
8	Mahoussi Kpatinvo		6 years	Young brother of No. 12
9	Houénouvo Ayiyéton Lali	3 years		
10	Sêgbègnon Dansou	5 years		
11	Dédjan Founi		40 years	Serum + scab
12	Lakognon Dansou	2 years		Son of No. 11 and brother of No. 10; scab
13	Houévou Toffodji		12 years	After vaccination; serum + scab
14	Hounton Toffodji	8 months		Young brother of No. 13
15	Oké Kpatinvo	12 years		Scab
16	Towédé Gounon		18 months	
17	Hounsi Dââ Toffodji		14 years	Serum + scab
18	Dansi Houénagnon		6 years	
19	Afagla Ahoton	4 months		
20	Hossou Zannou	3 years		

Smallpox epidemic at Koguédé (October 1969)

Koguédé is a hamlet in Tindji canton situated on the road from Bohicon to Covè about 150 km north of Cotonou and about 10 km from Bohicon.

The health authorities were alerted on 1 October 1969 by a leprosy treatment team. The epidemiological survey was conducted immediately (responsible national official and NCDC medical officer). Five patients were discovered:

- (1) Akouavi Soudo, female, aged five, thought to have been contaminated by (2) in the village of Hougomè.
- (2) Simon Djandé, female, aged 30.
- (3) Tonahin Soudo, female, aged eight, contaminated by (1) at Koguédé.
- (4) Kakpo Soudo, male, aged three, contaminated by (1) at Koguédé.
- (5) Gbessin Atoko, male, aged 40, uncle of (3) and (4).

Akouavi Soudo died on 2 October 1969. None of the patients had been vaccinated. Two of the cases, (3) and (5), were doubtful; samples were sent to Atlanta, which confirmed the diagnosis of smallpox.

The following measures were taken:

- examination of the population;
- isolation and treatment of smallpox victims;
- revaccination of the entire population of the village and the surrounding area.

Good surveillance was carried out in the area. No further suspected cases were detected after this outbreak, which is the last recorded in Benin.

2. SURVEILLANCE AND VACCINATION PROGRAMME, 1972-1975

2.1 Surveillance programme

2.1.1 Number and category of reporting units

The health units detailed in 1.1.2 are responsible for reporting cases to the health authorities. As already stated, these units consist of:

- 6 hospitals
- 36 health centres
- 212 dispensaries
- 16 MCH centres
- 2 tuberculosis centres
- 6 major endemic diseases sectors, with 7 mobile teams
- 58 leprosy teams
- 15 welfare centres
- 9 leprosarria

This makes a total of 367 units. As noted in section 1.3.1, there were 300 reporting units for the period 1967-1971.

2.1.2 Regularity of reporting

As during the period 1967-1971, suspected cases were reported immediately using the methods described in section 1.3.2. Notification was made by means of the weekly reports on diseases subject to the International Health Regulations and summarized in the monthly health information bulletin (specimens attached).

All reporting units regularly submitted the monthly epidemiological report. For the weekly reports, the number of notifying units varied from 244 to 275.

Weeks No. 11, 12, 13 and 14 in 1974: no cases reported by 260 units.

Weeks No. 11, 12, 13 and 14 in 1975: no cases reported by 265 units.

2.1.3 List of smallpox suspects

Very often the provincial teams of the major endemic diseases service or the national smallpox eradication team (Dr Yepke) are alerted by travellers or villagers regarding supposed cases of smallpox. The team immediately visits the location and makes a diagnosis.

From 1970 up to the present time all cases thus examined have proved to be chickenpox (in particular, a case of infectious chickenpox detected in Cotonou in 1973 and investigated by the national team). However, none of the suspected cases required samples for laboratory diagnosis, since the clinical diagnosis was always straightforward. The last cases for which samples were taken were those that occurred in October 1969 and are reported in section 1.3.3.4.

2.1.4 Deaths attributable to chickenpox

Year	Cases of chickenpox	Deaths
1972	6 725	0
1973	4 807	0
1974	5 826	1
1975	5 659	0

A survey was undertaken following the notification of a fatal case of chickenpox in November/December 1974. The victim was Anasthasie Attolou, female, aged four, who lived at Savalou. She caught typical chickenpox on 23 November 1974, recovered by 30 November 1974, but then contracted an acute lung condition on the hospital premises and died of this on 2 December 1974. The investigation was carried out by the head of sector 4 of the communicable diseases service. Chickenpox was therefore not the cause of death.

2.1.5 There were no suspected smallpox cases in the period 1972-1975.

2.2 Vaccination programme, 1972 to present time

Our aim is to vaccinate against smallpox all unprotected children aged 0 to four years and anyone else without a vaccination scar. We lay stress on the age groups of children who should be vaccinated, since this makes it possible to avoid pointless revaccinations and to protect the susceptible population born since the last visit by the teams. We still make it compulsory to carry the vaccination card or a certificate in lieu of the card.

Each of the six provinces of Benin has a surveillance and vaccination team, which puts into effect at provincial level the plan of work laid down by the directorate. The route taken depends on the size and population of the province.

Vaccinations are given in combination:

- smallpox (under the conditions defined above);
- yellow fever (age six months to 14 years);
- measles (age six months to four years);
- BCG (supplementary, depending on the zone, from age one to age 20).

Smallpox vaccination is carried out by jet injector. In 1972 and 1973 we used the "dryvax" smallpox vaccine from Wyeth Lab. Inc. (Marietta), and in 1974 and 1975 we used dried smallpox vaccine manufactured in the USSR (and applied with the bifurcated needle).

Total smallpox vaccinations

1972	:	184 169
1973	:	56 884
1974	:	351 249
1975 (January-July)	:	459 545

The accurate assessment by age group that was made in 1972 has not been repeated. The small number of vaccinations carried out in 1972 and in 1973 was due to a breakdown in supplies of the American vaccine. With the arrival of the USSR vaccine in 1974 and 1975 it was possible to resume the customary work schedule, keeping within the framework of the prepared programme.

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