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REPORT ON A SURVEY TO DETERMINE THE STATUS OF  
SMALLPOX AND LEVELS OF SMALLPOX IMMUNITY

Because of the proximity of Argentina to previously known endemic areas of Brazil and the frequency of importations in the past, the possibility that unknown endemic foci might be present in Argentina required special appraisal. Accordingly, from 20 June to 27 July 1971, evaluation of the situation was undertaken by Dr Juan José Hiriart, Chief of the Smallpox Eradication Programme, Argentina, and Dr Claudio Marcos da Silveira, WHO Consultant.

Previous smallpox incidence

A special law promulgated in 1960 provides for compulsory notification of specified communicable diseases and for reporting within 24 hours of internationally notifiable diseases. All health units are required to submit to provincial level a weekly report regarding the notifiable communicable diseases. These reports are sifted, consolidated and reported in a weekly bulletin to the national level.

During the past 10 years, 109 cases have been reported from seven of the 24 provinces of Argentina and 99 of the 109 cases have occurred in the three provinces of Corrientes, Misiones and Santa Fe (below and Fig. 1).

CASES OF SMALLPOX BY PROVINCE, 1961-1971

Province	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	Total
Corrientes	3	1	-	8	15	9	-	-	-	-	-	36
Formosa	-	-	-	-	-	-	2	-	-	-	-	2
Jujuy	1	-	-	3	-	2	-	-	-	-	-	6
Mendoza	-	1	-	-	-	-	-	-	-	-	-	1
Misiones	1	-	-	-	-	-	24	-	-	24	-	49
Salta	-	-	-	1	-	-	-	-	-	-	-	1
Santa Fe	-	-	-	-	-	10	4	-	-	-	-	14
Total	5	2	-	12	15	21	30	-	-	24	-	109

Since 1965 all cases except two have been reported from these three provinces, most of them having occurred in Misiones, situated in the extreme north-east of the country and sharing an extensive common border with Brazil. One outbreak in 1968 resulted from an importation from Paraguay but subsequent outbreaks appear to have originated from Brazil.

Vaccination programme

Between 1968 and 1971 (June) 5.3 million vaccinations were performed in the course of the special vaccination programme (Table 1). Most were given in the northern provinces. In Misiones the number of vaccinations was equivalent to 84 per cent. of the estimated population; in Corrientes 74 per cent. and in Santa Fe 55 per cent. The programme is still in progress.

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Survey and results

In the implementation of this survey for unrecognized foci, the following activities were conducted:

1. Interviews with national and provincial health authorities in provinces bordering those areas where smallpox was endemic until 1970.
2. Surveys in areas where cases of smallpox were notified during the period 1965 to 1970:
  - (a) in all public health services of the locality (hospitals and health centres);
  - (b) in schools;
  - (c) among community leaders;
  - (d) among previous smallpox patients and contacts living in areas where outbreaks had most recently occurred with special emphasis on areas where an outbreak had occurred in 1970.

In all areas visited, officials were informed of the present status of smallpox and the importance of surveillance, as well as the need to sustain an active, continuing vaccination programme. They were also asked to undertake special scar surveys to estimate the level of vaccination immunity in their respective areas.

In all, 14 localities were visited and 86 persons in the health services and the community were contacted (Table 2). Visits were also made to 38 schools during which 2819 students were interviewed. During the course of the survey, 26 illnesses with rash were investigated. All were unequivocally cases of chickenpox. No other cases were known to any of those interviewed.

Eight cases among those which occurred between 1965 and 1969 were located and they and their contacts were interviewed in regard to other cases which might have occurred. None could be identified.

A scar survey was conducted in the 38 schools visited. The children attend in two separate shifts each day and only those present at the time of visit were examined. The proportion with vaccination scars ranged from 81 per cent. to 95 per cent. (Table 3).

Smallpox case finding survey in Colonia Alicia

More detailed investigations were made at Colonia Alicia, Misiones Province, which experienced in 1970 the only known outbreak in Argentina since 1967. Colonia Alicia lies adjacent to the Brazilian border and is relatively isolated. Smallpox was introduced into this community at the end of April 1970 from Brazil. The last case occurred on 25 June. A total of 24 cases occurred. The outbreak was contained by mass vaccination throughout the area.

Visits were made to each of the 107 houses in the village and 503 of the 594 persons were interviewed and examined. No further cases were detected. A total of 61 persons was identified (12 per cent.) who had not had smallpox and had not been vaccinated (Table 4); 25 of these were infants who had been born since June 1970.

The headmasters of the schools at Colonia Alicia and Londeiro (11 kilometres from Colonia Alicia) and three tradesmen noted below were interviewed at length. They noted that those residing in the village do not leave it to visit other parts of Argentina because the access routes are impassable and because their produce is sold to trades people in the village

itself. The means of access are either over land, by an extremely bad road 60 km long which leads to the village called El Cruce, or by river. Both routes are difficult to use in rainy periods. It is much easier to cross the river and go to Brazil. For business purposes only three tradesmen, who are the ones who buy the agricultural produce, go outside Colonia Alicia. The only persons who come to the village from other parts of Argentina are a small number of salesmen, always the same ones. The contacts they make are mainly with the three tradesmen mentioned.

None of these five persons were aware of any other cases of smallpox except for the 24 originally reported.

#### SUMMARY

The study conducted supports the belief that there is no smallpox in the areas surveyed which correspond to the areas of greatest risk.

Continuing surveillance and vaccination will be important to maintain a smallpox-free status.

TABLE 1. NUMBER OF SMALLPOX VACCINATIONS PERFORMED  
BY THE ERADICATION PROGRAMME IN ARGENTINA 1968-1971

Province	Population (000)	No. vaccinated	% relative to population
Catamarca	172	160 422	93
Córdoba	2 060	1 230 000	60
Corrientes	564	420 326	74
Chaco	567	188 461	33
Chubut	190	100 000	53
Entre Rios	812	292 664	36
Formosa	230	216 195	94
Jujuy	302	122 996	41
Mendoza	973	749 268	77
Misiones	443	372 969	84
Salta	510	251 202	49
San Luis	183	95 392	52
Santa Cruz	85	38 000	45
Santa Fe (norte)	243	134 446	55
Sgo. del Estero	495	265 390	54
Tucumán	766	651 127	85
Tierra del Fuego	13	10 960	82
Total	8 608	5 299 818	62

TABLE 2. CATEGORIES OF PERSONS CONTACTED DURING SURVEY - ARGENTINA - JUNE-JULY 1971

Province	Locality	Health services		Schools		Community leaders	Total
		Physicians	Auxiliary personnel	Directors	Auxiliary personnel		
Buenos Aires	Buenos Aires	5	-	-	-	-	5
Santa Fe	Cdad. Sta. Fe	3	-	-	-	-	3
Santa Fe	Villa Ocampo	2	2	1	-	1	6
Corrientes	Cdad. Corrientes	4	-	-	-	-	4
Corrientes	Cdad. Ituzaingó	-	2	4	-	2	8
Corrientes	Apipé Grande	-	1	1	-	-	2
Corrientes	Santo Tomé	1	1	8	1	1	12
Corrientes	Mercedes	2	1	10	1	2	16
Misiones	Posadas	3	-	-	-	-	3
Misiones	Pto. Leoni	1	-	1	-	1	3
Misiones	Pto. Iguazú	1	-	3	-	-	4
Misiones	Bdo. Irigoyen	-	1	1	-	1	3
Misiones	San Javier	1	3	3	-	1	8
Misiones	Colonia Alicia	-	-	2	-	7	9
Total		23	11	34	2	16	86

TABLE 3. VACCINATION IMMUNITY IN 38 SCHOOLS AMONG CHILDREN 5-14 YEARS OF AGE - ARGENTINA - 1971

Province	Locality	No. of schools visited	Total enrolment	No. examined	Vaccination scar		% with scar
					Yes	No	
Santa Fe	Villa Ocampo	4	477	245	228	17	93
Corrientes	Ituzaingó	4	589	250	218	32	87
Corrientes	Santo Tomé	9	1 979	615	546	69	89
Corrientes	Mercedes	10	2 198	711	633	78	89
Misiones	Puerto Leoni	1	131	104	97	7	93
Misiones	Puerto Iguazú	3	528	283	269	14	95
Misiones	Bdo. de Irigoyen	2	146	89	83	6	93
Misiones	San Javier	4	785	392	333	59	85
Misiones	Colonia Alicia	1	141	130	105	25	81
Total		38	6 974	2 819	2 512	307	88

TABLE 4. SURVEY OF POPULATION - COLONIA ALICIA - JULY 1971

Age	Total	Non-susceptible		Susceptible	% susceptible
		Vacc. scar	Previous smallpox		
0-4	89	50	2	37	42
5-14	146	123	15	8	5
15-	268	231	21	16	6
Total	503	404	38	61	12
		442			

Fig. 1

ARGENTINA

PROVINCES REPORTING SMALLPOX 1961-1971  
LOCATION OF SMALLPOX CASES 1965-1971

