



## The Elimination of Smallpox from Israel\*

Paul E. Slater MD MPH<sup>1</sup>, Alex Leventhal MD MPH MPA<sup>2</sup> and Emilia Anis MD MPH<sup>1</sup>

<sup>1</sup>Department of Epidemiology and <sup>2</sup>Public Health Services, Ministry of Health, Jerusalem, Israel

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The development of an effective vaccine against smallpox some 200 years ago by the English physician, Edward Jenner, led to the ultimate containment of "the most terrible of the ministers of death," although the conversion of the western world to routine smallpox vaccination took more than a century. In underdeveloped countries, smallpox still flourished in the first half of the twentieth century, and even in North America and Western Europe limited outbreaks from imported cases occurred with some regularity [1, pp. 317–33].

In the Middle East, smallpox control was achieved with even greater difficulty than in Europe and North America, and the disease occurred in large epidemics in Iran, Iraq and Syria as late as the early 1970s [1, pp.1087–91]. In Palestine, which would later become the State of Israel, vaccination against smallpox was carried out only haphazardly by the Turks [2], and large epidemics were recorded at the turn of the century [2,3]. Morbidity data are not available from the period of the Turkish occupation, but Masterman [3] wrote of "an utterly unchecked epidemic" of smallpox in Jerusalem in 1900.

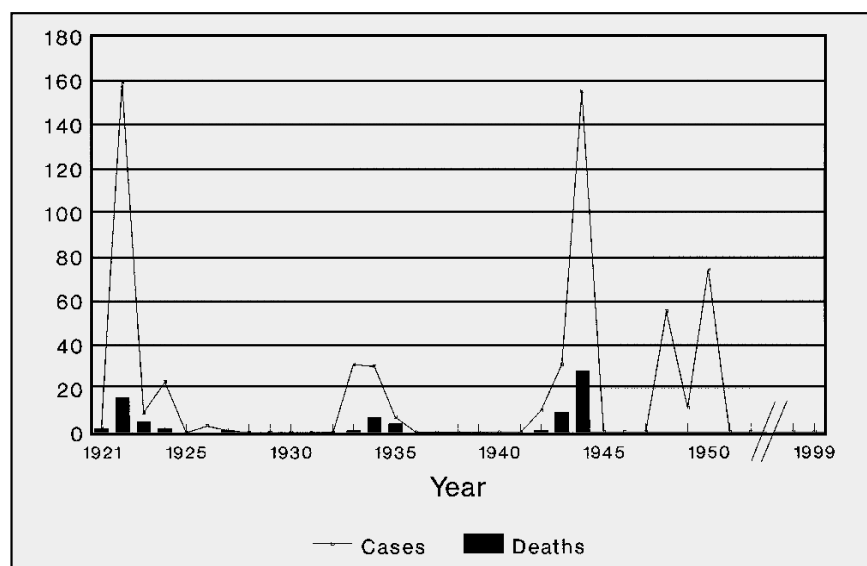
The occupation of Palestine by British forces in 1918 was followed by mass vaccination of the population, compulsory vaccination of infants and children,

and a policy of prompt vaccination of villages and settlements following the appearance of new cases [4]. As a result of these organized efforts, smallpox was considered no longer to be endemic in Palestine by 1920 [1, p. 349]. Summarizing a small outbreak in 1935, the British were able to state, "...in consequence of the high percentage of the population protected by vaccination, there is little fear of a serious spread of the disease resulting from any imported cases from neighbouring infected countries" [Department of Health Annual Report, 1935, unpublished].

Despite the availability of imported and locally produced vaccine of high quality and safety, the ancient and hazardous practice of "variolation," the

inoculation of susceptibles with infectious material from active smallpox cases, continued in the rural Arab population, and in fact accounted for most of the cases and deaths in a large outbreak in the Hebron area in 1922 [2].

Available data on smallpox occurrence and mortality in Palestine/Israel, culled from published sources [4,5] and unpublished documents found in the archives of the Department of Epidemiology, are shown in Figure 1, and incidence according to population group is presented in Table 1. Masterman's vivid accounts at the turn of the last century [3] portrayed Jewish as well as Arab victims, but between 1921 and 1943 smallpox was observed almost exclusively in the Arab population of



**Figure 1.** Smallpox in Palestine/Israel, 1921–1999, cases and deaths. Note: data on deaths among cases occurring in 1948–50 are not available.

\* The opinions expressed in this article are those of the authors alone and do not purport to be the opinions of the Ministry of Health.

**Table 1.** Smallpox in Palestine/Israel, 1921–1950, by population group

Year	Total cases	Non-Jews	Location	Apparent source	Comments
1921	2	2	Ramleh, Hebron	Syria, Transjordan	
1922	160	160	Hebron, Jerusalem	Transjordan	Variolation
1923	9	9	Tiberias, Majdal	Syria	
1924	23	19	Jaffa, Zemach, Huleh	Egypt, Syria	Variolation
1925	0	–			
1926	3	3	Hebron, Tiberias	Transjordan	
1927	1	1	Jerusalem	Syria	
1928-32	0	–			
1933	31	31	Gaza, Majdal	Sinai	
1934	30	30	Beisan, Haifa, Beer Sheva	Transjordan, Syria, Sinai	
1935	7	7	Tiberias, Acre, Sheikh Munis	Syria	
1936-41	0	–			
1942	10	9	Haifa, Tel Aviv, Beer Sheva	Syria, Lebanon	
1943	31	31	Tulkarem	Mecca	
1944	155	140	Jaffa, Tel Aviv, Ramleh, Majdal, Haifa	Sinai, Syria	
1945-47	0	–			
1948	55	55	Nazareth		
1949	23	20	Tel Aviv, Beit Zefafa		
1950	74	60	North, Beit Zefafa, Jerusalem		

Sources: Refs. 4 and 5; Statistical Abstracts of Palestine, 1942, 1944–45; unpublished Department of Epidemiology documents.

Palestine, invariably following importation from the surrounding Arab states. From 1944 until 1950, increased contact between Arabs and Jews led to sporadic and small clusters of cases among Jews. In early 1949 the appearance of smallpox in Tel Aviv among Jewish immigrants from Yemen led to the following war-time declaration by the fledgling Ministry of Health, which appeared in a local newspaper:

The Ministry of Health of the State of Israel designates February 1949 as smallpox vaccination month. During this month all persons will be vaccinated at Tipot Halav [Mother-Child

Health Stations], pre-kindergartens, kindergartens, schools, Talmud Torahs, yeshivot [religious elementary and high schools], private clinics, Sick Fund clinics, Magen David Adom stations and district health offices. Vaccination will be free of charge. Vaccination is mandatory.... Citizen, fulfill your duty; protect yourself and your family

(*Davar*, 31 January, 1949)

This was the first and last mass smallpox vaccination campaign carried out by the Israel Ministry of Health, and no cases were observed after 1950. From then until 1980, routine smallpox vacci-

nation of infants and children, military recruits and new immigrants was carried out faithfully, employing vaccine produced in Ministry of Health laboratories [4].

In December 1979, the World Health Organization certified the eradication of smallpox from the world. Over the objections of a minority of expert advisers who expressed doubt that smallpox had indeed been eradicated [6], routine smallpox vaccination was officially discontinued in Israel in July 1980, thirty years after the last observed case.

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**Correspondence:** Dr. P.E. Slater, Dept. of Epidemiology, Ministry of Health, P.O. Box 1176, Jerusalem, Israel. Phone: (972-2) 670-6814, Fax: (972-2) 670-6876, email: paul.slater@moh.health.gov.il