

ASSESSMENT IN THE CENTRAL AFRICAN REPUBLIC

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In the Central African Republic, as in other OCEAC countries, the Smallpox/Measles Programme (SMP) is part of a general health programme run by the Endemic Disease Service (EDS). The EDS is a mobile medical organization which makes periodic visits (prospections) to all parts of the country to provide health services supplementary to those offered by static facilities such as hospitals and dispensaries. Preventive medical care includes vaccinations against smallpox, yellow fever, measles, and tuberculosis (BCG). Examinations are given for such diseases as leprosy, onchocerciasis, and trypanosomiasis; medication is provided for those diseases amenable to treatment.

The EDS consists of a headquarters in Bangui and five medical sectors located throughout the country. Each sector is headed by a physician and staffed by 60 to 75 nurses, drivers, and labourers. The current programme calls for mobile teams to visit all parts of the country at least once every three years. Visits are made more often to larger towns.

The possibility of establishing an assessment programme to evaluate smallpox vaccinations was first considered in 1967. Trial surveys showed the usefulness of an assessment programme. In one sector an inquiry revealed low coverage among children less than a year old; in Bangui a survey revealed low coverage among certain occupational groups. In other areas surveys showed good coverage among all groups, verifying what had previously been only an assumption.

Ideally we would have liked to establish one or more independent teams of thoroughly trained, conscientious individuals able to cover all areas of the country using a statistically valid sampling method. However, transportation for one full-time assessment team, or two or three part-time teams, was simply not available. Even had trucks been available, maintenance and gasoline costs would have been prohibitive in view of the considerable distances involved. Financial problems are even greater today. Consequently C.A.R. has not, and probably will not be able to develop a full-time, independent assessment programme.

Because of these problems, a programme adapted to the means of the EDS was introduced. Under this programme, the Medecin-Chef of each sector performs one assessment per month in those months when teams are on prospection. Each physician obtains and evaluates the results of his team's work and makes whatever changes are necessary or possible. Coverage and take rates for smallpox vaccinations are compiled, and a report is later forwarded to the Director of the EDS.

THE SAMPLE

The village chosen is one vaccinated by a team 6 to 8 days earlier. The selection is thus limited to 10 to 15 neighbouring villages vaccinated over a 3-day period. The choice is narrowed further by the fact that assessment can only be carried out on a limited number of days per month. The Medecin-Chefs are often busy supervising their teams or working in sector headquarters, which means that surveys can only be made when they have time to conduct them.

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Having arrived in a village, a choice must be made of which persons to examine. The size of the village is estimated, and every 2nd, 3rd, or n-th house is then visited until an adequate sample is obtained. If only a small number of people are present, a second or third village is visited. To avoid counting only those persons who voluntarily approach to present their arms for inspection, care is taken to search out all persons in the sample houses.

Our assessment procedure has several drawbacks: (1) it is not a true random sample; (2) even if the village was chosen at random, and even if the number of persons seen in the village was adequate to draw valid conclusions, the number of villages sampled is too small to give a representative picture of the area as a whole. In general, an entire sub-prefecture is vaccinated in a two or three week period, with the total number of vaccinees ranging from 5,000 to 20,000. A sample of 200 to 300 people from one or two villages is not sufficient for this large population which is dispersed in dozens of small villages.

FINDINGS

Table I presents the results of some of the spot assessments conducted in the five sectors in C.A.R. Some of these were performed by the NCDC Medical Officer or Operations Officer, others by the Medecin-Chefs. The reports are grouped in three categories: the first presents results in areas where vaccination take rates on all persons were recorded; the second where only primary rates were determined; and, finally, those in which take rates for children 0 to 4 years were evaluated. These three categories exist because when assessments were first introduced, no distinction was made between primary vaccination and re-vaccination. Current policy is to determine take rates only among primovaccinees, a procedure which includes, by and large, children aged 0-4 years, and excludes virtually all adults.

In areas where rates were based on all vaccinees, take rates ranged from 76-97%, with an average of 81%. Since this constitutes a mixture of both primary vaccinees and revaccinees, it is impossible to make any definitive statement about vaccination effectiveness.

The take rates for primary vaccinees in the first three sub-prefectures (6,7,8) are satisfactory. The take rates in M'Boki (10) are low; the reasons for the poor results are unknown. The 92% rate in Bimbo (9) was in an area where the multiple pressure technique was employed.

The results in the final section include take rates among children 0-4 years old. For the most part, the children are primary vaccinees, with perhaps 10 to 15 percent of the total representing revaccinees.

Overall vaccination coverage is 90% by assessment figures (Table II). Because of shortcomings in the sampling technique, this figure cannot be considered as more than an approximation. Unless a truly random sampling procedure is used, an evaluator cannot expect to see a representative portion of the community. Persons who are present in the village on vaccination day are often likely to be those present on assessment day. Conversely, those absent on vaccination day (workers, farmers, hunters) are also likely to be absent when an assessment is performed.

In the first column in Table II, vaccination coverage based on official population figures is shown. Among the 49 sub-prefectures, there are probably some whose census figures are accurate, but which ones are reliable is unknown. When, in two sub-prefectures (4 and 14) it is possible to vaccinate 147% and 102% of the census population, it is difficult to have confidence in the 80 and 90% results obtained in other areas. Reasonable though these figures seem, they are based on censuses compiled with the same methodology used for areas where coverage exceeded 100%. One

must be cautious in using official population figures to evaluate the prospection/vaccination programme.

If the 90% result based on spot assessments is accepted as indicative of good coverage, to what can success be attributed? Several factors are involved: (1) EDS prospections have historically been successful. There are no known groups opposed to vaccination, and the influence of authority figures such as village chiefs, and sub-prefects remain fairly strong. (2) Prospection teams have great appeal in a country where in many areas the only medical care available is provided by the EDS. Also, the arrival of anyone in a remote village is an infrequent event, and the diversion thus provided probably helps to attract persons to vaccination sites. (3) Official papers, including vaccination certificates, are important in the country. In 1968, the Medecin-Chef of one sector learned that some villagers present in a vaccination line were from a neighbouring sub-prefecture. They explained that in order to obtain other official papers (driver's licenses, etc.), they needed current vaccination certificates. Although this type of stimulus is exceptional, it is an indication of the utility of certificates and the role they can play in the operation of a successful prospection programme.

OTHER CONTROL MEASURES

Current policy is to schedule another complete prospection or a complementary campaign if coverage is less than 50%. Although this is a very low standard, it is not possible to justify the expenses of a second campaign unless results are extremely poor.

Special investigations resulting from reports of certain diseases provide an opportunity for the EDS physicians to evaluate conditions in their sectors. For example, there have been several reports of suspected smallpox in recent years. On each occasion an immediate investigation was conducted, revealing all cases to be chickenpox. Reports of meningitis, sleeping sickness or an increased incidence of leprosy have also led to special investigations. Though all of these inquiries have a specific objective unrelated to general assessment, each investigation allows sector physicians to evaluate their overall prospection programme. Even if no special assessment report is prepared, a quick scar survey can be made.

There are many sources of reports of suspected disease. Villagers themselves, through village chiefs and sub-prefects, sometimes provide information. Nurses in dispensaries and first aid posts also transmit information. Leprosy control personnel follow regular, fixed circuits and are able to report on unusual outbreaks of disease. Finally, physicians assigned to hospitals in several interior towns are good sources of information. Through investigation of reports of various diseases, the surveillance system serves to stimulate assessment.

CONCLUSION

The Central African Republic has had no cases of smallpox since 1962; scars suggestive of past smallpox infection are rare among villagers. At least one vaccination scar is present on virtually all adults; in such a well vaccinated population there appears little danger of an epidemic in the event of an introduced case. In addition, villagers continue to participate when prospections are conducted. When these factors are considered in combination with the fact that several limited forms of assessment are in operation, there seems to be little justification for the creation of a formal assessment team whose findings in any case probably could not be acted upon. It is primarily a question of money.

Assessment is undoubtedly more vital for a country where no health structure exists, but for the Central African Republic, special teams for this purpose are certainly not a necessity. Our record with respect to smallpox supports this contention, for the disease has been eradicated. If results, not technique, are what count, our system cannot be strongly criticized.

TABLE I
ASSESSMENT OF COVERAGE

	<u>No. Examined</u>	<u>No. With Takes</u>	<u>% With Takes</u>
I. Take rates determined in all persons irrespective of vaccination status			
1. Markounda	211	204	97
2. Bambari	419	373	89
3. Bakouma	420	335	80
4. Rafai	120	856	76
5. Berberati	78	59	76
II. Take rates determined in primary vaccinees only			
6. M'Baki	39	39	100
7. Kembe	101	99	98
8. Mingala	45	44	98
9. Bimbo	51	47	92
10. M'Boki	40	36	90
III. Take rates determined in children 0-4 years of age			
11. Alindao	359	347	97
12. Bozoum	19	18	95
13. Bossangoa	107	101	94
14. Bria	124	116	93
15. Paoua	137	123	90

TABLE II
ASSESSMENT OF GOVERAGE

Locality	Assessment Data (%)	Census Data (%)	0-4 Yrs.		5-14 Yrs.		15-44 Yrs.		45+ Yrs.		Total	
			No. Per-sons	% Vac.	No. Per-sons	% Vac.	No. Per-sons	% Vac.	No. Per-sons	% Vac.	No. Per-sons	% Vac.
1. Markounda	84	87	84	89	58	100	91	82	18	17	251	84
2. Bambari	90	93	72	96	98	91	261	90	32	81	463	90
3. Bakouma	88	97	77	64	73	95	286	94	44	77	480	88
4. Rafai	95	147	141	92	240	95	481	97	316	93	1178	95
5. Berberati	91	97	23	96	16	94	45	92	13	76	97	91
6. M'Baki	96	91	42	98	44	98	63	95	15	93	164	96
7. Kembe	95	84	78	94	28	100					106	95
8. Mingala	89	87	51	98	119	91	73	85	10	60	253	89
9. Bimbo	83	86	54	94	44	93	115	76	34	79	247	83
10. M'Boki	86	69	8	88	105	96	71	86	1	100	185	86
11. Alindao	95	89	378	95	422	98		93	137	93	1546	95
12. Bozoum	92	86	22	86	51	94		98	26	81	159	92
13. Bossangoa	95	84	108	99	177	97		95	82	89	555	95
14. Bria	93	102	136	91	128	94	164	98	50	86	478	93
15. Paoua	96	79	142	96	203	97	201	95	81	90	627	96