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**SURVEILLANCE PROGRAMME
IN THE SYRIAN REGION, UNITED ARAB REPUBLIC**

By

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Introduction:

The Malaria Control Programme started in Syria, "The northern region of the United Arab Republic" in 1949 by national efforts.

From 1952 to 1955 a malaria demonstration team was established in Homs, with the collaboration of WHO and UNICEF.

Eradiation Programme: In March 1956, a Basic Agreement on a malaria eradication programme was agreed to, and signed by the representatives of WHO, UNICEF and the Syrian Ministry of Health, and on 20 December 1956 it was approved by law No.334 on behalf of the parliament.

The programme is planned to protect 1,500,000 individuals, living in malarious areas, out of the total population of 4,025,165 (according to 1956 census).

The duration of the programme was planned on a five years basis, with an annual allocation of S.L. 736,000 (US \$ 200,000) from the Syrian Ministry of Health and almost as much from the other two parties concerned, namely, WHO and UNICEF.

Hereinafter is listed briefly the number of inhabitants protected through DDT residual spraying by the Malaria Control Programme between 1949 - 1956, and those protected by the Malaria Eradication Programme between 1956 - 1959.

Malaria Control Programme 1949-1955		Malaria Eradication Programme 1956-1959	
Year	No. of Population Protected	Year	No. of Population Protected
1949	19,000	1956	203,657
1950	180,073	1957	870,652
1951	29,924	1958	1,241,881
1952	198,799	1959	1,933,963
1953	389,407		
1954	282,215		
1955	272,225		

The surveillance System

The establishment of the surveillance system in the Syrian Region of the United Arab Republic began in July 1958, in the province of Damascus, where most of its area was under spraying operations since 1949, with the exception of a single district, called Al Kounaitra, near the south western frontier and which is regarded as a military district needing entry permits from the military authorities. These restrictions delayed the malaria operations there which were started for the first time on a total coverage basis during 1958.

When submitting the plan of operation for 1958 - 1959, the WHO and national experts agreed to stop the spraying operations in Damascus province, with the exception of Al Kounaitra district, mentioned above; and to establish a surveillance system all over the province, including that district.

The province was divided into thirteen districts and sub-districts. The number of inhabitants allotted to each surveillance agent depended on the past malaria history of the district as well as the existence of good roads. Nabek district covers almost 34,718 inhabitants with one surveillance agent, while another one, Al Nashabiyia, with a population of 20,640 inhabitants, was divided between two surveillance agents. This is due to the fact that the first district is not a malarious one, with good roads, and experience proved it to be within the possibilities of one surveillance agent, while the other district, Al Nashabiya used to be a malarious one, with difficult roads in some parts, and thus was divided into two subdistricts with one surveillance agent in each, covering and protecting about 7,000 inhabitants only.

The size of villages is also an important factor in determining the area assigned per surveillance agent. In Nashabiya district the villages are small and scattered, but in Nabek the villages are big and limited in number with high density of population.

According to the phase of our Malaria Eradication Programme, the surveillance system was started during the attack phase in Al Kounaitra District and after the discontinuation of the spraying operations, i.e. in the consolidation phase, in the rest of Damascus province.

The surveillance agents were selected as permanent skilled labourers, who have had a formal education or at least able to read and write and fill the necessary forms easily without misapprehension. They were given a monthly salary of S.L.120 to S.L.140 (US \$ 33 - 40).

They were given a special course to be able to accomplish their duties perfectly, and to deal with public health education. They were put under the direction of a physician and a qualified technician and their monthly itinerary was laid down in advance visiting every village once per month according to fixed dates. Their work is continually supervised by the physician as well as by assistant inspectors each of whom was entrusted to supervise the work of three to five surveillance agents.

The surveillance agent is supplied with a leather bag containing the following items:

1. Forms
2. Alcohol.
3. Cotton.
4. Slides.
5. Camoquine tablets.
6. Aralen tablets.
7. Sulphaguanidine tablets.
8. Aspirin tablets.
9. Zinc ointment.
10. Black ointment.
11. Argyrol eye drop.
12. Mercurochrome.
13. Stationery, pen, pencil, etc.
14. Slide Box.

Each surveillance agent is assigned one zone or part of a zone and his duty station is centrally located in the area, with the exception of East and West Ghouta where the duty stations are based in Damascus. The surveillance operation of Kounaitra district with its four zones operates from Kounaitra town and is provided with Land-Rover car distributing the four surveillance agents each morning and collecting them at the end of each working day. Official circulars issued by the Ministries of Health, of the Interior and of Education, asking the collaboration of the whole medical profession, including those in official posts, in private practice, the administrative authorities, police-men, school teachers and village Moukhtars, to offer the surveillance agents the necessary help when needed, and to facilitate their duties, of systematic active search for the detection of residual or imported malaria cases, through house-to-house visits, and to take blood smears from every fever case, in every community without exception.

The blood smears taken are dispatched quickly to the central laboratory and examined by 10 well-trained laboratory technicians.

The average daily number of blood films examined by a single technician runs between 15 (by those who have extra administrative work) and 40 (by those who are devoted to blood examination only). Three other employees do the staining and cleaning work.

On discovering any positive case, treatment is given to the individual at the earliest possible time, (according to the WHO standard methods) until radical cure is obtained. An enquiry is made at the same time for the probable source of origin, and the necessary measures are soon applied.

For the sake of the cooperation of the public which is very essential, we felt the necessity of supplying the surveillance agents with a limited amount of drugs such as sulfaguanidine, aspirin, eye drops, and first aid materials. This ancillary curative activity, although consumes some of the surveillance agent's time and efforts, considering also the cost of these drugs, proved to be beneficial and rewarding.

The confirmed positive cases detected out of a total 49,133 blood smears collected by the surveillance agents were only five. Four P. vivax were detected in two villages located in Zone 13 (Kounaitra) and one P. falciparum was detected in Makrousa village in Zone No. 11 (Keswa) adjacent to Kounaitra. Kounaitra Zone as well as few villages adjacent to it were never sprayed before 1958. Even in 1958 some villages were partially sprayed and rather late in the season due to administrative difficulties. Evidently the start of surveillance in this area during the attack phase was intended to compensate for the delay of operations in these villages and in order to find out and cure radically any residual parasite reservoirs, so that the whole Damascus Province with all its districts will enjoy the same freedom from malaria.

Five other blood positive malaria cases were reported through a private laboratory and practitioners. Four were from Damascus city and one from Zabadani (district No.5). The epidemiological investigations carried out on these cases proved to be as follows:

Damascus City:

- 1 P. vivax was imported from Iraq.
- 1 P. vivax in a child 18 months old from a blood transfusion. The donor was not registered and some unreliable information stated that he is from Aleppo Province.
- 1 P. malariae a very old relapse case.
- 1 P. vivax case in a pilgrim who stayed a few days in a village along the Medina Jedda Road.

Zabadani : 1 P. vivax imported from Kamishli area in the North.

The surveillance system is recently applied in another province namely Homs, but on a limited scale and we hope that during 1960 it will be possible to extend it to cover the whole province. The following data give a picture of the surveillance activities achieved in the period between July 1958 and August 1959:

Total pop. under surveill.	- 403,072	Av. pop. protected monthly	216,246
Total villages	" " 395	Av. Vill. protected monthly	179
Total smears taken	19,133	Av. smears taken per month	4,913
Total No. of Def. Laboratory visits	2,394	No. of surveill. agents	17
Total kilometers covered	68,409	No. of mobiles used	22

The data collected during this reporting period show the following analysis. This analysis will enable the responsible authorities to form an idea on the trend of work in order to develop the surveillance operations their maximum efficiency.

(a) <u>Population</u>	<u>Max.</u>	<u>Min.</u>	<u>Aver.</u>
Average population visited monthly by one surveillance agent	31,499	4,846	17,814
Average population daily visited by one surveillance agent	2,120	605	939
Average village monthly visits	12	7	10
(b) <u>Blood Smears</u>			
Average smears monthly taken by one surveillance agent	540	230	350
Average smears daily taken by one surveillance agent	36	14	21
% of smears taken as per total inhabitants visited	3.2%	0.9%	1.6%
(c) <u>Transport and Others</u>			
Average No. of working days/month/surv. agent		10	16
Average daily distance covered	93.7	31.6	51.5

Notification:

Malaria became a notifiable disease in 1956. In response to a request from the Malaria Eradication Department, the Ministry of Health issued a circular to the whole medical profession including physicians in private practice as well as those holding official posts in hospitals and dispensaries to report malaria cases, as well as suspected ones, after taking a blood smear from each and dispatching it to the nearest malaria eradication laboratory. Unfortunately we shall feel that this collaboration is not complete yet, and we have to depend upon our active and passive surveillance system.

Voluntary Collaboration:

system for detection of malaria cases, depending partly on voluntary collaboration "passive surveillance" such as school teachers, students, certain non-medical official employees, and educated volunteers in rural areas, and partly upon the medical profession, is being organized by Dr. Y. Kiledjian, the Chief of Malaria Eradication Centre in Aleppo, who during his visit to Latin America, saw such a system of voluntary collaboration, which is well developed in Mexico and in El Salvador.

The Malaria Eradication Department approved this system, and recently started to implement it in Aleppo Province first. His Excellency the Minister of Health started the drive to implement such a programme by an appeal on August 15, 1959 to the whole medical profession to assist and collaborate in this important work.

Means of Transport:

The UNICEF offered two types of Lambrette motor cycles (48 c.c. and 125 c.c.) for use in the surveillance programme. Both were used and tested during the last year (the cost of which will be mentioned under cost of surveillance later) but we have a number of difficulties while using them, although they were not given to any surveillance agent except after passing an examination on driving them for the smaller size, or having an official licence of driving, for the big size.

The main trouble was the frequent need for repair, and the spare parts were sometimes unavailable or expensive. This, however, was solved through the help of the UNICEF which supplied us with the sufficient amount of the spare parts needed, and we are now creating a work shop in our department for the prompt care and repair of these motor cycles.

We did also try recently to use a Land-Rover car to carry four surveillance agents, given daily field work in adjacent villages, the car drops them each in his place of work in the morning, stays with the last, and collects them at the end of the working hours. We are thinking to have the driver as an assistant inspector, who can combine the duties of driving, technical supervision, and the taking of blood films and reports to and from the Malaria Eradication Centre and its laboratories. It is still early to compare and judge the results of this method.

The Cost of Active Surveillance

A tentative estimate of the cost of active surveillance on a monthly basis in the Province of Damascus is given below:

(a) <u>Salaries</u>	<u>S.L.</u>
Salaries of 17 surveillance agents	2,040.00
Salaries of 5 assistant informants (Surveillance)	750.00
Salaries of 3 Laboratory Attendants	300.00
Salary of one Machine	180.00
Salaries of 10 Laboratory Technicians	1,500.00
(b) <u>Cost of Equipment and Supplies</u>	
Depr. of surveillance equipment and stationery (Aver. 3.150/Sur.Agent/Month)	25.50
Cost of first aid material (Aver. 8.2.00/Sur.Agent/Month)	34.00
Other expenditures (Aver. 50.00/Month)	50.00
Cost of Medicaments (Aver. 230/Month)	230.00
(c) <u>Transport</u>	
Depr. of Lambrettas 48 c.c. (Quantity 17) Cost \$110.-	68.00
Depr. of Lambrettas 125 c.c. (Quantity 5) Cost \$210.-	37.00
Cost of fuel for 22 motorcycles (40% Lit. at S.L. 0.36)	145.04
Repair of motorcycles	125.00
Cost of spare parts (Aver. S.L. 10.00)	220.00
Total	S.L. 5,704.54

Average population monthly protected 210,246

Cost per capita per month = SL 0.03 (US Cents 11.1)

From the information available as averages and which cannot be considered as final, due to limited experience, an estimate of the total surveillance work for all provinces of Syria could be drawn up. A total No. of 1,500,000 inhabitants will be under surveillance work, thus costing monthly SL 45,000 totalling to SL 540,000 yearly. This estimation, however, as well as the previous calculation above do not include the salaries of the senior staff (physicians and administrative staff) as well as the depreciation on heavy transport, rents of centres, etc. as well as the cost of the food spraying operations which have to be carried out in conjunction with the surveillance work.

Conclusions

The implementation of active and passive surveillance system, in certain provinces of the Syrian Region of the United Arab Republic, namely Damascus, Homs and Aleppo started during 1958 - 1959.

The main results obtained, the difficulties encountered, the technical and administrative aspects of the work of surveillance were mentioned; a general view of the work of the Commission was also presented.

It is hoped that the whole participation of the United Arab Republic will be completed and that the surveillance system during 1960 - 1961.

ANNEX ISURVEILLANCE RESULTS
OF DAMASCUS PROVINCE

DATE	NO. ZONES COVERED	NO. OF VILL.	0 - 1 NO. (+)	1 - 2 NO. (+)	2+ NO. (+)	TOTAL NO. (+)	FEV. CASES	TOTAL No. POP. PROTECTED	RE-MARKS
JULY 1958	1	24	604 0	798 0	677 0	2079 0	447	48872	
AUG 1958	3	33	915 0	1135 0	603 0	2653 0	624	67048	
SEP. 1958	4	44	145 0	283 0	1416 0	1844 0	1025	94439	
OCT. 1958	5	64	131 0	211 0	2258 0	2600 0	1969	129154	
NOV DEC 1958	10	156	451 0	599 0	4315 0	5365 0	2270	278498	
JAN. 1959	6	101	373 0	400 0	2643 0	3416 0	1913	174172	
FEB. 1959	9	172	560 0	532 0	4233 0	5325 0	2530	207509	
MARCH 1959	9	144	318 0	337 0	2778 0	3433 0	1733	166780	
APRIL 1959	8	136	299 0	302 0	2867 4	3468 4	1333	162079	
MAY 1959	12	119	309 0	485 0	3221 0	4115 0	1882	192760	
JUNE 1959	10	145	476 0	597 0	2877 1	3952 1	1798	198379	
JULY 1959	19	441	3014 0	3059 0	5752 0	11825 0	9409	550476	
TOTAL			7655 0	8696 0	33599 5	49950 5	26933		

N.B. = Surveillance is active in ten Zones only.

MODEL OF MONTHLY FORM ON SURVEILLANCE
RESULTS IN DAMASCUS PROVINCE

Month: JULY

Year: 1959

CONFES		No. of AGT.	No. of Vill.	GROUPS						TOTAL		FEV. CA-SES	Total No. Inh. Protec.	Remarks
NO	NAME			1		2		3		4				
				NO. of ex.	PR	NO. of ex.	PR	NO. of ex.	PR	NO. of ex.	PR			
1	NaBAK	I	9	7	0	25	0	209	0	242	0	178	32945	
2	YABROUD	I	8	31	0	42	0	749	0	222	0	108	23504	
3	KATAYFA	I	1	88	-	51	0	137	0	576	0	152	22390	
4	TELL													
5	ZABADANI													
6	DOUMA													
7	E.GHOUTA	2	25	138	0	142	0	910	0	1190	0	621	69878	
8	W.GHOUTA	2	14	49	0	70	0	141	0	50	0	10	2575	
				20	0	19	0	125	0	170	0	43	7218	
10	NACHABIYA	2	32	54	0	68	0	185	0	61	0	176	17796	
11	KESWA	2	25	76	0	84	0	162	0	60	0	281	16105	
12	HARAMOUN	1	15	82	0	112	0	131	0	335	0	112	17870	
13	QUINETRA	6	(praying programme going on and no surveillance activities)											
TOTAL		17	116	551	0	557	0	2523	0	2019	0	15698		

GENERAL REMARKS:

ITEMS	1	2	3	4	6	7	8	9	10	11	12	13	Total
	NAME	VA ROAD	KUTLIFA	BL - TEL	DOUM	E. GHOUTA	W. GHOUTA	K.T.M.	NASH-BIYA	KESW.	H.R. MOUN	KOUN ITR	TOTL
Total population cens. 1957	34718	23606	35721	-	-	92630	61660	20635	20640	21448	15565	76449	403072
Total Number of Villages	10	10	23	-	-	29	34	28	42	44	19	156	395
Date Start Surveillance	8/58	8/58	5/59	-	-	7/58	10/58	2/59	2/59	1/59	2/59	2/59	
Total monthly visits planned	13	13	4	-	-	14	11	7	12	8	7	4	
Average pop. monthly visited	31499	20571	23488	-	-	51238	31578	9054	9692	10109	9864	21203	218246
Aver. pop. protected, Man/k	7571	1210	1171	-	-	1281	1857	905	535	613	657	2120	939
Aver. pop. protected, Man/Inch	31499	20571	23438	-	-	23619	15503	9054	4846	5021	9864	5300	5300
Aver. Vill. monthly visited	8	"	11	-	-	23	18	8	20	22	12	50	179
Total No. of smears	4787	3294	1654	-	-	15122	5622	2001	4610	3934	2224	5835	19133
Aver. Smears Month/Agent	368	253	113	-	-	540	295	85	306	306	316	364	350
Total No. Sur. Agents	1	1	1	-	-	2	2	1	2	2	1	4	17
Total Man - days	261	233	81	-	-	577	331	71	323	206	101	165	2349
Aver. Monthly Work days/et.	20	17	20	-	-	20	17	0	16	15	15	10	16
Aver. smears taken man/day	18	14	20	-	-	27	17	23	14	20	21	36	21
Aver. vill. monthly visit	8	7	11	-	-	12	9	8	10	11	12	12	0
% smears taken from visit	1.1	1.2	1.7	-	-	1.0	0.9	3.1	3.1	0.9	3.2	1.1	1.6