

(A Study of Problem of Tuberculosis Among Migrant Laborers in Wisconsin.)
(X-ray survey in July-August 1952, report by Dr. Feig)

To our knowledge the first and only published report of a tuberculosis study among migrant agricultural workers is that of Newitt and Koppa¹ undertaken in Texas in 1939 and 1940, and published in 1947. It was prompted by the recognition that considerable numbers of Mexicans were admitted to tuberculosis hospitals in Michigan, and its purpose was to screen and certify the Mexican migrants at recruitment centers in San Antonio, Texas, before permitting them to leave for work in Michigan. In this respect, it was considered successful; the authors state that approximately 120 cases of probably contagious tuberculosis were excluded from the state.

Local surveys undertaken within those states from which the bulk of this country's migrant agricultural workers are drawn may not reflect the true nature of the tuberculosis status of those who migrate seasonally. A local survey may include many who will not migrate and the prevalence so determined may vary appreciably from that of the migrant group. A screening and certifying procedure such as described above may restrain many who suspect illness in themselves from participating. The prevalence of tuberculosis found in such a study will undoubtedly be lower than that which actually exists.

Rapidly increasing numbers of agricultural migrants have been entering Wisconsin each year since the early 1930's; more so since World War II. Estimates range from 4,500 in 1947, to 6,000 in 1948, 8,700 in 1949, 10,000 in 1950, 11,000 in 1951 and 12,000 in 1952. Until 1942 these agricultural migrants were limited almost exclusively to "Texas-Mexicans." Although 75 percent of Wisconsin's agricultural migrants are of this group, in 1949, for example, migrants also came from Missouri, Arkansas, Oklahoma, Louisiana, Kentucky, Illinois and Georgia. During that year almost an additional 2,000 workers from the British

West Indies were employed under contract.² In recognition of the many problems presented by the rapidly increasing numbers of migrant agricultural workers entering the State of Wisconsin in recent years, and with the impetus of a request from the Governor's Commission on Human Rights, the State Board of Health attempted to determine the housing problems and tuberculosis status among this group of agricultural laborers.

This paper is a report of a study conducted in 1952 to determine the extent of tuberculosis among the agricultural migrants working in Wisconsin during that year.

Preliminary Considerations

The conduct of an adequate tuberculosis study of the migrant agricultural laborers within the state presented many problems for consideration.

These migrant workers, considered from the viewpoint of racial or geographic origin, are quite heterogeneous. They were grouped into seven major groups, and efforts were made to include an adequate sampling of each group in the preliminary 70 mm. survey.

It was estimated that about 12,000 agricultural migrants would be in the State during the two-month survey period. Because of the very nature of their work, these people do not constitute a stable "fixed" population group--they follow the crop harvest within the state from early summer to late fall staying in each locality a relatively short period of time ranging from two to four weeks as a rule. It has been estimated that the average migrant moves within the state at least 3 times in a given year, and some leave the state during a slack in the summer season to return in the early fall. It is almost an impossibility to determine beforehand exactly where a given

migrant or his family will be located once a move begins. While efforts are made to secure such information by the State Employment Service, or the migrants' employers, in many instances even the migrants themselves do not know for whom they will work. Many follow their "padrones" or move individually to such places in the state which are ready for harvesting, seeking employment as best they can within such areas. This factor was important in planning the survey. It was necessary to move into a given area for the original screening program as soon as the migrant group entered that area for harvesting purposes. Films had to be processed and read as soon as possible so that the migrant would be available for the necessary follow-up procedures for more definitive diagnosis before he changed location and further follow-up would become impossible. In order to avoid possible duplication in screening and to secure an adequate sampling of the various racial and geographic groups, it was necessary to secure some information concerning the tendencies toward specific group employment in given areas of the state, the number of persons in each group likely to be concentrated in such areas and their migration tendencies within the state as they followed the harvest from place to place at varying periods. This information was obtained from the State Employment Service.

Since in most areas the agricultural migrants are paid by "piece-work," it was considered advisable for the mobile units to operate from dawn to breakfast and in the evenings. This facilitated the cooperation of the employer who was anxious to have his crop gathered as soon as possible, and the participation of the workers whose earnings would not be affected by such timing.

The survey was not limited to any particular age or sex groups. Quite the contrary, every effort was made to bring in all age groups of both

sexes, with emphasis on family and household groups where possible.

Participation by the migrants in the survey was on a voluntary basis; it is therefore quite likely that the tuberculosis findings and rates reflect a lower rather than true prevalence. Although follow-up study for tuberculosis following the initial 70 mm. screening was recommended in 66 persons, this could only be achieved in 32 instances.

Previous Experience with Tuberculosis Among Migrant Agricultural Workers in Wisconsin

There is no data available concerning this problem in Wisconsin except for records of sanatorium admissions. (Table 1).

Forty-five cases of tuberculosis among migrants were admitted to Wisconsin tuberculosis sanatoria between 1942 and 1951. These were all Texas-Mexicans. Forty-one of these were admitted in the four year period 1948-1951, within which an estimated 25,700 migrants of this group entered the state. This yields an over-all hospital admission rate of 1.60 per thousand, which is above four times the annual rate of new tuberculosis hospital admissions for the State of Wisconsin at large. (.382 per thousand population)

It must be emphasized that the Wisconsin cases are derived from a relatively constant population group, among whom repeated case-finding measures are conducted, whereas the migrant laborer group is one which fluctuates annually (there is no method of determining which or how many return to the state from year to year) and that no case-finding programs have been conducted among them. Those migrants who were admitted to sanatoria, were admitted only because they were so severely ill as to cause them to seek medical aid.

Of all the Texas-Mexican admissions 18 per cent were minimal on

admission, 24.5 per cent were moderately advanced, and 42.1 per cent far advanced. Eighteen per cent of admissions were in the 0-15 year age group, 53.2 per cent in the 16-35 year age group, 9 per cent between 36-45, and 18 per cent were 46 years and over.

Composition of the Survey Group

Nationality and Race

The composition of the survey group by nationality and race as secured from the migrant workers is shown in Table 2. The migrant workers were considered in the following nationality and racial groupings: Texas-Mexican, Mexican Nationalist, Jamaican and Barbadian, Puerto Rican, U.S. Negro (southern), U. S. White (southern), and U. S. Indian (Wisconsin). It was estimated that for the year 1952, the total number of migrant agricultural laborers in the State of Wisconsin was about 12,000. This estimate, and the number of workers in each group was obtained from the Industrial Commission of the State. About one-third of all the migrant laborers in Wisconsin were of Jamaican-Barbadian origin and about three-fifths (58.4) per cent) were Texas-Mexicans. Whatever findings the survey would reveal would undoubtedly be centered among these two groups which comprised over 90 per cent of the migrant population.

Efforts were made to get significant numbers of all groups into the survey. 1750 Texas-Mexicans participated. This constituted 25 per cent of all the Texas-Mexicans estimated to be in the State. 888 (or 23 per cent) of all Jamaican-Barbadians were surveyed and more than two-thirds of the Mexican-Nationalist group. Participation of the other numerically smaller groups varied from 1 per cent (southern Negro) to 38.5 per cent (Wisconsin Indians).

Age-Sex Distribution

The age and sex distribution of the groups surveyed is indicated in Table 3.

The sex distribution of the Texas-Mexican group was about equal, males 892, females 852. This sex distribution was evident in all age groups up to age 60, and over, where the preponderance of males over females was about 5 to 1. 1570 of the 1750 Texas-Mexicans surveyed (about 90 per cent) were in the age groups under 45.

144 of 176 Mexican Nationals were between 20 and 60 years of age (82 per cent) and the bulk of these (104) were between 20 and 45 years. The latter age group alone constituted almost 60 per cent of all Mexican Nationals. The migration of whole families is slight as compared to the Texas-Mexicans; the preponderance of males over females in the 20 to 45 year group being about 7 to 1; in the 45 to 60 age group about 2 to 1. The sex distribution in the younger age groups is about equal.

Almost all of the Jamaican-Barbadians were between 20 and 45 years of age, as were the Wisconsin Indians. However, there were only 2 females in the former group. There was no appreciable evidence of family migration among the other groups.

The 70 mm. Survey Findings

3260 films of 3308 persons surveyed were considered satisfactory for interpretation (Table 4). 3135 or 96.2 per cent were considered normal. 127 pathologic findings were observed in 125 persons (3.8 per cent). 66 films (2.0 per cent) were read as "possible tuberculosis", 7 films (0.2 per cent) as "pathology of undetermined etiology," and 54 or 1.7 per cent as "cardiac pathology."

Tuberculosis pathology on the survey films (Table 5) were read in the following categories: Suspicious, minimal, moderately advanced, and far advanced. Of the 66 persons in these groups, one-third were referred as suspicious, and one-half (54 per cent) as minimal. Eight (17 per cent) were referred as moderately advanced and none as far advanced.

Referrals for tuberculosis involved 3.4 per cent of the Mexican National group, 2.6 per cent of the Texas-Mexican group and 1.2 per cent of the Jamaican-Barbadians.

Follow-up Findings on Referrals for Tuberculosis

Because of difficulties previously discussed follow-up could only be obtained in 32 of the 66 survey referrals. The results are summarized in Table 6. About one-third (12) were considered normal after 14 x 17 x-ray films. Diagnosis was confirmed in 15 cases (47.1 per cent of the 32 persons followed up). Of these, 2 were considered inactive minimals, and 9 were considered active. In 4 cases the activity status was undetermined. Three other referred cases were reported back as suspicious tuberculosis after 14 x 17 x-ray, but no further follow-up could be done, nor could further study be done in 1 case reported back as "pathology or undetermined etiology."

Of the 9 active cases, 3 were minimal, 3 moderately advanced, 2 far advanced, and one case was an active primary. In 6 of these 9 cases, the activity status was verified by laboratory work (positive sputa and guinea pig inoculation or culture).

Nationality Prevalence

The tuberculosis findings among the various national groups for the 32 referrals are itemized in Table 7. Eighteen Texas-Mexicans were followed.

Of these, 6 were found to be normal, and 12 (67 per cent) were found to have tuberculosis. On the basis of 1750 Texas-Mexicans surveyed, this represents a rate of 7.0 per thousand. Of the 12 tuberculosis cases, 6 were considered minimal, 5 moderately advanced and 1 far advanced. Seven of the 12 were considered active, a rate of 4 per thousand. This rate estimate is based on the 1750 surveyed and active cases found, and does not take into consideration that only 18 of 46 persons referred were followed. Had all been followed, there can be little doubt that the rate would have been at least several times greater. Of the 12 cases of tuberculosis diagnosed among the Texas-Mexicans, 7 were among males and 5 among females. Of the 9 active cases, 5 were in males and 4 in females.

176 Mexican Nationals were surveyed, 6 referred for follow-up study, and 4 successfully followed. Of the 4 so followed, 1 was negative and 3 were diagnosed as having tuberculosis. Of these 3, 2 were minimal and one considered suspicious. The 2 minimal cases were suspected by the radiologist of being active. All the cases in this group were in males. Rates were not estimated for this small group.

Of 888 Jamaican-Barbadians, 11 were referred for follow-up study, and 7 of the 11 were so studied. Four of the 7 were negative, 1 was considered to be a cardiac, and another to have some pathology of undetermined etiology other than tuberculosis. Only one case of tuberculosis, far advanced, active was found in this group.

Age-Sex Distribution

The age-sex distribution of the 18 cases of tuberculosis found in the migrants is shown in Table 8. None were under 20 years of age. Six cases were in the 20-29 year age group, 5 in the 30-39 year group and 2 each in the

40-49, 50-59 year, and 60 and over age groups. Thus, 15 of the 17 cases tabulated (90 per cent) were in the 20-59 year groups which comprised 1990 of the 3260 persons surveyed (61 per cent).

TABLE 1.

Texas-Mexicans Admitted to Wisconsin Tuberculosis
Sanatoria (1942-51) by Age and Sex Groups, and Stage On
Admission

Stage on Adm.	Cases		Not stated		1-15		16-25		26-35		36-45		Over 45	
	No.	%	M	F	M	F	M	F	M	F	M	F	M	F
Primary	2	4.5				2								
Minimal	8	17.8			1			4	1			1	1	
Mod. Adv.	11	24.5			1	1	2	2	2		1	2		
Far Adv.	19	42.1		1	1	1	3	1	5	2			3	2
Extra-Pul.	1	2.2								1				
Observation	4	8.9			1					1			2	
Total	45	100		1	4	4	5	7	8	4	1	3	6	2
Percent of Admissions	100		2.2		17.8		26.6		26.6		8.9		17.8	

Table 2

Nationality Composition of 11,978 Migrant Laborers,
as Related to Nationality Groups Surveyed by 70 mm. X-ray.

Wisconsin, July-August, 1952

Nationality Group	Migrants in Wis.		Included in Survey		
	Number	Percent of Total	Number	Percent of Total	Percent of Nat'l Group
Texas-Mexican	7000**	58.4	1750	53.7	25.0
Mexican Nationalist	261	2.2	176	5.4	67.4
Jamaican & Barbadian	3857	32.2	888	27.2	23.0
U.S. Negro (Southern)	300**	2.5	3	.1	1.0
U.S. White (Southern)	300**	2.5	58	1.8	19.3
U.S. Indian (Wisconsin)	200**	1.7	77	2.3	38.5
Puerto Rican	60	.5	9	.3	15.0
No Data	--	--	299	9.2	--
Total	11978	100%	3260	100%	27.2

* From Industrial Commission State of Wisconsin

** Estimated by Industrial Commission

Table 3

AGE AND SEX DISTRIBUTION BY NATIONAL AND GEOGRAPHIC ORIGIN
OF 3260 MIGRANT WORKERS X-RAYED IN 70 MM. SURVEY, WISCONSIN, 1952

	Texas-Mexican		Mex. Nat'l.		Jam.-Barb.		Indian (Wis.)		South-White		Puerto-Rican		No Data		Total ^a				
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F			
0-4	67	88	1	3	0	0	0	0	0	0	0	0	0	5	7	12	73	98	171
5-9	137	133	4	4	0	0	1	1	0	3	1	0	1	14	9	24	157	150	308
10-14	155	151	3	2	0	0	0	0	0	2	0	1	1	14	12	26	172	168	341
15-19	153	159	6	3	4	0	3	1	4	31	1	0	0	10	9	20	209	173	382
20-44	275	250	90	13	861	2	59	6	65	13	3	7	0	161	26	189	1467	300	1774
45-59	77	65	28	12	11	0	1	1	2	2	0	0	0	14	4	18	133	82	216
60+	25	6	2	3	0	0	4	0	4	0	0	0	0	4	3	7	35	12	47
No Data	3	0	0	1	6	0	0	0	0	3	0	0	0	3	0	3	15	1	19
Total	892	852	134	41	882	2	68	9	77	49	9	8	1	225	70	299	2261	984	3260

() Number in parenthesis indicates those in age-groups with sex not stated.

* 7 in 45-49 age group.

** Both in 45-49 age group.

a. Includes 3 Southern male negroes, 2 in age-group 15-19, 1 in age group 20-24.

Table 4

SUMMARY OF MIGRANT WORKER 70 MM. X-RAY SURVEY, WISCONSIN 1952

	<u>Number</u>	<u>Per cent*</u>
Number of Workers X-Rayed	3308	-
Number of Unsatisfactory Films	48	-
Number of Satisfactory Films	3260	-
Films Read as Negative	3135	96.2
Total Number of Pathologic Findings	127	-
Number of Persons with Pathologic Findings	125	3.8
Films Read as "Cardiac" Pathology	54	1.7
Films Read as "Pathology of Undetermined Etiology"	7	.2
Films Read as "Possible Tuberculosis"	66	2.0

*Of satisfactory films

Table 5

Tuberculosis Screening Findings Among Specific Groups of Migrant Workers, Wisconsin 1952

Screening Finding	Texas-Mexicans (1750 persons)	Mexican Nationals (176 persons)	Jamaican Barbadian (888 persons)	Southern White (58 persons)	South Colored (3 persons)	Wisconsin Indian (77 persons)	Total (2952 persons)
Suspicious	14	1	5		1	1	22
Minimal	25	5	5	1			36
Mod. Adv.	7		1				8
Far. Adv.							
Total	46	6	11	1	1	1	66
Percent of Specific Group Surveyed	2.6	3.4	1.2	1.7	32.3	1.3	2.2

Table 6

Results of Follow-up Examinations for Tuberculosis in 32 Migrants.

Wisconsin State Board of Health Migrant Labor Survey, 1952

Diagnosis Reported After Follow-up	Number	Per cent of Examined Group
Negative*	12	37.5
Tuberculosis	15	47.1
Inactive	2	6.3
Active	9	28.2
Primary	1	3.1
Minimal	3	9.4
Moderately Advanced	3	9.4
Far Advanced	2	6.3
Activity Undetermined	4	12.6
Minimal	2	6.3
Moderately Advanced	2	6.3
Far Advanced	0	0.0
Suspicious Tuberculosis	3	9.4
Pathology of Undetermined Etiology	1	3.1
Cardiac	1	3.1
Total	32	100.2

* Includes 4 inactive primaries.

Table 7

Results of Follow-up Studies in 32 of 66 Migrants Referred for Further Tuberculosis Study After Screening

Follow-up Diagnosis	Texas-Mexicans		Mexican Nationals		Jamaican Barbadian		Southern White		Southern Negro		Wisconsin Indian		Total	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Tuberculosis	7	5	3	0	1	0	1	0	0	0	1	0	13	5
Minimal	2	4	2	0	0	0	1	0	0	0	1	0	6	4
Active	2	1	-	-	-	-	-	-	-	-	1	-	3	1
Suspected Active	-	-	2	-	-	-	-	-	-	-	-	-	3	0
Inactive	-	-	-	-	-	-	-	-	-	-	-	-	0	2
Undetermined Active	-	1	-	-	-	-	-	-	-	-	-	-	0	1
Moderately Advanced	4	1	0	0	0	0	0	0	0	0	0	0	4	1
Active	2	1	-	-	-	-	-	-	-	-	-	-	2	1
Suspected Active	-	-	-	-	-	-	-	-	-	-	-	-	0	0
Inactive	-	-	-	-	-	-	-	-	-	-	-	-	0	0
Undetermined Active	2	-	-	-	-	-	-	-	-	-	-	-	2	0
Far Advanced	1	0	0	0	1	0	0	0	0	0	0	0	2	0
Active	1	-	-	-	1	-	-	-	-	-	-	-	2	0
Suspected Active	-	-	-	-	-	-	-	-	-	-	-	-	0	0
Inactive	-	-	-	-	-	-	-	-	-	-	-	-	0	0
Undetermined Active	-	-	-	-	-	-	-	-	-	-	-	-	0	0
Suspicious	0	0	1	0	0	0	0	0	0	0	0	0	1	0
Pathology of Undetermined Etiology	0	0	0	0	1	0	0	0	0	0	0	0	1	0
Cardiac Pathology	0	0	0	0	1	0	0	0	0	0	0	0	1	0
Negative	4	2	0	1	4	0	0	0	1	0	0	0	9	3
Total	11	7	3	1	7	0	1	0	1	0	1	0	24	8

Table 8

Age-Sex Distribution of 18 Cases of Tuberculosis //
 Found Among Specific Groups of Migrant Workers, Wisconsin, 1952

Age Group	Texas Mexicans		Mexican Nationals		Jamaican Barbadian		Total	
	M	F	M	F	M	F	M	F
20-29	3	2	0	0	1	0	4	2
30-39	3	1	1	0	0	0	4	1
40-49	0	1	0	0	0	0	1 ²	1
50-59	0	0	2	0	0	0	2	0
60-69	1	1	0	0	0	0	1	1
Total	7	5	3	0	1	0	12 ²	5

1. Table does not include 1 male Wisconsin Indian, age 7.
2. Includes 1 male Southern white, age 46.