

REPORT OF THE BUREAU OF UNCINARIASIS OF THE DEPARTMENT OF HEALTH ⁽¹⁾

1924-1925

The Bureau of Uncinariasis was created in 1923 to take charge of the increasingly important work of prevention and treatment of Uncinariasis which has been abundantly proved to be one of the most serious problems confronting the Department of Health and the Government of Porto Rico.

The work of the Bureau consists largely in sanitation to prevent infection with Uncinariasis and in giving treatments for the cure of the disease where it has been found to be already established. Nor is the educational aspect of these campaigns to be ignored. While we are teaching the importance of sanitation, we are also teaching these people to live more hygienic lives, and thus giving them a chance to live longer and be healthier, happier, and richer. Sanitation not only lessens the chances of infection but it also greatly reduces the contamination of rivers and other streams from which most of the drinking water for both urban and rural population is secured. In doing this, the danger from typhoid and other intestinal infections is greatly reduced. It is safe to say that to-day there is not a single stream in Porto Rico that is not contaminated to some extent with human feces.

Uncinariasis, as well as most other common intestinal parasitic diseases is contracted only by contact, direct or indirect, with human feces. This fact cannot be too plainly stated. To get rid of these diseases it is necessary to properly dispose of the excrement, and to teach this is the task of the Bureau of Uncinariasis.

It was long ago pointed out that 90 per cent of the rural population of the Island is suffering from Uncinariasis. This is no less true to-day. Indeed, we can now go farther and say that 50 per cent of the urban population, at least in the smaller towns, has the disease. I do not mean that all these people are anemic, for many of them are not; but they harbor some of the parasites. We have

¹The Bureau of Uncinariasis has been reorganized and is now known as the Bureau of Rural Sanitation. In addition to the routine work which is being carried on for the prevention and cure of uncinariasis the Bureau deals with all matters concerning sanitation in the rural sections of the Island.

now examined the people in several towns, including Arecibo and Aguadilla, and the infection has always run about 50 per cent. During the year we made an examination of the school children of Ponce and found 25 per cent of them infected. A survey of the town of Moca is just being finished and 90 per cent of the inhabitants of this town of 1,600 people have been found with Uncinariasis.

Uncinariasis is not a very fatal disease. If it were, many thousands of Porto Ricans would die from it yearly. But just for this reason it is the more dangerous. It partially incapacitates the individual and renders him unfit to properly earn his own living. It often reduces his earning capacity as much as 75 per cent. In this condition he is a burden on the state, both for the medicines which are given him free and from his lessened earning capacity. The patient himself often realizes that he is not giving his employer a proper return for the wages which he is paid. The parasites also actually rob the individual of his food and this makes the problem of undernutrition more serious.

Uncinariasis is a debilitating disease. It greatly lowers the body resistance, so that other more fatal, if not more serious, diseases can find a foothold in the weakened body. Influenza and tuberculosis find their readiest victims among the anemic. The country people are moving to the cities continually; the city people in large numbers have Uncinariasis. How much more serious, then, becomes the problem of disease in the cities.

In previous years the work of the Bureau has been principally conducted by groups or units of inspectors in charge of a Chief Inspector working in municipalities in the northern and western part of the Island. These inspectors conduct sanitary campaigns throughout the municipality, and when one district is finished they move on to the adjoining municipality and commence work there. They are followed by another group of inspectors who give treatments from house to house throughout the rural and urban districts. This work was continued during the year, the Department maintaining four to five construction units and three treatment units, two of which were aided by the International Health Board of the Rockefeller Foundation.

The work of the Bureau also expanded greatly at the beginning of the fiscal year. On July 1, 1924, the Department of Health ordered the local sanitary inspectors in each town to devote a part of

their time, amounting in general to one-third, to rural sanitation work. This, in effect, added twenty-five full-time inspectors to the Bureau. This was a revolutionary step, since never before had any attention been paid to the rural zones, except for occasional inspection of dairies and stores. Since the population of Porto Rico is largely rural and the vast majority of the country people are afflicted with Uncinariasis, it follows that this action was necessary and of great importance for the future health of the Island. Consequently the Bureau did a greater amount of work during the past year than ever before. More latrines were built, more reinspections made, more educational work was done and more people were cured than in any previous year. In fact, it is very probable that Porto Rico did more work in proportion to its size than any other state or country in the world. We do not know of any country of any size which did as much organized sanitary work as Porto Rico.

During the year 22,408 latrines were approved, 14,158 of them by the regular construction units and the rest by the local inspectors. Added to the 34,893 latrines approved to the end of 1923-24, we now have a total of 57,301 latrines approved to date in all the Island. It is estimated that we have now provided over one-fourth of the total rural population of the Island with sanitary accommodations. The only cost to the Government is for the salaries of the inspectors. The cost of construction is borne by the house owner. Sanitation campaigns have been completed in 14 municipalities and are in progress in every remaining one.

Thirty-six thousand two hundred and thirty-nine rural inhabitants were examined during the year for Uncinariasis and as always, over 90 per cent of them were found to have the disease. Sixteen thousand five hundred and fifty-seven people were examined in the towns of Isabela, Aguadilla, Arecibo and Manatí, of whom 50 per cent were found with Uncinariasis. A survey among the school children of Ponce showed 25 per cent of them with the disease. Examination of all the inhabitants of one *barrio* of Morovis showed 98 per cent of them with Uncinariasis.

The Department of Health, in conjunction with the International Health Board, gave 139,585 treatments during the year to 38,269 persons, most of whom were freed from their parasites. To date, nine municipalities have been treated, and the northern section of the Island from Aguadilla to Manatí can now be said, for the first time in its history, to be practically free from Uncinariasis.

In conservation, 17,772 houses in areas already sanitized were reinspected, and latrines repaired or rebuilt in 10,541 of them. This division of the Bureau is very important and will assume increasing importance as more and more of the Island is sanitized.

The work of the Bureau is divided into three principal phases: Sanitation, Conservation and Treatment. These will now be taken up somewhat more in detail.

SANITATION

Four units of inspectors worked the entire year, and a fifth was begun during the last quarter.

One sanitation unit completed sanitation in Añasco and began work in Mayagüez during the year. Another unit completed work in Aguada and was nearing completion of the municipality of Rincón. A third unit finished work in Barceloneta and had nearly completed work in Manatí by the end of the year. A fourth unit worked the entire year in the eastern half of Arecibo, while a fifth unit was formed in the latter part of the year to work in Vega Baja. In addition to these groups of inspectors, there were full-time inspectors doing rural sanitation work in the towns of Bayamón, Fajardo, Guayama, Ponce, Caguas and Villalba and for part of the year in Barranquitas, Comerío and Cayey, while there are part-time inspectors in all the other municipalities of the Island.

TABLE I

Latrine Campaigns

Municipality	Begun	Fin- ished	Total houses	Latrines approved			Approved 1924-25	Remarks
				Old	New	Total		
Añasco	2-1-24	2-28-25	2,208	99	1,887	1,986	1,812	Completed
Aguada	4-1-24	2-28-25	2,831	134	2,360	2,494	1,839	Completed
Barceloneta	6-1-24	6-30-25	2,550	1,399	933	2,332	2,134	Completed
Arecibo	9-1-24	.....	.....	28	2,033	2,061	2,061	In progress
Mayagüez	10-1-24	.....	.....	206	1,702	1,908	1,908	In progress
Rincón	11-1-24	.....	.....	96	1,220	1,216	1,316	In progress
Manatí	12-1-24	.....	.....	711	2,054	2,765	2,765	In progress
Vega Baja	3-1-25	.....	.....	76	411	487	487	In progress
Bayamón	5-1-25	.....	.....	40	296	336	336	In progress
Total				2,789	12,896	15,685	14,158	

TABLE II

Latrine Construction in the Island During the Year 1924-25, Exclusive of Those Reported in Table I

Municipality	Letrines approved	Municipality	Letrines approved
Adjuntas	13	Juncos	326
Aguas Buenas	83	Lajas	267
Aibonito	36	Las Piedras	121
Arroyo	163	Loíza	53
Barranquitas	256	Luquillo	21
Barros	163	Maricao	118
Cabo Rojo	198	Maunabo	103
Caguas	168	Morovis	117
Carolina	56	Naguabo	34
Cataño	102	Naranjito	54
Cayey	183	Patillas	97
Ceiba	104	Peñuelas	33
Ciales	253	Ponce	381
Cidra	49	Río Grande	164
Coamo	80	Río Piedras	280
Comerio	159	Sabana Grande	25
Corozal	319	Salinas	30
Dorado	154	San Germán	105
Fajardo	200	San Lorenzo	87
Guánica	55	Santa Isabel	32
Guaynabo	49	Toa Alta	95
Guayama	66	Toa Baja	136
Guayanilla	170	Trujillo Alto	28
Gurabo	12	Vega Alta	136
Hormigueros	135	Vieques	192
Humacao	102	Villalba	717
Jayuya	235	Yabucoa	154
Juana Díaz	159	Yauco	577
Total			8,250

TABLE III

Total Number of Latrines Approved up to June 30, 1925

Latrines approved during the year 1924-1925	22,408
Latrines approved in previous years	34,893
Total approved to date	57,301

The sanitation units, as shown by Table I, approved a total of 14,158 latrines. Table II gives the work in other municipalities. The total of 22,408 latrines approved in the Island is over twice as much as in any previous year. In this latter table, it will be noticed that some towns have done more work than others, noticeably Yauco and Juncos, whose Local Inspectors showed a most intelligent interest and zeal in the sanitation campaign. These part-time inspectors approved more latrines than the full-time inspectors in other towns, except Ponce, thus demonstrating what can be done by these officials when zeal and ability are combined in proper proportions. It is only fair to state, however, that the large majority of the Local

Inspectors have given their cordial cooperation to the new duties which were entrusted to them at the beginning of the year.

There have been thus completed 14 municipalities as follows: Arecibo (west river), Hatillo, Camuy, Quebradillas, Isabela, Aguadilla, Moca, San Sebastián, Lares, Utuado, Las Marías, Aguada, Añasco, and Barceloneta. In each of these municipalities over 90 per cent of all occupied houses have been provided with acceptable latrines.

The minimum standard of latrine now accepted is a pit latrine two yards deep surmounted by a wooden superstructure with galvanized-iron roof. Exception is made only in the case of indigents where the house is worth less than \$10. Only a few latrines less than the standard are now accepted. On the other hand, many better-class houses make their latrines of concrete or install septic tanks.

This is perhaps the most important work of the Bureau. As pointed out in the report for last year, rural sanitation is fundamental in any public-health program.

CONSERVATION OF SANITATION

In each municipality in which the sanitation campaign has been terminated, one or more inspectors are placed, who devote their whole time to the reinspection of the completed work for the purpose of keeping latrines in good condition and of insuring construction at new homes.

Experience has shown that this is necessary. It has been found that whereas the people will use their sanitary conveniences while they are in good condition, they may cease to do so when these become older and perhaps dangerous. It apparently does not occur to the average countryman to repair his latrine until he has been notified to do so by the proper government employée, in spite of the fact that he seems to appreciate the necessity for the latrine.

Furthermore, until two years ago any sort of material was received as an acceptable latrine. As a consequence, many latrines of earlier construction were built of palm leaves, cocoanut-tree branches, etc., which can only last a few months. In many cases it has been found that these flimsy latrines have disappeared, as is to be expected. These are being replaced with more durable types.

Fourteen inspectors were engaged in this work, in addition to

the Local Sanitary Inspectors in the completed municipalities, who also did efficient work for this division.

The importance of this branch of the service is well shown by a glance at Table IV. A total of 17,772 latrines were inspected during the year and only 2,987 of them were found in perfect condition. Eleven thousand four-hundred and seven were classified as in need of repair. It should be stated, however, that the majority of defects encountered were trivial, such as the lack of a hinge to the door or a board lacking from the side of the structure, etc., so that in reality the percentage of good latrines is much larger than the table would indicate. Nevertheless, it is our intention to keep the latrines in the best possible state of repair until the country people learn to do it without the intervention of the authorities.

Three thousand three hundred and seventy-eight houses were found without latrines. These were largely in those districts of earlier and poorer construction mentioned above.

The inspectors of this division also have an important educational effect, for their constant presence among the country people should be and is a powerful factor in bettering living conditions in general and in giving them better hygienic conditions in particular.

TABLE IV

Reinspection: Number of Latrines Inspected and Repaired

Municipality	First inspection				Final inspection		
	Houses				Latrines approved		
	With latrines		Without latrines	Total	Old repaired	New	Total
	Good	Poor					
Arecibo	275	503	85	863	332	47	379
Aguadilla	908	609	119	1,636	568	18	586
Utando	213	2,094	73	2,380	1,491	54	1,545
Lares	268	893	1,154	2,315	870	1,146	2,016
San Sebastián	63	567	140	770	448	125	613
Camuy	134	1,513	398	2,054	558	137	695
Moca	88	722	323	1,133	481	170	651
Quebradillas	85	238	84	407	238	59	297
Las Marias	251	1,206	49	1,506	1,182	27	1,209
Hatillo	109	1,263	577	1,949	974	355	1,229
Isabela	252	829	238	1,319	578	91	669
Aguada	205	637	134	976	398	50	454
Añasco	136	333	4	473	96	2	98
Total	2,987	11,407	3,378	17,772	8,254	2,287	10,541

TREATMENTS

Treatment Unit No. 1 completed the giving of treatments in Arecibo (rural zone), Arecibo (urban zone), Barceloneta (rural zone

and urban zone) and Manatí (urban) during the year. They also gave treatments in one *barrio* of Morovis and at the end of the year were working in Manatí (rural zone).

Treatment unit No. 2 completed work in Isabela (urban and rural zone) and Aguadilla (rural zone). At the end of the year they were nearing completion of Aguadilla (urban) and were also treating in Moca (urban) and Aguada (rural).

Unit No. 3 completed work in San Sebastián (rural zone) and at the end of the year were giving treatments in Lares (rural zone).

Treatments have now been completed in the following nine municipalities: Utuado (rural), San Sebastián (rural), Aguadilla (rural), Isabela (rural and urban zones), Quebradillas (rural and urban), Hatillo (rural and urban), Camuy (rural and urban), Arecibo (western half of rural zone and urban), Barceloneta (rural and urban) and Manatí (urban).

The rate of infestation has always run 90 per cent or over in all rural districts with the single exception of Isabela, which had a rate of 85 per cent. Special studies have shown the rural inhabitants to have an average of over 400 worms, which is very high.

The Uncinariasis rate in the towns has been uniform at 50 per cent of those examined. It has not been sufficiently emphasized heretofore that Uncinariasis is not alone a rural disease, but is as common in the towns of Porto Rico as it is in the rural districts in many other tropical countries where it is considered a serious menace to the health of the population. The principal reasons for this are: (1) the universal infestation in the country, (2) the free communication between country and city inhabitants, (3) the migration of the country people to the town and (4) imperfect sanitation in the towns.

Table V gives the details of treatments in the different municipalities. It may be pointed out that our campaigns are thorough, as evidenced by the fact that our census closely approximates the federal census. We do not include in our census children under three or adults over sixty-five years of age. It should also be noted that we cure over 80 per cent of those who begin treatments, while most of the others have been freed of the majority of their parasites. This can be affirmed, since we treat over 80 per cent of those taken in census and it is known that one treatment removes an average of 90 per cent of the total number of worms harbored by the individual.

TABLE V

Treatment Campaigns—Total Work Done During Year

Municipality	Zone	Time operated	Census	Positive	Persons treated	Total treatments	Cured
Barceloneta	Rural	6-30-24- 3-31-25	10,541	9,746	9,238	33,634	8,149
Barceloneta	Urban	9- 2-24-10-31-24	1,022	424	369	780	263
Isabela	Rural	7- 1-24-10-23-24	5,289	4,718	3,813	24,689	4,851
Isabela	Urban	7-15-24- 9- 6-24	1,557	981	913	1,270	803
Manatí	Rural	4- 7-25- 6-30-25	4,534	4,534	4,289	16,822	2,840
Manatí	Urban	2-22-25- 6-30-25	4,551	2,122	1,966	4,894	1,752
Aguadilla	Rural	10-14-24- 5-28-25	14,242	12,607	12,114	40,024	11,016
Aguadilla	Urban	4- 1-25- 6-30-25	8,313	4,229	3,834	10,958	2,683
Morovis	Rural	4- 7-25- 6-30-25	1,115	1,065	1,070	3,925	978
Moca	Urban	6-16-25- 6-30-25	1,114	914	470	507	.....
Aguada	Rural	6-29-25- 6-30-25	343	150	143	1,694	1,241
Arecibo	Rural	7- 1-24- 8-31-24	175	3	50	388	264
Arecibo	Urban	7- 1-24- 7-31-24	.....	.....	.....	.....	.....
Total	.....	.....	52,796	41,523	38,269	139,585	34,923

These encouraging results are largely due to the fact that our treatments are given by the inspector, who actually sees the patient take the medicine in his presence, in the patient's own house. Only in this way can we be sure that the medicine is being taken properly. By this means, too, we are able to follow up the case until cured and not depend upon the return of the patient to the dispensary, which might not occur.

Five hundred thousand treatments have been given since the initiation of the intensive campaign in 1921.

TABLE VI

Resumé of Treatments Given Since 1921

Year	Census	Infected	Treated	Total treatments	Cured
1921-1924	115,486	161,483	97,121	364,029	80,378
1924-1925	52,796	41,524	38,269	139,585	34,923
Total	168,282	143,007	135,390	503,614	115,301

PERSONNEL

During most of the year the Chief of the Bureau was assisted by two other doctors who had charge of the different treatment units and made occasional visits of inspection of sanitation units.

Latrine construction and conservation in the whole Island was in charge of a general inspector who obtained excellent results in organizing the work of the Local Inspectors on a firm basis.

Besides the 70 or more Local Inspectors who devoted a part of their time to rural sanitation, there were on an average of 33 full-time inspectors engaged in latrine construction and conservation and 35 inspectors giving treatments for Unicinariasis. The treatment units also employed five clerks and four microscopists.

The International Health Board paid the salary and expenses of the Chief of the Bureau and part of the expenses of two treatment units. The department of Health paid the rest of the expenses of the Bureau.

