Laboratory Reporting of Syphilis Reactors in the Los Angeles Program

SUZANNE DANDOY, M.D., M.P.H., and EDWARD M. McKENNA, B.A.

A REACTOR-REPORTING program offers the best opportunity available for intelligence on syphilis. If we had knowledge of every reactor, we would need little else to eradicate syphilis (*1*). These beliefs of James F. Donohue, chief, Research and Control Statistics Unit of the Venereal Disease Branch, Communicable Disease Center, Public Health Service, emphasize the important role of a laboratory reactor program in syphilis control. However, we might add a statement here on the need for adequate personnel to act on the knowledge made available by a reactor program.

The goal of all such programs is to insure followup of every "reactor," or person known to have a reactive test for syphilis, to obtain a final diagnosis. When the diagnosis is syphilis, control measures may be applied to prevent further spread of the disease.

History of Reactor Program

Although the laboratory reactor program in its present wide scope is a recent addition to venereal disease control activities, a limited number of reactive laboratory reports have been sent to the Los Angeles City Health Department for followup for many years. In California, reports of blood tests from private laboratories first were made available to health departments as a result of the premarital and prenatal examination laws passed in 1939. During the 1940's reactive serology reports for persons in the armed services were also sent to the health departments.

In 1942 the city health department began its first local program to investigate other reactors. A public health nurse, acting as liaison, worked from an office in the county general hospital. The nurse received reports of positive or doubtful serologic tests performed in the hospital and interviewed those cases for which a diagnosis of syphilis was confirmed. About 600 new cases of syphilis were found in 1947 through the use of this casefinding method, but its effectiveness depended on sufficient nursing personnel to do followup on the laboratory reports. By 1956 less than half of the positive reports from the hospital were being investigated. By 1960 there was a large backlog of cases needing investigation. In this same period reactors reported from the city health department's laboratory were being referred to district personnel for followup.

In 1958 the first U.S. Public Health Service representative was assigned to syphilis control activities for the city of Los Angeles. Blood banks were reporting reactors to the city health

Dr. Dandoy is senior postdoctoral trainee in epidemiology at the School of Public Health and the School of Medicine, University of California Center for Health Sciences, Los Angeles. Mr. McKenna is a public health adviser (tuberculosis), Public Health Service, on assignment to the Pennsylvania Department of Health. Both were with the Los Angeles City Health Department: Dr. Dandoy was resident in public health and assistant director of the communicable disease control division; Mr. McKenna was public health adviser (venereal diseases). *This article is based on a paper presented at the 31st annual meeting of the Western Branch, American Public Health Association, Salt Lake City, Utah, May 19, 1964.*

department, but private clinical laboratories rarely reported any results other than those required by the premarital and prenatal laws. During 1961 a Public Health Service representative was assigned to a private laboratory visitation program in an effort to secure voluntary cooperation in the reporting of all reactors to the city health department. In the first 3 months of this voluntary program, 60 unknown cases of syphilis were discovered.

The Task Force Report to the Surgeon General (*2*), released in 1962, strongly recommended "that a program be established to insure that all laboratories (public, private, hospital, and blood bank) processing blood tests for syphilis cooperate in the control effort by reporting to appropriate health departments all positive specimens by name of patient." Success of such a program necessitated the enactment of laws or regulations that would require such reporting. Implementation of these laws would necessitate the employment of personnel to visit the laboratories and to continue followup on cases of possible infectious syphilis.

The California State Department of Public Health was aware of the need for such a regulation before the recommendation from the task force. In 1956 an opinion was obtained from the attorney general of California stating that a regulation for the notification of private laboratory results to local health officers would be legally acceptable, and such notification would not constitute diagnosis. In 1961 a regulation was drafted and approved by the California Conference of Local Health Officers and the California Medical Association. There was considerable discussion as to whether this regulation should apply only to syphilis and to laboratory serology reactors or to all medically reportable communicable diseases. It was finally decided that typhoid, diphtheria, and tuberculosis were of particular importance and should be included in the regulation, in addition to syphilis and gonorrhea.

Before this regulation was adopted by California, 15 other States had such laws or regulations. The New York State regulation dates back to 1949. The Venereal Disease Branch of the Public Health Service reports that 21 States, two cities, the District of Columbia, and Puerto Rico now have laws or regulations requiring laboratories to report reactive specimens for venereal diseases. In the western part of the United States, Nevada, Utah, Oregon, and California have such requirements.

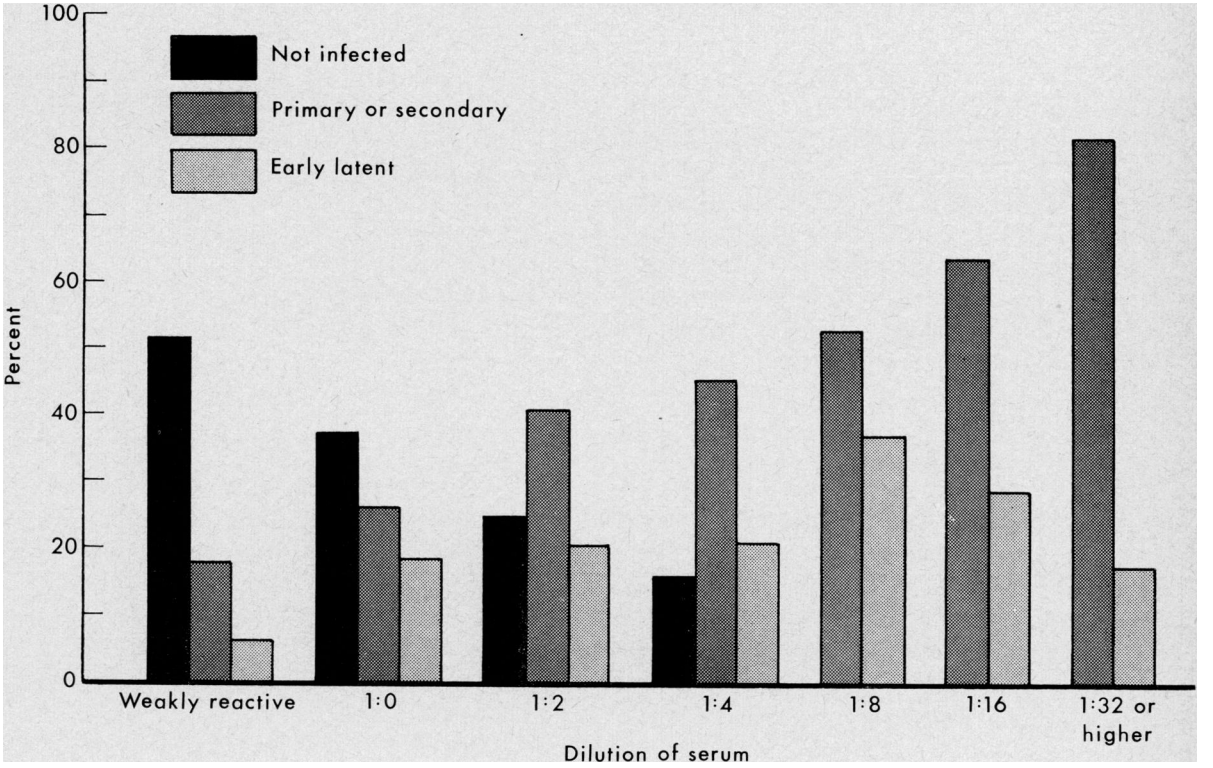
Implementation of California Regulation

After California adopted the regulation in March 1962, explanatory letters were sent from the State department of public health to all local health officers and to all directors of clinical laboratories. Local health departments were given the responsibility for implementing the regulation. The Los Angeles City Health Department began by preparing a notification form to be provided without charge to the laboratories, and a letter outlining the procedure to be followed in notification by telephone or mail. Telephone notifications were requested when laboratories had positive darkfield tests for syphilis or any findings suggestive of diphtheria or typhoid.

During 1962 all 220 known clinical laboratories in the city were visited by Public Health Service program representatives to initiate the notification program. From each laboratory data were obtained concerning the estimated number of serologic tests examined yearly for syphilis, the estimated number of reactors discovered, and the number of reactors reported to the city health department. In interpreting the regulation to the clinical laboratory directors, it was stressed that this notification was not a report of a disease and that all information would remain confidential. They were assured that, except under special circumstances, the city health department would not contact the patient until a diagnosis was reported and approval was given by the attending physician.

One of the decisions that must be made in such a reactor followup program is determining the high-titer serum dilution so that persons with early infectious syphilis can be selected. Until recently the Los Angeles City Health Department considered all persons with serum reactive at a dilution of 1 : 16 or greater as high-titer reactors. To gather data on the final diagnoses of patients with initial reactive VDRL tests, the department undertook a study of 263 clinic patients. The results are summarized in figure 1. As expected, more than 60 percent of patients with initial VDRL tests reactive at

Figure 1. Selected diagnoses of patients related to initial reactivity of serum in VDRL tests, Central District Clinic, Los Angeles City Health Department, 1962



a serum dilution of 1: 16 or greater were diagnosed as having primary or secondary syphilis. In addition, 52 percent of the patients with reactivity at 1: 8 dilution were diagnosed as having primary or secondary syphilis, and another 37 percent as having early latent syphilis. Therefore, with reactivity at 1: 8 serum dilution, 89 percent of the patients were diagnosed as having infectious or potentially infectious syphilis. In this study all patients with serum reactive at a dilution of 1: 8 or greater were diagnosed as being infected with syphilis. There were no biologic false positive reactions at this serum dilution. All biologic false positive reactions occurred with serum reactive at dilutions of 1: 4 or less.

The diagnostic standards are more uniform in the health department clinic than could be expected when patients are diagnosed in the offices of private physicians. Therefore, the results of this study may not parallel those found in followup of private physicians' patients. However, the city health department is now including persons with VDRL tests reactive at 1: 8 serum dilution in the high-titer category in an effort to locate as early as possible more cases of infectious syphilis.

A method for handling the laboratory notifications has been established in the city health department following the pattern previously used for positive premarital and prenatal serology reports. All reactors of any age with positive darkfield examinations or strongly reactive serologic tests are investigated immediately. Otherwise, no followup is attempted of those reactors 60 years of age or older. The remaining reports on reactors under 60 years of age are filed to allow the physician time to evaluate the case. When no morbidity report is received within a specified period of time, letters requesting dispositions are sent to the physicians. If no reply is received, the physicians are called or visited.

Evaluation of Program

The volume of notifications of reactive specimens for syphilis received by a health department with a laboratory reactor program is one

measure of the effectiveness of the program. The 1963 totals for the Los Angeles City Health Department program are given in table 1. For each type of laboratory, the estimated number of total serologic specimens processed for syphilis is given in column 2. The estimated number of reactive specimens is given in column 3, and the actual number of reported reactive specimens in column 4. The last column gives the percent of expected reactive specimens actually reported. Private hospital laboratories reported 89 percent of expected reactive specimens; private clinical laboratories, 65 percent. The "unapproved" laboratories are those not approved for premarital serologic tests. Arrangements for notification by the major Federal hospital in Los Angeles have recently been completed so that the number of specimens reported by this source should increase this year.

From a sample 2-month period in the spring of 1964, it was found that most private laboratories are reporting significantly fewer reactive specimens annually than they expected. Whether this discrepancy is caused by inaccurate original estimates, a real decrease in reactive specimens, or incomplete notification by the laboratories is not known. During repeat visits to the laboratories in 1964, the Public Health Service program representatives are again asking directors for the total number of reactive specimens found annually.

The final answer in determining the effective-

Table 1. Reactive reports on serologic specimens tested for syphilis, by type of laboratory, Los Angeles City Health Department, 1963

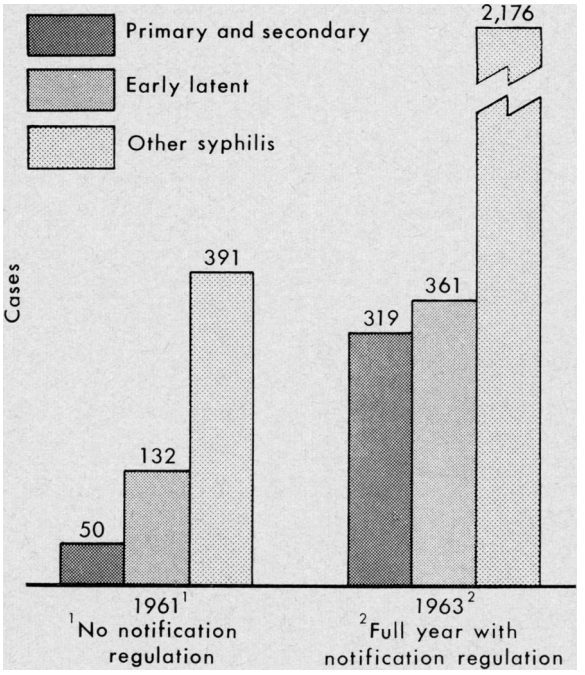
Type of laboratory	Number of laboratories	Number specimens tested [1]	Reactive specimens		
			Total number [1]	Number reported to health department	Percent of expected reported
Private:					
Hospital	53	172,950	2,735	2,440	89
Blood bank	3	201,000	4,180	2,966	71
Other:					
Approved	139	275,300	7,586	4,935	65
Unapproved	24	12,060	34	16	47
Public:					
Hospital	1	84,708	4,137	4,137	100
State	0				
City or county	1	10,000	1,153	1,153	100
Federal hospital	4	24,320	3,730	71	<1
Total	225	780,338	23,555	15,718	

[1] Estimated.

Table 2. Percentage of reports on syphilis morbidity through laboratory reactor program, by stage, Los Angeles City Health Department, 1963

Stage of syphilis	Number cases reported	Reactor program reporting		All other reporting sources	
		Number	Percent	Number	Percent
Primary or secondary	822	319	38.8	503	61.2
Early latent	772	361	46.8	411	53.2
Other	3,072	2,176	70.8	896	29.2
Total cases	4,666	2,856	61.2	1,810	38.8

Figure 2. Syphilis morbidity reporting through laboratory reactor program, by stage, Los Angeles City Health Department, 1961 and 1963



ness of a laboratory reactor program will be measured by the number of cases of syphilis reported as a result of the program. Reactive laboratory tests for 8,074 persons unknown to the city health department were reported in 1963. Followup of these reactors produced 2,856 newly reported cases of syphilis: 11.2 percent were primary and secondary, 12.6 percent were early latent, and 76.2 percent were diagnosed as other syphilis (late latent, late, or congenital). During 1963 the laboratory reactor program was responsible for reporting 38.8 percent of the primary and secondary syphilis in the city, 46.8 percent of the early latent syphilis, and 70.8 percent of other syphilis (table 2). Thus the followup activity that started as a result of laboratory reactor notifications was a significant source of morbidity reports for syphilis. With approval of the private physician, each patient with potentially infectious syphilis was interviewed for contacts.

The laboratory notification regulation went into effect in California in 1962; therefore, data for 1961 and 1963 provide comparisons between a year when there was voluntary notification only and a year when the regulation was well established (fig. 2). The number of cases of primary and secondary syphilis reported as a result of the followup of laboratory reactors increased more than 500 percent from 1961 to 1963. Total syphilis reported from this program activity increased 400 percent.

Difficulties in Program

When the laboratory notification regulation went into effect, clinical laboratory directors expressed some concern regarding the need for the requirement. Because a California law existed for many years requiring physicians to report all diagnosed cases of venereal diseases, laboratory directors suggested that the city health department's efforts be directed toward enforcing this requirement of physicians. Some laboratory directors feared that adherence to the new regulation would decrease laboratory business. They felt that some physicians do not want to report cases and would interpret laboratory notification to the health department as interference with the doctor-patient confidential relationship. The Public Health Service representatives explained to the directors that business would not decrease if all laboratories complied with the regulation. Laboratories also complained about the clerical work required by the program. A few laboratory directors have refused to submit notifications but no legal action has been taken to force compliance.

In a recent independent survey, which will be published, clinical laboratory directors in California indicated that there had been no decrease in business since adoption of the regulation 2 years ago. They still have objections regarding the clerical work and the inadequacy of the notification form supplied by the State department of public health. Some laboratory directors who are physicians believe that exceptions should be made to the notification requirement in the following instances: (*a*) weakly reactive results in the standard serologic tests, (*b*) repeat serologic tests on treated cases of syphilis, and (*c*) biologic false positive reactions as indicated by clinical history or treponemal tests. However, almost all directors replying

to the survey indicated that they considered the regulation an important and effective tool in the control of venereal diseases.

Conclusions

The laboratory notification regulation in California has been a valuable addition to the control of syphilis. Notification of reactive serologic tests has provided the local health departments with an important source of information on persons with a potentially infectious disease. In 1963 more than 8,000 persons were brought to the attention of the Los Angeles City Health Department through this program. Laboratory reactor program activity has been responsible for a significant increase in syphilis morbidity reports. In 1963 health department followup of reactors was responsible for reporting 38.8 percent of the primary and secondary syphilis and 46.8 percent of the early latent syphilis in the city of Los Angeles. For continuing effectiveness, the program requires frequent visits of health department personnel to the laboratories. Laboratory directors can be assured that health departments are using the information for the benefit of the public health.

REFERENCES

(*1*) Donohue, J. F.: Administration of physician and laboratory visitation and reactor followup programs. Paper presented at Venereal Disease Seminar, Houston, Tex., January 1964.

(*2*) U.S. Public Health Service: The eradication of syphilis: A task force report to the Surgeon General, Public Health Service, on syphilis control in the United States. PHS Publication No. 918. U.S. Government Printing Office, Washington, D.C., 1962.

WHO Fellowships Available to U.S. Health Workers

The World Health Organization will provide to U.S. health workers in 1965 a limited number of short-term fellowships for the "improvement and expansion of health services" in the United States.

Applications will be considered in public health and related fields. Applicants must be engaged in full-time public health or educational work. A special committee will evaluate the ability of the individual, the field and locale of the study proposed, and the contribution which the applicant will make on his return. Officers and employees of the U.S. Government are not eligible.

Fellowship awards will cover per diem and transportation and, except in very unusual circumstances, will be limited to short-term travel programs of 2 to 4 months. Employers of successful applicants will be expected to endorse applications and to continue salary during the fellowship.

The deadline for the receipt of applications is January 1, 1965, but successful applicants probably could not start their fellowships before May 1, 1965. Further information and application forms may be obtained from Dr. Howard M. Kline, Public Health Service, Washington, D.C., 20201.