The Surveillance of Communicable Disease in Vermont: Who Reports?

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Synopsis

The Vermont Department of Health reviewed 2,035 reports of selected notifiable diseases received from January 1, 1986, through December 31, 1987. Laboratories provided 1,160, or 71 percent, of the initial reports on 1,636 confirmed cases.

This demonstrates that laboratories, when required by law and when part of active surveillance, can make a significant contribution to surveillance of infectious disease.

A survey of primary care physicians indicated that 18 percent always reported notifiable diseases. The most frequently mentioned reason for lack of reporting was an assumption that the laboratory would report the cases.

Notifiable disease (ND) reporting systems provide the basis for surveillance of communicable diseases in most States. Some States require laboratory reporting, but the value of laboratory-based surveillance has not been well documented in the literature (*1*, *2*). A comparative study of active and passive physician-based surveillance systems in Vermont in 1980 indicated that underreporting by physicians was extensive (*3*). This finding led to a decision to add mandatory laboratory reporting to the surveillance system of the State health department's epidemiology division.

The Vermont Department of Health (VDH), serving a total State population of approximately 541,000, uses a combination of passive and active surveillance of infectious diseases. Disease reports are received by telephone and mail from primary care practitioners. Active surveillance is conducted by weekly surveys of the 23 clinical laboratories in the State. In most instances, the actual reporting is delegated to laboratory technologists or secretaries within the laboratory. In addition, hospital Infection Control Practitioners are surveyed monthly for ND. For every case report received, the source and date of each report is documented.

Methods

The period from January 1, 1986, to December 31, 1987, was studied to identify the sources of ND reports. Notifiable diseases having a confirmatory or useful laboratory test for diagnosis were selected for this study. These included meningococcal infections, invasive *Haemophilus influenzae* disease, other bacterial meningitis, campylobacteriosis, giardiasis, hepatitis (A and B), measles, pertussis, salmonellosis, and shigellosis. The analysis was restricted to initial reports of confirmed cases that met specific diagnostic criteria for each disease as defined by the epidemiology division.

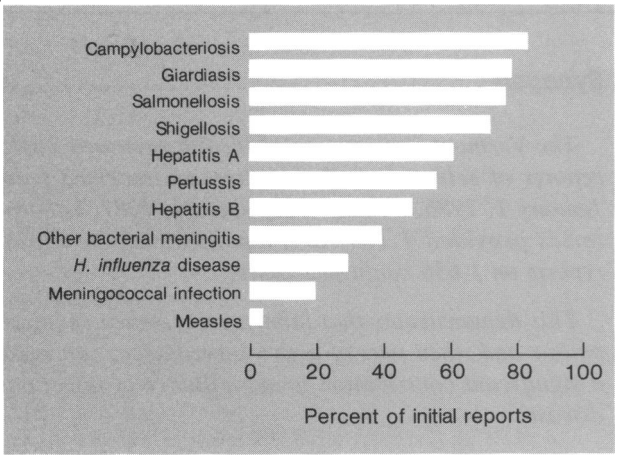
In a separate analysis, the number of ND reports, including duplicate reports, provided by all other sources required to contribute to VDH surveillance were compared with the number of laboratory-reported cases for these same diseases.

Physician survey. A list of primary care physicians licensed in pediatrics, internal medicine, obstetrics-gynecology, and general or family practice was obtained from the State registry. Questionnaires were mailed to a stratified random sample of 369 (52 percent) physicians who had office-based practices. To be eligible for participation, physicians had to respond that they were currently practicing in Vermont in one of the specialties previously listed and spending more than 10 hours per week in direct patient care. Physicians were questioned about the person designated in each office to report notifiable diseases, whether the office complied with disease reporting laws, and the perceived reasons for nonreporting.

Results

Surveillance analysis. A total of 2,035 reports were received during 1986–87 on 1,636 confirmed cases for

Laboratory reporting of selected diseases, Vermont, 1986–87



Reasons for noncompliance with disease reporting requirements, Vermont, 1987

Reason	Physicians	
	Number[1]	Percent[2]
Assumed laboratory reports	101	66.4
No copy of notifiable disease list	60	39.5
Unaware reporting required	44	29.0
Doctor-patient confidentiality concerns	23	15.0
No incentives to report	22	14.5
Reporting too time-consuming	16	10.5
Assume someone else in office reports	12	7.9
Phone reporting hours too short	9	6.0
It's not important	3	2.0

[1]Excludes 34 physicians who responded that they always report notifiable diseases.
[2]Percentages exceed 100 because respondents could check more than 1 reason.

an average of 1.2 reports per case. The initial reports on the 1,636 confirmed cases, based on the date received by the epidemiology division, were distributed as follows: 1,160 (71 percent) were provided by laboratories, 159 (10 percent) by nurses, including hospital infection control nurses, 160 (10 percent) by physicians' offices, and 157 (9 percent) by other sources.

During this period, the 23 clinical laboratories reported a median of 100 percent of the time with a range of 0 to 100 percent. Two small laboratories had periods of deficiency in reporting. The figure shows the number of initial reports received from laboratories for each disease. For enteric diseases (salmonellosis, campylobacteriosis, shigellosis, and giardiasis), the majority of initial reports were from laboratories. By contrast, only 25 percent of initial reports were from laboratories for measles, pertussis, invasive *Haemophilus influenzae* disease, and meningococcal infections, compared with 35 percent from nurses and 27 percent from physicians' offices . For hepatitis A and B, 48 percent of initial reports were from laboratories and 32 percent from physicians.

More than one report was received for 399 of the 1,636 confirmed cases. Duplicate reports were determined by a single epidemiology division staff member assigned to surveillance. Reports were considered duplicates if more than one report was received on a patient with the same name, with the same type of disease, and within a specified time period that varied by type of disease. Laboratories provided 206 (52 percent), nurses 158 (39 percent), physicians 15 (4 percent), and other sources 20 (5 percent) of these duplicate reports. Only 270 confirmed cases (16 percent) were not laboratory-reported when both initial and duplicate reports are considered.

Physician survey. A total of 139 of the 369 physicians sampled were ineligible because they had retired, moved out of the State, or did not practice in one of the primary care specialties surveyed. Altogether, 192 (83 percent) of 230 eligible physicians responded to the survey. The 192 respondents represented 80 solo practices and 106 group practices. More than half (52 percent) of the respondents stated that they alone were responsible for ND reporting, 17 percent shared this task with other office members, and 27 percent relied exclusively on their staff to report ND. The remaining 4 percent did not assign this task to any particular person.

Only 34 (18 percent) of the physicians said that they always reported NDs. The table presents frequencies of reasons given for not reporting. The frequencies were similar by medical school attended, location of practice, primary specialty, age, and sex. There were 25 physicians who listed additional reasons for not reporting.

Discussion

The data on sources of ND reports to the Epidemiology Division indicated that the laboratory can be an excellent source of ND reports if a laboratory determination exists for a particular disease. For example, the diagnosis of several enteric diseases relies on a positive stool culture or examination and may explain the high level of laboratory reporting for campylobacteriosis, shigellosis, salmonellosis, and giardiasis. Furthermore, duplicate reports were received on a small number of confirmed cases. In large States, duplicate reports may be a burden. The potential improvement in the surveillance of certain diseases may be worth the additional effort, however. For example, 84 percent of confirmed cases for these selected diseases were initially or subsequently identified through mandatory laboratory reporting. Most of these cases would have escaped our surveillance system otherwise.

The physician survey, in agreement with other stud-

ies, indicates that a surveillance system based solely on traditional passive reporting by health care providers may lead to substantial underreporting of certain diseases (*3–6*). To improve the surveillance of ND, State health departments should consider making laboratory reporting for selected diseases a requirement. While laboratories can provide an important source of disease reports to a State surveillance system, it is not a substitute for physician reporting and does not eliminate physicians' legal responsibility to report disease. There are a number of reportable diseases, such as invasive *Haemophilus influenzae* disease and meningococcal infections for which timeliness of reporting is an important factor, and waiting for a test result is not practical. Other reportable diseases have no definitive laboratory determination. Multiple sources should be required to contribute to the surveillance system.

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Differences Between Oklahoma Indian Infant Mortality and Other Races

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Synopsis

Indian infant mortality rates (IMR) in the State of Oklahoma follow a downward linear trend from 13 per 1,000 live births in the 1975–76 period to 5.8 in 1987–88. Data from 7,631 death certificates matched to birth certificates, however, reveal much higher Indian IMR across the time interval than is currently documented.

Matching (linking) of infant deaths to birth certificates from 1975 to 1988 indicates that infants born Indian had a 28 percent chance of being misclassified as another race (usually white) on the death certificate. Infants born white or black had less than a 1 percent chance of being misclassified.

Misclassification of Indian deaths strongly alters the overall IMR for the Oklahoma Indian population from the currently reported 5.8 per 1,000 (1987–88) to an estimated actual rate of 10.4 per 1,000 for the same period.

Misclassification of race on Oklahoma death certificates strongly affects mortality rates of Oklahoma infants. Misclassification occurs among four races: white, black, Indian, and others. It is predominant in the Indian race.

All-race IMR in Oklahoma have followed the national trend downward. Yearly fluctuations have put the State slightly above or below the rate for the United States. Vital records show infant mortality across a 14-year period for all Oklahoma races to be 12.1 per 1,000. Indian infant mortality for this period was 8.9 (27 percent lower), for blacks it was 18.5 (53 percent higher), and for whites it was 11.8 (3 percent lower) (*1*). When the 1985 national Indian IMR (excluding Alaska) is compared with Oklahoma's, the national rate is 80 percent higher (*2*). Table 1 summarizes the 14-year comparison of IMR among all Oklahoma races with Oklahoma Indians, blacks, and whites.

For some years now, Terry Rice and Pat Gideon of the Oklahoma City Area Office of the U.S. Indian Health Service and Dick Lorenz and Roger Deapen from the Oklahoma State Health Department have been looking at the differences between Oklahoma Indian infant mortality and that of other races of Oklahoma infants and wondering why Oklahoma Indian infant mortality was unusually low. The discussions of Fed-