Reporting of Communicable Diseases by University Physicians

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Synopsis

Billing records from the outpatient clinics of the University of Arizona were compared to case reports of communicable diseases received by the local health department. Of 286 cases of reportable diseases found, 183 (64 percent) were reported to the local health department. Sexually transmitted diseases were more likely to be reported than other diseases [risk ratio (RR) = 1.97; 95 percent confidence interval (CI), 1.62–2.39].

Diseases of residents of Pima County were more likely to be reported than those of residents of other Arizona counties (RR = 1.40; 95 percent CI, 1.11–1.77), and diseases in Arizona residents were more likely to be reported than those of residents of other States (RR = 2.37; 95 percent CI, 1.35–4.15). Diseases of citizens of other countries were never reported. The only significant difference found among the specialty clinics of the medical center was that pediatricians reported less frequently than others (RR = 0.75; 95 percent CI, 0.58–0.98).

Physicians in all States are legally required to report selected communicable diseases to their local or State health departments. It is common knowledge among public health officials that communicable diseases are underreported by physicians, yet the extent to which this occurs is unknown. Studies of this question have suffered from relying on physician recall (*1–4*), studying only one or a limited number of diseases (*5–10*), or studying hospitalized patients only (*11,12*). Eisenberg and Wiesner (*13*) have shown that physicians do not make accurate retrospective estimates of the number of patients treated for venereal diseases. This lack of accuracy suggests that studies of rates of reporting communicable diseases should be based on verified medical records.

Factors that influence physicians' reporting have been found to include the perceived importance of the physician-patient privilege, a lack of faith in the confidentiality of health department records, pressure from patients to not report, a perceived lack of value of case reports, a belief that reporting responsibility lies elsewhere, a lack of awareness of reporting requirements, and the difficulty and time requirements involved with reporting all cases (*4,14,15*).

Some of the difficulty in obtaining higher rates of reporting by physicians might be with the nature of the reporting requirements. These vary from State to State according to the disease being reported, reporting source (laboratories, physicians, other health care providers, and facilities), method of reporting (mail or phone), and definition of cases (*16,17*). In Arizona, a wide mix of reporting requirements exist depending on the disease and the circumstances of its occurrence. Reports are required on 59 different conditions varying from well-known, traditionally reportable diseases (tuberculosis and sexually transmitted diseases) to those that physicians may not be aware are on the list of diseases that are to be reported (varicella, coccidiomycosis, for example). This list of reportable diseases contains some with important public health implications (AIDS, measles) and some that call for aggressive interventions (measles, hepatitis in a food handler); it also includes some diseases that seem unimportant and for which no action is taken (coccidiomycosis, varicella). It is unknown to what degree each disease is reported.

The purpose of this study was to investigate the practice of communicable disease reporting by university physicians who treat patients in university-based outpatient clinics.

Methods

The outpatient clinics at the University of Arizona are managed by each specialty department

Table 1. Number of cases of reportable diseases and percentage reported by the University of Arizona Medical Center Clinics, June 1, 1986–June 30, 1988

Disease	Cases found in billing records	Cases reported		Risk ratio	95 percent confidence interval
		Number	Percent		
Grand total	286	183	64	...	...
Vaccine preventable	37	21	57	0.87	0.66–1.15
Congenital rubella	1	0	0	...	...
Hepatitis B	20	10	50	...	...
Measles	2	2	100	...	...
Pertussis	14	9	64	...	...
Enteric	47	20	43	0.62	0.47–0.82
Amebiasis	6	1	17	...	...
Giardiasis	10	1	10	...	...
Hepatitis A	12	4	33	...	...
Salmonellosis	4	4	100	...	...
Shigellosis	15	10	64	...	...
Sexually transmitted	170	136	80	1.97	1.62–2.39
AIDS–HIV	115	92	80	...	...
Chlamydia	4	0	0	...	...
Gonorrhea	22	21	96	...	...
Syphilis	29	23	79	...	...
Miscellaneous	32	6	19	0.27	0.17–0.43
Botulism	1	0	0	...	...
Hepatitis, non-A, and non-B	15	0	0	...	...
Leprosy	1	0	0	...	...
Tuberculosis	15	6	40	...	...

under the administrative control of an umbrella organization, University Physicians Incorporated (UPI). Each outpatient visit to the various clinics is recorded on an encounter form on which is written a primary, and if applicable, secondary and tertiary diagnoses. Each diagnosis is assigned an International Classification of Diseases, 9th revision, Clinical Modification (IC9CM) code by clerical personnel. Some clinics use encounter forms that have the most common diagnoses listed, to be checked by providers, with space for uncommon diagnoses to be written in. Encounter forms are sent to the UPI main office where the data are entered into a centralized mainframe computer for billing purposes. These data include patient's name, age, address, diagnosis, chart number, physician of record, clinic visited, and date of diagnosis.

In Arizona, communicable disease reports are submitted to local county health departments within five business days. The county health departments forward copies of disease reports to the State health department weekly.

A computer printout containing a list of all patients seen between and including June 1986 and June 1988 with a primary or secondary diagnosis of any of 22 selected communicable diseases was obtained from the UPI billing office. The diseases selected included those for which reporting is required in Arizona and those that had the highest incidence rates during the previous 10 years. Herpes and varicella were not included because of the infrequency of reports received by the health department on these two diseases. If patients appeared more than once for the same disease, all encounters together were counted as one case, and it was assigned to the first primary care clinic listed chronologically for that disease. If no primary care clinic was listed, a case was assigned to the first specialty clinic listed.

This list was compared with the case reports received by the local county health department through October 1988. All diagnoses that were not matched to a case report were verified by checking the patient's chart. If a diagnosis could not be confirmed, or if the patient record was not located, the case was not included in the totals. The addresses listed for each patient were examined and categorized as follows: Pima County, another Arizona county, another State, foreign. Reporting rates involving patients from each category were then compared. If a patient's home address was outside the county, he or she was excluded from the study only if the diagnosis was made, and treatment completed, at a facility other than at the University Medical Center. If the initial diagnosis was made prior to the study period, and the patient was being seen for ongoing care or followup, he or she was not included.

All cases that were not reported to the local county health department were then compared, by State health department personnel, to case reports received by the State health department to see if any cases had been reported to the State directly, or through another local health department if the case originated in another county. There were 21 cases involving seven diseases listed with the State that were not listed with the county. Thirteen of these involved residents of Pima County, and the reports originated from Pima County so they were counted as cases reported by university physicians. Eight involved residents of other counties and were classified as case reports originating from referring physicians.

The diseases were combined into four groups: sexually transmitted diseases, enterics, vaccine preventable, and others. Reporting rates for each disease, and each group, were tabulated. A comparison was made of overall reporting rates for the following clinics: family practice, pediatrics, internal medicine, surgery, and others. All specialties other than family practice, internal medicine, pedi-

atrics, and surgery were grouped together since each one had only a few diagnoses.

Risk ratios and confidence intervals were calculated using a microcomputer and standard statistical software package. When comparing disease groups and specialty clinics, reporting for each group was compared with all other groups combined. For instance, reporting from the family practice clinic was compared to reporting from all other clinics combined; reporting of sexually transmitted diseases was compared with all other diseases.

Results

Of the 22 diseases studied, there were no cases found for these 5: food poisoning, rubella, meningococcal disease, hemophilus influenza, and diphtheria. The overall reporting rate for the remaining 17 diseases was 64 percent. The number of cases and number of cases reported for each disease are listed in table 1. The reporting for sexually transmitted diseases was the most complete (80 percent) followed by vaccine preventable diseases (57 percent).

The results of the analysis by specialty are in table 2. Family practice had higher reporting rates than the other specialties; pediatrics had the lowest rates and was the only specialty clinic that reported at a rate significantly different from all others.

Table 3 contains the results of reporting rates by home address of the patients. Cases involving Pima County residents were more likely to be reported than those of residents of other counties. Cases involving residents of other States were much less likely to be reported than those of Arizona residents, and no cases of foreign residents were reported.

Discussion

This study differs from others in that only outpatient diagnoses by university-based physicians were examined. Our result, an overall reporting rate of 64 percent, is better than that found by others who studied hospital discharge records for diseases with significant public health impact (*11,12*). We cannot generalize these results to the entire physician population in the local community since the practice patterns of university physicians and community physicians are different; others have found that university physicians may report communicable diseases more often than their community peers (*1,5*).

Table 2. Number of cases of reportable diseases and cases reported by specialty clinics of the University of Arizona Medical Center, June 1, 1986–June 30, 1988

Specialty	Cases found in billing records	Cases reported		Risk ratio	95 percent confidence interval
		Number	Percent		
Family practice	42	30	71	1.14	0.90–1.44
Internal medicine	185	121	65	1.07	0.89–1.28
Surgery	9	5	56	0.85	0.51–1.47
Pediatrics	44	22	50	0.75	0.58–0.98
Others	6	5	83	...	...
Total	286	183	64	...	...

Table 3. Number of cases of reportable diseases in Arizona and cases reported by the University of Arizona Medical Center, by home address of patient, June 1, 1986–June 30, 1988

Specialty	Cases found in billing records	Cases reported		Risk ratio	95 percent confidence interval
		Number	Percent		
Pima County	215	154	72	1.40	1.11–1.77
Other Arizona counties	49	25	51	...	...
State of Arizona	264	179	68	2.37	1.35–4.15
Other States	14	4	29	...	...
United States	278	183	66	...	...
Foreign	8	0	0	...	...

The reporting rates for all the sexually transmitted diseases except chlamydia were the highest for all diseases studied except measles and salmonellosis, both of which involved small numbers of cases. Acquired immunodeficiency syndrome and human immunodeficiency virus (AIDS-HIV) was reported as well as syphilis but to a lesser extent than gonorrhea. The rate of reporting of tuberculosis was surprising—considering that most of these patients were seen in infectious disease clinics and that public tuberculosis control programs are well established and longstanding. Of 10 unreported tuberculosis cases, 4 were associated with foreign residents; 1 was associated with a resident from another State; and 2 involved residents from another county—leaving 3 unreported local cases.

The enteric diseases were often not reported even though a specific pathogen was identified. This lack of reporting could have significant public health impact since disease control measures are available for cases and contacts. In addition, information that could point to common source outbreaks was not available to public health officials.

A small portion of the documented underreporting can be explained by confusion about responsi-

bilities for reporting patients from outside the county. The State regulations simply require reporting of cases of communicable diseases to local county health departments; they do not mention what to do when the case involves a patient from outside the county. When referrals involve cases of communicable diseases, they should be reported to the local health department; public health officials then have the responsibility of notifying the State and local health department where the patient lived. Physicians should not assume that cases have been reported by the referring physician when accepting transfers. Of 49 cases involving residents of other counties, the university physicians reported 25; of the remaining 24 cases, the State health department had received reports of only 8. The duty to report a case, regardless of the home location of the patient, is one area where clarification of reporting requirements by the State would be helpful.

While the group of physicians examined did reasonably well reporting the diseases listed in the study, it should be pointed out that reportable diseases with well-known low report rates, herpes and varicella, were not included. And, while the reporting rates were higher than documented elsewhere, there is clearly room for improvement.

There are several possible reasons why the detected reporting rate for the university physicians might not be totally accurate. Some of the cases for Pima County might have been reported by a referring physician or outside laboratory, and such reports would have contributed to an overestimate of the reporting rate for university physicians. The county health department could have lost or misplaced case reports. This loss would have led to an underestimate of reporting. As a result of our chart reviews and double-checking between county and State, we believe that these were infrequent events.

The use of the billing records to identify reportable diseases appears to have been less than perfect. It is hard to imagine that only five cases of chlamydia were diagnosed in 2 years' time. It is also possible that physicians philosophically opposed to reporting of certain diseases would avoid writing the diagnosis on a billing record. The combination of physician error in writing the diagnoses, clerical coding errors, and deliberate omissions of certain diagnoses would have led to an underdetection of reportable diseases by the method we used. We do not know to what extent these undetected cases were reported.

Various options have been explored to improve reporting rates of communicable diseases. Some suggest having other health personnel, such as laboratory technicians, responsible for reporting (*18*). It has been documented that laboratories have better reporting rates than physicians for certain diseases (*19*). Other innovations attempt to make reporting easier for physicians, such as allowing telephone reports in lieu of written reports and modification of the reporting form (*15,20,21*). These substitutions have not been successful. The superiority of active surveillance, including periodic calls to physicians' offices, has been demonstrated, but the cost per case discovered is fairly high (*5–7,9,14*).

Given the importance of communicable disease reporting to public health departments, further studies are needed to document reporting rates for various diseases and practice settings, reasons for lack of reporting, and success or failure of different strategies to improve reporting.

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Staff Patterns of Epidemiologists in the Health Departments of 12 Southern States

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Synopsis

In November 1989, representatives from 12 States attending the Annual Convocation of Southern State Epidemiologists completed a survey to enumerate epidemiologists working in central offices of State health departments. Epidemiologists were classified according to education and program area. A total of 117 epidemiologists were identified, yielding a range among the States of 0.6 to 8.3 (median 1.9) epidemiologists per million population.

The most common degree was a medical degree, followed by master's training in epidemiology or biostatistics; only 9 percent had doctoral training in epidemiology or biostatistics. More than one-third of the epidemiologists worked in infectious diseases, including acquired immunodeficiency syndrome (AIDS) and sexually transmitted diseases, and about one-fifth worked in environmental epidemiology. The areas of injuries, cancer, chronic diseases, maternal and child health, and occupational health collectively accounted for about one-fifth of epidemiologists. The results of the survey suggest room for further epidemiologic training among health department epidemiologists. The results also identify areas where additional epidemiologic input would be beneficial.

Among the agenda topics discussed during the 14th Annual Convocation of Southern State Epidemiologists, held November 29-December 1, 1989, in Mobile, AL, was the evolving role of epidemiology in public health. This topic was of interest for several reasons, including the emphasis placed on epidemiology in the Institute of Medicine's report, "The Future of Public Health," and in the draft report of the "Health Objectives for the Nation for the Year 2000," as well as ongoing organizational issues facing the Council of State and Territorial Epidemiologists and the Public Health Service's Centers for Disease Control (*1,2*).

As an adjunct to that discussion, a survey was conducted to determine staffing patterns among epidemiologists in central offices of State health departments represented at the meeting. This article summarizes the results of that survey.

Methods

The State epidemiologist or other designee of the 14 States (including the District of Columbia) attending the meeting was asked to complete a single page, nonvalidated survey. A repeat request was made of nonresponders. Epidemiologists were listed if they currently (November 30, 1989) worked in the central office of the State health department