



COMMUNICABLE DISEASE REPORTING AMONG PHYSICIANS: KNOWLEDGE, ATTITUDES, AND REPORTING LEVELS

BACKGROUND

Reporting of communicable diseases to local health departments by health-care providers and laboratories is fundamental to the prevention, control, and monitoring of diseases in the community. It is common knowledge among public health officials that communicable diseases are underreported by physicians; yet the extent to which this occurs is unknown. This study was implemented to determine communicable disease reporting levels and factors impacting compliance among physicians in one health district in Los Angeles County (LAC). Disease reporting was evaluated by comparing laboratory records with cases reported by physicians.

METHODS

Telephone Survey. Two hundred and fifty practicing pediatricians, general practitioners, family physicians, and internists in a LAC district were identified from four different telephone and medical directories. One hundred and two (41%) randomly selected physicians were interviewed by telephone about laboratories used for testing communicable diseases. Cases were identified from laboratory records of patients seen by the selected physicians during the six-month study period. Identified cases were compared with physician-initiated case reports received by LACDHS.

Mail Survey. A survey was mailed to the same 102 physicians about their knowledge, attitudes, barriers, and suggestions regarding disease reporting. To test knowledge of reportable diseases, physicians were asked whether a disease was reportable from a list of 16 diseases, four of which were non-reportable. Survey responses were linked to their reporting rates.

Frequencies, average reporting lag time, reporting rates (physician-initiated case reports/cases identified from laboratories), and proportion of physicians reporting cases were calculated. Chi-square and ANOVA tests were calculated using EpiInfo and SAS software.

RESULTS

Telephone Survey. The study population was composed of mostly males (81%), Asians (59%), internists (50%), and solo-practice physicians (63%). Fifty-four of the 102 physicians saw 169 reportable diseases during the six-month study period. Only 6% of the 54 physicians reported all of their cases, 17% reported some of their cases, and 78% reported none of their cases. Of the 169 cases seen by physicians, only 11% of the cases were reported (Table 7). Diseases were more frequently reported by physicians who were female, Asian, and worked in a solo-practice. General practitioners had significantly higher reporting rates than other specialties ($P < .05$), and internists reported at the lowest rate. The average reporting delay was 24 days.



Table 7. Disease Reporting Rates by Demographic Characteristics Telephone Survey

Characteristic	Reporting by Physician			Reporting by Case		
	Physicians Seeing Cases (N=54) No.	Physicians Reporting Cases (N=12)		Cases Identified (N=169) No.	Cases Reported (N=18)	
		No.	(%)		No.	(%)
Sex						
Female	10	3	30	25	4	16
Male	43	8	9	132	12	9
Race						
Asian	36	9	25	127	14	11
White	9	1	11	17	1	6
Hispanic	3	0	0	4	0	0
Other	3	0	0	4	0	0
Practice Type						
Clinic	0	N/A	N/A	0	N/A	N/A
Group	14	1	7	23	1	4
Solo	40	11	28	146	17	12
Specialty						
Family	14	4	29	51	5	10
General	5	3	60	21	6	29*
Internal Med	27	3	11*	73	4	5
Pediatrics	8	2	25	24	3	13

*P<.05

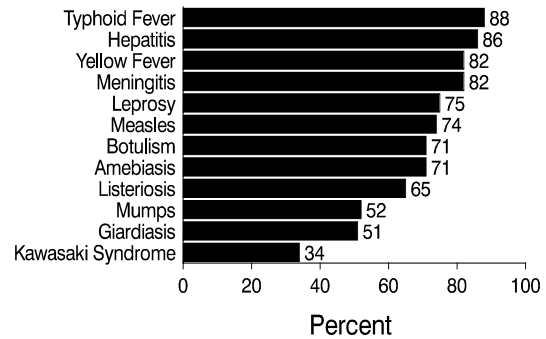
Mail Survey. Sixty-nine (68%) physicians responded. Respondents and non-respondents had similar reporting rates and demographic characteristics suggesting that there was no apparent response bias. Physicians correctly identified 71% of the 16 diseases on the questionnaire as either reportable or non-reportable. Pediatricians had significantly higher scores and internists had significantly lower scores than other specialists (ANOVA, P<.05). Of 12 reportable diseases studied, physicians were most aware that typhoid fever and hepatitis required reporting and least aware that Kawasaki syndrome was reportable (Figure 1). Ninety-one percent of physicians knew of their legal responsibility to report *Salmonella*, *Shigella*, and *Campylobacter*, although this knowledge was not associated with actual reporting (Table 8). Physicians who believed reporting should be their responsibility had significantly higher reporting rates (ANOVA, P<.05) than those who believed it should be a laboratory's responsibility.



Physicians most frequently agreed that time/manpower was a barrier to disease reporting (61%), followed by laboratories reporting diseases (29%). Among the barriers studied, the assumption that laboratories are required to report diseases was most associated with lower reporting rates, although it was not significant. Those who agreed that time was a barrier had higher reporting rates than those who did not.

More physicians preferred fax than phone or e-mail for disease reporting (66%, 47%, and 19%, respectively). Among the 38 respondents who saw reportable diseases, those preferring fax had significantly higher reporting rates ($P < .05$) than those not preferring fax to report diseases. Those preferring e-mail had significantly lower reporting rates ($P < .05$).

Physicians' Knowledge of Disease-Specific Reporting Requirements, Mail Survey (n=69)



DISCUSSION

Underreporting by physicians with long delays in reporting diseases is substantial in this district. Overall, 89% of the cases were not reported by physicians. Seventy-eight percent of physicians did not report any cases, and among those physicians who reported cases, the average reporting rate was 53%. The results of this study indicated that attitude, rather than knowledge, was a significant factor in underreporting.

The limitations of this study include drawing a sample from only one district in Los Angeles County, which may not represent physicians in other locations. Although only 68% of physicians responded to the survey, there was no significant difference between reporting rates and demographic characteristics of respondents and non-respondents. By using laboratory records as a source of cases which should have been reported to the health department, cases of disease which do not have a confirmatory or useful laboratory test would be missed, causing an overestimation of the reporting rate. Only 53% of the study sample saw cases of reportable disease during the six-month study period; therefore, the number of reportable diseases was low.

Many options have been explored to improve the reporting rates of communicable diseases. Studies suggest having laboratories be responsible for disease reporting. Previous studies have demonstrated that laboratories have better reporting rates than physicians for communicable diseases. Limitations of a laboratory-based system include the lack of a definitive laboratory test for many communicable diseases and frequently missing patient contact information in laboratory records. Making laboratory reporting a requirement for communicable diseases, which can be confirmed by a positive laboratory test may improve



surveillance of communicable diseases. The establishment of a laboratory-based electronic reporting system would make disease reporting more effortless and would decrease delay in disease reporting.

The establishment of information exchanges with physicians may be another way to improve disease reporting. Information should focus on the impact reporting has on disease control, rather than on the legal issues of reporting, since attitudes, rather than knowledge of legal requirements, had an effect on actual reporting. The simplification of the reporting form along with a choice of diversified methods of disease reporting (i.e. fax, phone, and e-mail) may facilitate reporting. Fax was most preferred and most associated with higher rates of reporting. Although an association between e-mail and underreporting was identified, its impact is unclear since it is currently unavailable. More studies are needed to determine interventions that would impact disease reporting.



**Table 8. Disease Reporting Rates by Knowledge and Attitudes
 Mail Survey**

Question	Survey Response (N=69)	Reporting by Physician					Reporting by Case		
				Physicians Seeing Cases (N=38)	Physicians Reporting Cases (N=8)		Cases Identified (N=124)	Cases Reported (N=11)	
		No.	%	No.	No.	%	No.	No.	%
Who is required to report cases of <i>Salmonella</i> , <i>Shigella</i> , and <i>Campylobacter</i> ?	Physicians	7	10	5	1	20	9	1	11
	Both physicians and labs	55	81	28	7	25	106	12	11
	Only labs	6	9	4	0	0	7	0	0
In your viewpoint, who should be responsible for disease reporting?	Physicians	11	16	5	2	40	6	2	33*
	Both physicians and labs	44	65	24	5	21	80	10	13
	Only labs	13	19	8	1	13	37	1	3
What are barriers to your disease reporting?	Time-consuming:								
	-Agree	42	61	27	6	22	88	11	13
	-Disagree	27	39	11	2	18	36	2	6
	Labs report diseases:								
	-Agree	20	29	13	2	15	44	2	5
	-Disagree	49	71	25	6	24	80	11	14
	Unsatisfactory health Department response:								
	-Agree	6	9	4	0	0	6	0	0
	-Disagree	63	91	34	8	24	118	13	11
	Serves no purpose:								
-Agree	0	0	N/A	N/A	N/A	N/A	N/A	N/A	
-Disagree	69	100	38	8	21	124	13	10	
How could the health department facilitate disease reporting?	Dedicated fax line:								
	-Agree	45	66	25	6	24	72	11	15*
	-Disagree	23	34	13	2	15	52	2	4
	Dedicated phone line:								
	-Agree	32	47	16	4	25	61	7	11
	-Disagree	36	53	22	4	18	63	6	10
	Electronic mail system:								
	-Agree	13	19	10	0	0	29	0	0*
	-Disagree	55	81	28	8	29	95	13	14

*P<.05