A Screening Survey to Assess Local Public Health Performance

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Synopsis

Current studies are attempting to develop a national surveillance system to measure the extent that populations are served by local departments carrying out the core functions of public health. Early phases of the study featured observations on 14 health departments that have been subjects of a longitudinal study. These departments were surveyed using a protocol with 81 different indicators. The results permitted distinctions to be made among the departments on levels of performance according to core functions and their associated practices.

To simplify the survey protocol so that it might be suitable for use with a large number of local public health jurisdictions, a subset of 26 indicators was selected from the previously developed protocol. Each indicator in the subset was linked with one of the three core functions of public health and with one of the associated practices. In an effort to display correlation between scores on the simplified survey and those in the full survey, scatter plots were prepared for overall scores and for those pertaining to each function and practice. Stepwise regressions were done to determine which queries or groups of queries were most predictive of variations in the screening responses. Four questions accounted for 96 percent of the variance in responses for overall performance.

Results suggest that a three-tiered approach to the evaluation of local public health performance might be feasible. For the study departments, responses to four questions could be used to screen overall public health performance; responses to 26 questions could be used to yield information about performance of each of the three core public health functions; and responses to 84 questions could be used to yield more detailed information about performance for each of 10 public health practices. Experience with a larger set of departments might revise the number and nature of the screening queries.

A PROJECT BEGAN IN 1991 to restudy local health departments that were the subjects of an intensive case study a decade earlier (*1*). The departments originally were selected as exemplars from a list nominated by the Model Standards work group (*2*). A new study, sponsored by the Public Health Practice Program Office of the Centers for Disease Control and Prevention (CDC), proposed to gain longitudinal perspective to develop an assessment protocol for measuring the extent to which people are served by health departments carrying out the core functions of public health.

The effort was responsive to one of the Health Objectives for the Nation for the Year 2000: "Increase to at least 90 percent the proportion of people who are served by a local health department that is effectively carrying out the core functions of public health" (*3*).

The purpose of the studies is to develop an assessment protocol that might be used to develop a national surveillance system to measure local public health performance. The core functions were defined by a 1988 Institute of Medicine report as assessment, policy development, and assurance (*4*). These functions were subsequently elaborated by associating each of them with specified public health practices (assess, investigate, analyze; advocate, prioritize, plan; manage, implement, evaluate, inform-educate) (*5*).

A previous report from the project described the

Queries Constituting the Revised Screening Survey

I. ASSESSMENT

1. In the past three years in your jurisdiction, has there been a health needs assessment which included using morbidity, mortality, and vital statistics data?

2. **In the past three years in your jurisdiction, have there been age-specific surveys to assess participation in preventive and screening services?**

3. In the past three years in your jurisdiction, has the population been surveyed for behavioral risk factors?

4. In the past year in your jurisdiction, has there been timely investigation of any unusual adverse health events?

5. *In the past three years in your jurisdiction, has there been a review of hospital discharge data to determine age-specific leading causes of hospitalization?*

6. *In the past three years in your jurisdiction, has there been a review of work-related morbidity and mortality?*

7. *In the past three years in your jurisdiction, has there been an analysis of data on children two years of age who have been immunized with the basic series?*

8. In the past three years in your jurisdiction, has there been an analysis of health services needed by high-risk population groups?

II. POLICY DEVELOPMENT

9. In the past three years, has there been a public review of the public health mission for your agency's jurisdiction?

10. In the past year, as a part of the job, have you and your senior staff members regularly participated in meetings with other community health organizations?

11. In the past year in your jurisdiction, has there been a formal attempt at informing elected officials about the potential public health impact of actions under their consideration?

12. In the past year in your jurisdiction, have elected or other government officials been strong advocates for public health?

13. In the past three years in your jurisdiction, have community health initiatives been prioritized on the basis of established problems and resources?

14. In the past three years, has your health department published an explicit policy agenda for the department?

15. **In the past year, has there been a formal attempt to inform candidates for elective office about health priorities for your jurisdiction?**

16. In the past year in your jurisdiction, has a community health action plan developed with shared input from local, regional, and State levels been used?

17. **In the past year in your jurisdiction has a community health action plan, developed with public participation, been used?**

18. In the past three years, has your health department entered into any written agreements with key health care providers or funding sources to define service roles?

III. ASSURANCE

19. In the past three years in your jurisdiction, have local health codes been reviewed to assure they were up-to-date?

20. In the past three years in your jurisdiction, have public health services been reviewed to assure they comply with applicable professional and regulatory standards?

21. In the past year in your jurisdiction, has there been a program to assure environmental safety?

22. In the past year in your jurisdiction, has there been a program to assure access to basic personal health services for those unable to afford them?

23. **In the past year in your jurisdiction, has there been any evaluation of the effect that public health services have on community health?**

24. In the past year in your jurisdiction, has there been any evaluation of the effect that budget changes for your health department would have on public health problems?

25. In the past year in your jurisdiction, has there been a formal attempt at informing the public about health problems?

26. In the past year in your jurisdiction, have reports on public health problems been provided to the local media?

Italics—queries added after the initial analysis to strengthen evaluation of the assessment function. Bold face—the four queries that predict 96 percent of the variation in responses to the overall screening score.

development of a survey instrument that featured 81 performance indicators linked to 10 public health practices, each of which was keyed to one of the core public health functions (*6*). The 81 indicators had been selected from review of currently available sources on measurement of public health practice. They included the Assessment Protocol for Excellence in Public Health (APEX PH) (*7*), CDC's set of consensus indicators for assessing community health status and monitoring progress toward the year 2000 objectives (*8*), and Turnock and Handler's 1992 set of performance indicators for surveillance of effective public health practice (*9*).

Indicators were selected only if they could be expressed in terms reflecting the extent to which an entire community was served, regardless of the provider, and if the indicators could reasonably be associated with one of the 10 public health practices. Some arbitrary judgments were required. These were reviewed and in some instances modified by a national advisory committee of public health experts.

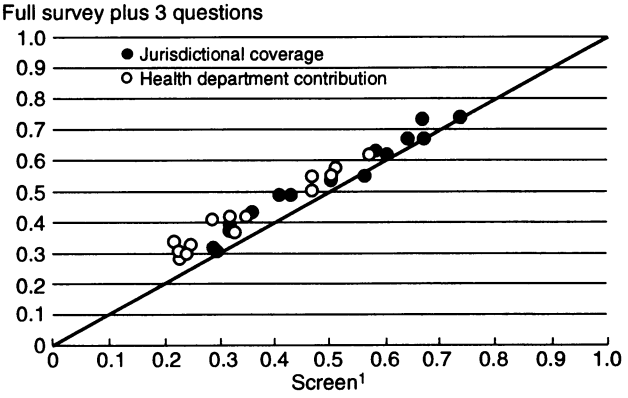
Responses to the survey were obtained by telephone interviews with directors of the 14 study departments. Scoring of responses provided for each community a graphic profile showing the perceived level of public health performance according to each of the 10 public health practices and indicated the extent to which local health departments and other providers contribute to each practice (*6*). The survey required 1-2 hours for completion and was regarded by most respondents as a useful exercise in departmental self-appraisal, staff training, and community analysis. Results were validated by review of findings with the director and in most instances with counterpart State health department officials.

Although the survey was useful for detailed evaluation of local public health practice, the method was judged to be too elaborate for use in nationwide surveillance. An effort was made to identify components of the survey that might be used for preliminary screening to identify high and low performing public health jurisdictions. Findings from those efforts constitute the present report.

Method

The 81 performance indicators were clustered in two different formats. The first group featured issues of a systems or programmatic nature and began with a dichotomous query on the presence or absence of the system or programs, followed by responses on their adequacy and their providers. The second group of indicators was more narrowly task- or resource-oriented and was presented in tabular format. A total of 23 of the indicators were of the first type, dealing with general public health service systems or programs. These questions were separately analyzed for possible use as a screening survey (see box).

Figure 1. Scatter plot for overall performance score of 14 local health departments surveyed



[1]with 3 new questions, 26 in all.

'The purpose of the studies is to develop an assessment protocol that might be used to develop a national surveillance system to measure local public health performance.'

Responses to these and other questions were reviewed for 14 local public health jurisdictions that have been the subjects of intensive longitudinal case study and have provided data for designing the complete assessment protocol (*1,6,10*).

The 23 screening queries were distributed among the core public health functions as follows: five for assessment, 10 for policy development, and eight for assurance. Indicators for policy development were the most difficult to formulate; only 10 of them were included in the full survey protocol. All 10 of them were included in the shortened screening survey instrument, inasmuch as they all met the criterion of having been formulated for response in a yes-no fashion concerning the presence of a service or program in the community.

For each public health jurisdiction the responses to the 23 screening queries included an assessment on adequacy of performance using a five-point scale, ranging from "not present" to "fully adequate," and another estimation on a five-point scale ranging from "none" to "all," indicating the extent of the health department's role in providing the indicated service.

Regression table for overall community score of all screening questions

Variable	Parameter estimate	Standard error	P value
R^2 = .9628			
ASSESSQ2 [1]	−0.176	0.023	<0.001
POLICYQ15 [2]	−0.098	0.029	0.008
POLICYQ17 [3]	−0.083	0.020	0.003
ASSURQ23 [4]	−0.138	0.020	<0.001
Community score of the assessment function:			
R^2 = .5749			
ASSESSQ2 [1]	−0.218	0.054	0.002
Community score of the policy development function:			
R^2 = .6640			
POLICYQ18 [5]	−0.366	0.075	<0.001
Community score of the assurance function:			
R^2 = .7940			
ASSURQ23 [4]	−0.235	0.050	<0.001
ASSURQ25 [6]	−0.180	0.055	0.007

[1] Assessment question 2 (see box).
[2] Policy development question 15.
[3] Policy development question 17.
[4] Assurance question 23.
[5] Policy development question 18.
[6] Assurance question 25.
NOTE: Analysis by the Biometric Consulting Laboratory, Department of Biostatistics, School of Public Health, University of North Carolina at Chapel Hill.

'These studies suggest that evaluations of local public health performance are feasible by means of survey responses from directors of local health departments.'

Using these ratings, two performance scores (0 to 1.0) were calculated for each jurisdiction, one for the community's coverage by the service, and the other for the health department's contribution to the coverage. These scores were charted on scatter plots against the total performance scores for the jurisdiction and for the health department serving it as determined from the full survey (*6*). Responses were plotted in the same fashion for results disaggregated according to the three public health core functions (assessment, policy development, and assurance) and for the 10 public health practices.

When the scatter plot for the assessment function failed to show close correlation between the results of the full survey and the screening queries for that function (five in all), three additional screening queries were formulated (see italicized queries in box) to achieve balance with the number of indicators used for other functions. The three new queries were selected by inspection of CDC's consensus indicators (*8*), identifying those that were linked to the assessment function and could be formulated as relevant to the entire community as well as to the local public health agency. Responses to the new queries were obtained from the same 14 departments, and new scatter plots were prepared. Correlation coefficients were calculated for each of the 26 questions, and regression analysis was done to determine which queries or groups of queries were most predictive of variations in the screening responses.

Findings

Scatter plots showed close correlation between scores for the full survey responses and those from the 23 screening queries in aggregate. Correlation was even closer when three additional screening queries were added (fig. 1). Pearson correlation coefficients were as follows: jurisdictional coverage $R = 0.986$, $P < 0.0001$; health department contribution $R = 0.981$, $P < 0.0001$.

When scores were disaggregated according to the three core public health functions, the scatter plot for the assessment function showed poor correlation. When three new queries were added, making a total of eight queries for the assessment function, the resulting scatter plot showed close correlation but a consistent tendency for screening scores to underestimate slightly the total scores for the assessment function (fig. 2). Correlation coefficients for community coverage were $R = 0.918$, $P < 0.0001$; and for health department contribution $R = 0.826$, $P < 0.0003$.

Scatter plots for the policy development function (10 queries) and for the assurance (8 queries) showed acceptable correlations and were not altered (fig. 2). For the policy development function, since all queries from the full survey were included in the screening instrument, the scatter plot showed exact congruence. For the assurance function, the correlation coefficient for the community was 0.985, $P < 0.0001$; and for the health department $R = 0.989$, $P < 0.0001$.

When responses to screening queries were disaggregated according to the 10 practices (two to three queries for each practice), no acceptable correlation of screening scores with results from the full survey was observed, except for those practices that incorporated all of the same queries in both the screening and the full surveys.

Stepwise regressions were done to determine which queries or groups of queries best predict scores

obtained from the screening survey. Four of the screening queries (see bold-face queries in box) accounted for 96 percent of the variation in responses for overall performance (see table). When regressions were calculated for screening scores obtained for each of the three core functions, responses to one query (ASSESSQ2) accounted for 57 percent of the variation in all responses for assessment; query POLICYQ18 accounted for 66 percent of the variation in responses for the policy development function; and responses to two queries, ASSURQ23 and ASSURQ25, accounted for 79 percent of the total responses for the assurance function (see table).

Interpretation

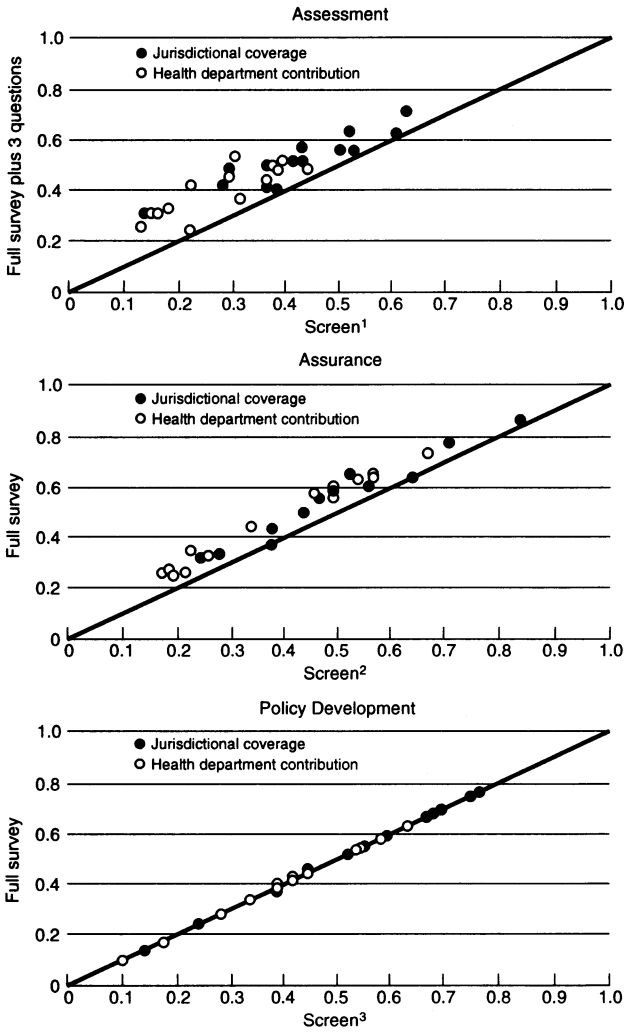
These studies suggest that evaluations of local public health performance are feasible by means of survey responses from directors of local health departments. A three-tiered approach is suggested, each level indicating a different degree of detail on assessment of public health performance. For the study departments, positive responses to as few as four queries (see box) could indicate the perception of a high level of overall public health performance. Responses to 20 or more additional queries could suggest adequacy of public health performance in each of the three core public health functions (assessment, policy development, and assurance). A detailed survey requiring 1 to 2 hours for responding to questions and scales for 84 indicators could yield information on overall community coverage and health department performance for each of 10 public health practices (fig. 3), as reported elsewhere (*6*). Experience with a larger, less select group of departments might revise both the number and nature of the survey questions.

The identification of a cluster of only four queries which in aggregate serve as rough indicators of overall local public health performance is a matter of interest. Those indicators probably have limited practical application, considering that positive responses might be generated without making appreciable changes in the full spectrum of public health performance. On the other hand, the issues embraced by those four queries may deserve close attention as reminders of key elements for effective public health practice: preventive services, political action, planning, and evaluation.

Failure to identify a simplified method for separately assessing each of the 10 public health practices in these 14 departments is a disappointment. Further work is warranted in an effort to identify a few valid practice-specific indicators. These preliminary findings require further validation and refinement. The reported experience relates to only 14 public health jurisdictions, albeit intensively studied ones. Findings depend on the reliability of perceptions as reported by public health directors. Both of these limitations are being addressed. The surveys are being completed for a large number of departments—all local health departments in six States; work is also in progress to relate performance assessments to local health status and outcomes measures and to on-site review by a visiting team of unbiased experts.

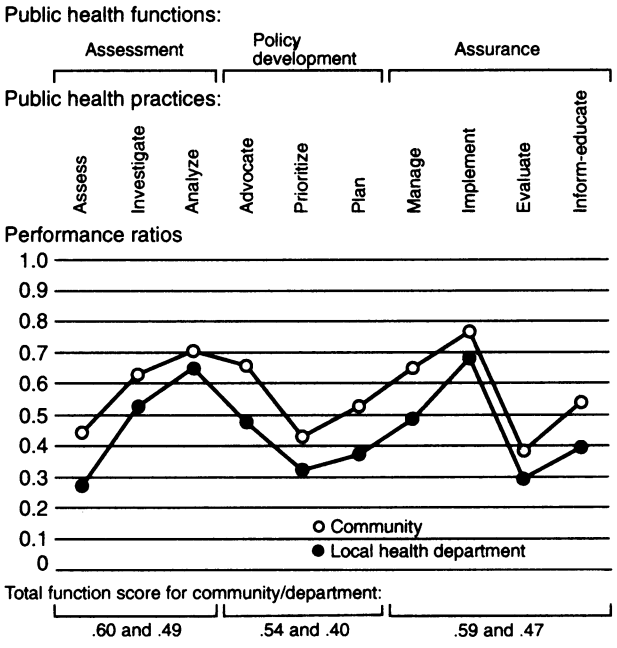
Additional experience and statistical analysis will help modify both the number and nature of the indicators for assessing public health practice. Initial analysis suggests that several questions have low predictive value and might be eliminated if findings are confirmed with a larger series of less highly selected respondents. Conversely, a few indicators

Figure 2. Scatter plots showing scores of 14 local health departments surveyed in performing 3 core functions



[1]with 3 new questions –8 for assessment, [2]8 questions, [3]10 questions

Figure 3. Aggregate profile for all 14 local health departments surveyed using mean performance ratios



Performance ratios represent the proportion of a possible perfect score (1.0)

show greater predictive value and suggest that a refined short list of function- and practice-specific indicators might be developed, perhaps merging these findings with those of other investigators. In the meantime, these preliminary findings are provided to encourage other investigators to use, evaluate, and modify the survey instruments. They are available on request.

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