HEALTHY PEOPLE 2000 Statistical Notes

From the CENTERS FOR DISEASE CONTROL AND PREVENTION/National Center for Health Statistics

Evaluating Public Health Data Systems: A Practical Approach

Phyllis Blood, MPA, Coordinator, State Center for Health Statistics, Iowa Department of Health

Background

In 1988, the Institute of Medicine published *The Future of Public Health* (1). According to this report, public health should perform three core functions—assessment, policy development, and assurance. Most of the health data and information activities of public health agencies fall within the assessment function. These information activities provide a basis for policy development and assurance.

Since 1988 health data have become more important both in the public and private sectors. *Healthy People 2000: National Health Promotion and Disease Prevention Objectives*(2) emphasizes the importance of measurable objectives. The National Committee for Quality Assurance developed health indicators for improving the quality, access and utilization of services in Health Maintenance Organizations (HMOs) (3). Most drafts of health care reform legislation recognized the need for health care data and included provisions for health care data systems.

There needs to be significant attention, however, to the quality and usefulness of health data. Dr. Manning Feinleib, in an article in the *American Journal of Public Health,*(4) identified seven characteristics that data must have to be useful: 1) relevancy; 2) coverage; 3) quality; 4) acceptability; 5) timeliness; 6) accessibility; and 7) usability. These characteristics also apply to data collected for public health purposes.

The Iowa Department of Public Health responded to these challenges and demands for quality health data in several ways. In October 1992 the Department began the project Enhancement of Capacity to Assess Progress towards Healthy People 2000 Objectives, a five-year cooperative agreement with the National Center for Health Statistics in connection with the CDC Assessment Initiative (5). Iowa is one of seven states to receive funding to enhance state capacity to use data effectively for policy development and assurance. In Iowa the project staff are located administratively in the Division of Substance Abuse and Health Promotion, the division with primary responsibility for coordinating the implementation of the *Healthy Iowans 2000* plan. *Healthy Iowans 2000* is the result of a broad-based public and private effort to develop year 2000 objectives for Iowa. This comprehensive document addresses components of all 22 priority areas in *Healthy People 2000*.

Evaluating Data Systems in Iowa

Early in 1993, the Director of the Iowa Department of Public Health identified five areas of strategic importance to public health in Iowa: health care reform, primary care, prevention, integrated services, and assessment. To address these strategic concerns, he

established program development groups (PDGs) with representation from each division in the department. These groups were charged with developing comprehensive, long-range plans in their respective areas. This article describes the principle activities of the Assessment PDG.

The coordinator of the State Center for Health Statistics led the Assessment PDG. This team has nine members including the project director and the coordinator of the Assessment Initiative project. The group includes individuals from a variety of departmental programs with varying levels of experience in using data.

The Assessment PDG adopted the Institute of Medicine's definition of assessment (1). Consistent with this definition, the group identified five purposes of an assessment process for the department: 1) to determine community health status, 2) to establish public health priorities, 3) to develop public health policies, 4) to evaluate the impact of public health programs, and 5) to promote and support the use of health information. A position paper based on four functions of data (assessment, explanation, prediction, and evaluation)(4) was also developed to provide a context for data practices within the department.

The Assessment PDG identified six activities required to develop a systematic assessment plan for the Department: inventory existing databases, evaluate current databases and data usage within the Department, establish standards and models for data collection and usage, improve the communication of data both internally and externally, develop training programs in data analysis, and recommend organizational structures and resource allocation guidelines to the Director. The database inventory, evaluation and resulting recommendations are described in this article.

The Assessment PDG identified approximately 100 separate databases including surveillance data, data from programs, licensure/certification information, and research files. The databases varied widely in terms of collection techniques, data entry, storage, report generation, and use. Many databases were developed categorically, in response to federal or state programmatic initiatives. Some databases were outdated considering the rapid changes that have occurred both in technology and health care priorities. In order to improve the quality and usability of data the Assessment PDG began a systematic evaluation of existing databases.

Step 1. Building Commitment—The leader of the Assessment PDG made a presentation to the Director and Executive Staff of the Department outlining the plan of action, identifying the anticipated benefits of the project, and the expected time commitment required of department staff. The time frame was set at four months from testing of the evaluation instrument to preparing the final report. The Director and Executive Staff approved the concept and agreed to support the project by allocating the necessary staff resources.

Step 2. Establishing Parameters—The Assessment PDG chose to evaluate only surveillance and program databases. These databases are used regularly to determine health status, establish priorities, develop policies, and evaluate program impact. Although licensure, certification and research databases also fulfill these objectives, the group chose to focus on 30 surveillance and program databases due to limitations in staff time.

Step 3. Developing a Tool—The group began with the Guidelines for Evaluating Surveillance Systems, published in the *MMWR* in May 1988 (6). These guidelines were written for the evaluation of epidemiologic surveillance systems. Several adaptations were necessary to make the guide more relevant to program-based systems. For example, staff involved in disease-specific surveillance systems understand the concept of ''predictive value positive,'' the proportion of persons identified as having the condition under surveillance who actually have the condition. However, for systems that provide data on prenatal services and outcomes, this concept is not meaningful. But there are principles in common between program data and surveillance data that could be captured in the way definitions were operationalized. So, the concept of ''predictive value positive'' was defined in terms of ''accuracy'' which includes efforts to edit and validate the data. The ''Guidelines'' in the *MMWR* were therefore used to develop a protocol for use in interviewing database managers.

Step 4. Validating the Tool—The interview protocol, ''Evaluating Surveillance/Program Data Systems,'' was pilot-tested for reliability and validity. The nine members of the PDG were divided into three groups. Three databases were selected as pilots; none of the databases selected were used regularly by any of the group members so bias based upon experience was eliminated. The manager of each selected database was interviewed by two groups. The results, including objective response coding and subjective recommendations, were compared. The findings by each group were sufficiently similar to give credibility to the tool.

Step 5. Training—The Assessment PDG felt that a broad-based effort was the best approach to conducting the evaluation. Involving a larger number of staff would 1) reduce the amount of time commitment for each individual staff member, 2) educate additional staff about the importance of quality data, 3) build a larger constituency for quality data, and 4) involve individuals with a diverse set of attitudes, opinions, and knowledge levels. Each PDG member therefore became a team leader with two additional team members recruited from other parts of the Department. Training was provided in a two-hour workshop attended by all 27 participants.

Step 6. Conducting the Interviews—Since 30 databases were evaluated, each team was assigned at least three. Care was taken to assure that no team member evaluated a database that he or she used regularly. The interview time ranged from 30 to 60 minutes. Each team member completed the evaluation instrument. After the interviews were completed, each team met to compare findings and develop a consensus report for each database. Reports included descriptive findings, strengths and weaknesses, and recommendations for improvement.

When all the reports were completed, the PDG reviewed the team findings and developed recommendations for the Director. The report consisted of two sections. The first part contained system level recommendations based upon common problems identified. The second part of the report contained the PDG's priority list for improving specific databases. There were seven databases identified in this section. Criteria used by the group to set priorities included the utility to the Department, impact on future database development, and the resources needed to implement the suggestions.

System Recommendations

1. Priority should be given to integrating, combining, or linking data in the allocation of data resources within the Department. In addition, new systems or proposed modifications of existing systems should not be undertaken without considering integration with existing databases. The Department should work with the Centers for Disease Control and Prevention (CDC) to reduce reliance on problem-specific software.

2. The Department should actively support the development of electronic transmission of data to the Department, including on-line and disk submission.

3. The Department should give more attention to the internal and external costs of data collection, particularly in the development of new systems.

4. Each database should have complete system documentation and user manuals should be readily available.

5. The Department should provide sufficient staff resources and training opportunities to allow the data to be used in the best way possible, and develop or modify personal computer or mainframe applications to produce frequent and usable reports.

6. All client-based systems should include a core set of demographic variables; common identifiers should be included to promote linkage.

7. Programs within the Department should share information with other programs with similar needs and concerns.

The Director has accepted all of the recommendations. Each division has a project leader to track implementation of the database-specific recommendations. System level recommendations are being implemented through additional activities of the Assessment PDG, including the development of training plans, the identification of core data elements, and the development of electronic transmission standards. The State Center for Health Statistics has assumed responsibility for overseeing database development, writing policies and procedures, and training.

The evaluation project has been successful in raising the Department's data-consciousness; steps have been taken to improve data collection and to make data more useful. However, the Department recognizes that quality health data can only be assured through continual appraisal, refinement, and responsiveness to changing demands and technology. Improvements in the planning phase of database development are necessary. The Assessment PDG modified the evaluation instrument and created a guide for database development. This tool will enable program staff to identify issues involved in developing a useful database. The "Framework for Developing a Data System" is being applied in the development of two newly proposed data systems.

The Department expects to use the "Framework for Developing a Data System" and "Evaluating Surveillance/Program Data Systems" to monitor and improve data collection and analysis for public health. Only by remaining vigilant and responsive to the changing health care environment can public health agencies achieve the benefits envisioned in the *Future of Public Health* (1).

For more information about the project, please contact Phyllis Blood, MPA, Coordinator, State Center for Health Statistics, Iowa Department of Public Health, Lucas State Office Building, Des Moines, IA 50319–0075, phone (515) 281–4435.

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