Community Assessment in a Vertically Integrated Health Care System

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A B S T R A C T

Objectives. In this report, the authors present a representative case of the implementation of community assessment and the subsequent application of findings by a large, vertically integrated health care system.

Methods. Geographic information systems technology was used to access and analyze secondary data for a geographically defined community. Primary data included a community survey and asset maps.

Results. In this case presentation, information has been collected on demographics, prevalent health problems, access to health care, citizens' perceptions, and community assets. The assessment has been used to plan services for a new health center and to engage community members in health promotion interventions.

Conclusions. Geographically focused assessments help target specific community needs and promote community participation. This project provides a practical application for integrating aspects of medicine and public health. (*Am J Public Health.* 2001;91:811–814)

Changes in the American health care system require new models for the allocation, design, and delivery of health services. Complex health care systems can use community assessment efforts to allocate resources and manage the specific health needs of communities.[1–4] Recently, there has been renewed interest in using and validating community assessment methodologies in the United States,[4–10] and several studies have emphasized the need for more efficient, centralized information-processing systems in medical schools and hospital systems.[5,8,9,11,12]

Geographic information systems technology presents the opportunity for focused assessments of geographically defined communities.[13–15] Despite the recent promotion of this technology in health care settings, few applications have been described in the literature.[13–17]

We present an illustrative case of the implementation and application of community assessment in a large, nonprofit, vertically integrated health care system with a contractual agreement to manage both medical and public health services for a large metropolitan county.[18] A centralized resource center has been created to manage data for specific communities. This report focuses on the community assessment for a primary care facility recently built in an underserved urban community.

Data Collection

In this project, 3 complementary methodologies were used to characterize the target community: geographically defined secondary data analysis to characterize the users of the health care system, a door-to-door community survey to document residents' perceptions of the community, and an inventory of community assets using rapid participatory appraisal methodologies described elsewhere.[19] Data were collected from 1997 through 1999.

Geographically Defined Secondary Data

ArcView[20] geographic information systems mapping software allowed the partitioning of computerized secondary data based on subjects' street addresses. Map files from a local government planning office were used to identify all addresses in the target community.[21] Health-related data for these addresses were retrieved from the following secondary data sets: discharge data and emergency department billing data from local hospitals, the county's emergency medical service dispatch data, birth and death certificate data from the county and state,[22–24] county tax address records, and the 1990 United States census.[25] Statewide hospital discharge data and county data were used for norm comparisons.[26]

Two years of data were accessed for each source, and average rates were computed. Individual names were removed from all databases to protect confidentiality, and addresses were removed after coding for geographic area ("geocoding"). Match rates between data sets and county map files varied from 89% to 95%. Complete address data were directly available from 2 local hospitals in the health care system, and our survey suggests that these 2 hospitals were used by 61% (SD=15%) of the target community.

Primary Data

A 49-question survey was developed from a validated instrument to elicit information on demographics, perceived community health and social issues, self-reported health status, quality of life, and perceived access to health care.[7] Interviewers were selected from the community and trained in door-to-door survey methodology.

Geocoded addresses were used to select a random sample of 388 households from county tax records and public housing address rosters. Of these addresses, 33 (9%) were not residences. For an additional 74 (19%), a household member could not be contacted in 3 attempts. Among the remaining 281 addresses, 214 households agreed to participate, yielding a participation rate of 76% and a margin of error of 6.9%. The demographic profile of surveyed households was similar to that of the US census, although the survey involved a higher percentage of female respondents (70% vs 55%).

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TABLE 1—Identified Health Problems for the Target Community (Rank Order of Conditions): 1997–1999

Death Certificate Data[a]	Hospital Billing Data[a]	Emergency Room Billing Data[a]	Birth Certificate Data[b]	Ambulance Run Data[b]	Survey Data[c]	
					Community Perceptions	Self-Reported Medical Problems
Heart disease	Obstetrics	Chronic obstructive pulmonary disease/asthma	Low birthweight	Motor vehicle accidents	Substance abuse	Hypertension
Stroke	Heart disease	Intentional injuries	Premature birth	Respiratory problems	Hypertension	Arthritis
HIV	Stroke	Motor vehicle accidents	Teen pregnancy	Intentional injuries	Sexually transmitted diseases	Diabetes
Lung cancer	Pneumonia and influenza	Falls	Late prenatal care	Chest pain	Teen pregnancy	Asthma
Injuries	Complications of diabetes	Pneumonia and influenza	Infrequent prenatal care	Seizure	Heart disease	Heart disease

[a]Based on population rates, 1995 and 1996 (death certificates: 1994 and 1995).
[b]Based on prevalence of the condition.
[c]Based on percentage of responses.

Community Assets

Maps were prepared to show specific community resources: churches, meeting facilities, health care facilities, parks and other recreation facilities, grocery stores, and restaurants.

The Community Assessment

Community Characteristics

The community's total population for 1996 was estimated at 19 670, and residents were predominantly African American (89%). Twenty-five percent of residents lived below the federal poverty level, as compared with 11% for the city overall. One quarter of the survey respondents had lived in the community for more than 30 years, and almost one half had resided there for more than 15 years.

Prevalent Health Problems

Table 1 shows the main health problems identified by the survey and secondary data sources. The data sets provided information on both morbidity and mortality. Conditions such as heart disease, cerebrovascular disease, injuries, and pregnancy were consistently present in several data sources. According to the survey results, heart disease, stroke, hypertension, diabetes, substance abuse, and teen pregnancy are areas of concern for the community. Table 2 shows conditions for which there are significant disparities between the community and the county. We prioritized conditions according to community concerns and rate disparities.

TABLE 2—Identified Health Disparities in the Target Community: 1997–1999

	Target Community Rate per 100 000	County Rate per 100 000
Mortality[a]		
Heart disease	262	190
Stroke	99	57
HIV	83	30
Hospital admissions[bc]		
Asthma[d]	142	110
Hypertension[d]	125	68
Diabetes[d]	300	113
Emergency room visits[bc]		
Injuries	7907	3708
Chronic obstructive pulmonary disease/asthma	2357	739

[a]1994 and 1995 average rates.
[b]1995 and 1996 average rates.
[c]Rates are underreported owing to missing data from other local hospitals.
[d]Ambulatory care–sensitive diagnoses.

Access to Health Care

Table 2 includes rates for ambulatory care–sensitive diagnoses (i.e., groupings of diagnoses for which access to good primary care is thought to reduce hospital and emergency room admissions).[27–29] Rates of use of 2 hospitals among residents were compared with rates of use among county residents who were admitted to any hospital in the state. Even though the rates reflected admissions for only 2 hospitals, they were still close to or greater than the comparable county rates.

Fifty-eight percent of survey respondents identified barriers to receiving health care. Only 9% of respondents indicated that lack of transportation was a barrier; 33% reported that "not enough money" was an important problem. Fourteen percent of respondents reported that they made out-of-pocket payments for health care services because they lacked a third-party insurer. Twenty-one percent had Medicaid, 23% had Medicare, and 42% reported job-related insurance coverage. High rates of emergency room use are often an indicator of poor access to primary care, and data for this community reveal that Medicaid and self-pay patients account for almost three quarters of all emergency room visits.

Applications of the Community Assessment

The findings of the community assessment were presented to primary care clinicians, administrators, health department staff, and a range of community members and service providers at meetings and health fairs. A health department educator disseminated the findings to community groups and coordinated collaborative intervention efforts. The survey pro-

vided an opportunity for members of the community to actively participate in the assessment process.

A coalition of community members, health providers, administrators, and health department staff used the assessment to implement a series of health education seminars for community leaders. The seminars focused on health issues identified in the assessment. To target cardiovascular health, the coalition organized an annual community walk during which participants were recruited for a new community walking group program.

The coalition recently obtained federal funding to target the racial disparities in heart disease and diabetes documented in the community assessment. Attempts to increase the size and representation of the community coalition are ongoing and involve local African American churches. Interventions will be based on establishing a lay health advocate program. Maps of community resources will identify entry points for further interventions.

Data from the community assessment also helped in the planning of aspects of the new health center. Poor access to care has been addressed by providing primary care, including prenatal care, in a family practice model. A sliding-scale fee system lessens financial barriers, and there is an on-site pharmacy. Heart disease, HIV/AIDS, substance abuse, and the complications of diabetes are specific conditions identified in the community assessment that have been targeted by the health center.

An infectious disease specialist, cardiologists, mental health professionals, and an ophthalmologist are available at the health center periodically to provide consultations and case conferences for the primary care providers. Continuous quality improvement efforts have focused on diabetes, and attempts are under way to develop a diabetes case management program.

The prevalence of a large high-risk obstetric population helped determine the need for a full-time maternity care coordinator and a Special Supplemental Nutrition Program for Women, Infants, and Children office. In the future, diagnostic codes and patient demographic characteristics will be analyzed to determine health center use patterns and to evaluate outcomes.

Discussion

This case study provides a multidimensional approach to community assessment using both primary and secondary data. In traditional community assessments, generalized county data are often applied to disparate groups, and analyses of specific communities are generally limited to zip code tracts. Analysis of secondary data based on geographic boundaries is an important tool for health care systems because it allows large data sets to be used for specific communities. Assessments that conform to neighborhoods or patient catchment areas can help in targeting specific community needs and managing resources more efficiently.

Geographic definitions of communities are meaningful to citizens, and primary data derived from surveys, focus groups, or key informant interviews document their perceptions and concerns. Institutions that identify a community's unique needs have more credibility when attempting to form coalitions and engage communities in health promotion.

In some areas, county address files may be less comprehensive than those available for this project, making it more difficult to geocode secondary data sets. Competing health care systems may be unwilling to share data as a result of concerns about marketing or negative advertising. Because of confidentiality issues, many state health agencies are prohibited from releasing specific patient identifiers or addresses. In this project, hospital and emergency room discharge data were not available from a competing hospital system, and access to address-labeled mental health data from the department of social services was prohibited because of confidentiality issues.

This example could be replicated in other health care systems. Three key components should be considered. First, collaboration between the health department and the medical system provided opportunities for funding, technical expertise, and community outreach networks. Second, centralized availability of geographic information systems software, supporting hardware systems, and trained personnel enabled health care providers and community groups to overcome the technical and financial barriers of geographically focused community assessments. Finally, primary data collection documented perceptions about access to care and health priorities, and targeting these specific concerns helped develop strong community involvement. □

Contributors

M. Plescia supervised the primary data collection, assisted with data interpretation, and wrote the initial draft and subsequent revisions. S. Koontz coordinated all data collection, organized the data, assisted with data interpretation, and edited the manuscript. S. Laurent supervised the secondary data collection, served as a methods advisor, assisted with data interpretation, and edited the manuscript.

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