

The Utility of the Environmental Scan for Public Health Practice: Lessons from an Urban Program to Increase Cancer Screening

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The environmental scan is a tool that can be utilized to collect data to design health programs uniquely tailored to the needs of communities. However, it remains relatively undefined, unevaluated and underutilized in the field of public health. While individual studies indicate the utility of the environmental scan for public health, it is difficult to find a theoretical framework or guidelines on how to design, implement or evaluate the process within public health practice. The purpose of this study was to elicit lessons learned to maximize the utility of the environmental scan as a tool for public health. This process occurred through the development and implementation of an environmental scan as part of the needs-assessment phase of a project to increase cancer screening among African Americans in Baltimore, MD.

Data collection methods for the environmental scan included a review of community stakeholders, cancer incidence and community assets and liabilities in target communities, focus-group sessions and key informant interviews with service providers. The environmental scan was conducted in 2003 and allowed for rapid acquisition and use of information about events, trends and relationships in the neighborhoods targeted for our project and enabled researchers to move forward with implementing the cancer-screening project. The researchers conclude that the environmental scan has considerable potential to be a creative, responsive, cost-effective and mobilizing tool for public health practice. However, further application and critical review are necessary to make it a more effective public health tool and an established research methodology.

Key words: environmental scan ■ public health tool ■ guidelines

© 2005. From Morgan State University Public Health Program, Baltimore, MD (Rowel, assistant professor; Moore, research coordinator; Nowrojee, research associate; Memiah, DrPH candidate; Bronner, director). Send correspondence and reprint requests for *J Natl Med Assoc.* 2005;97:527-534 to: Randolph Rowel, PhD, Assistant Professor, Morgan State University Public Health Program (MSUPHP); phone: (443) 885-3138; fax: (443) 885-8309; e-mail: rrowel@jewel.morgan.edu

BACKGROUND

The realities of the 21st century have forced the public health profession to reconsider traditional approaches, apply new technologies appropriately and diversify sources of support.¹ Recognition of social, economic and behavioral influences in disease prevention has highlighted the need to facilitate complex, individual behavior change and community participation.¹⁻³ Resource allocation away from social programs has made it necessary to be creative in the search for and allocation of scarce resources. In response to these challenges, there is a need for creative approaches to public health research and practice that maximize existing resources, ensure timely responses to public health crises, build on established knowledge and enhance community participation.

According to the American Public Health Association (APHA), community needs assessment is one of three components of the mission of public health: assessment, policy development and assurance.⁴ Assessment is the regular systematic collection, assembly, analysis and dissemination of information on the health of the community. Typically, the assessment process is an inclusive endeavor used to prioritize issues and develop plans to address community needs. The APHA⁴ further notes that two of the most popular assessment tools are Assessment Protocol for Excellence in Public Health (APEXPH) and Planned Approach to Community Health (PATCH). APEXPH was developed by the National Association for County and City Health Officials and PATCH was developed by the Centers for Disease Control.

Based on evaluation studies, the planning process for models such as PATCH is slow and usually requires substantial technical inputs to implement.⁵ Another assessment model called Rapid Assessment and Response (RAR) has been useful in quickly assessing emerging public health problems and identifying effective and inexpensive interventions that have a high probability of being adopted, successfully carried out and sustained at the local level.⁶

The World Health Organization has used this model for over 30 years. Recently, it has been adapted to form RARE (Rapid Assessment, Response and Evaluation) to help communities struggling with the devastating effects of AIDS.⁶

Regardless of the model, researchers recognize that a needs assessment is the foundation of any effective planning model and an important first step towards developing successful interventions. They are also cognizant that a key shift in public health in the past few decades has been the growing understanding that environmental factors are an important facet of a comprehensive needs assessment because these factors can inhibit or facilitate individual and community participation in health activities.^{3,6,7} This is particularly true in urban, poor and minority communities where many health problems are related to behavioral responses to the environment.^{2,3,8,9} This reality means the focus shifts the locus of change from the individual to the environment in which the individual resides.¹⁰ Such a shift can provide crucial

insight into realistic expectations related to health behaviors and the utilization of health services. By examining environmental or contextual factors, researchers can collect data to guide the design of effective health programs uniquely tailored to the needs of communities.

The environmental scan is a needs-assessment tool that can be utilized to collect program development data. A dearth of information is available about the use and efficacy of environmental scans to address health problems having a devastating effect on racial and ethnic minority communities, such as HIV/AIDS, cancer and cardiovascular diseases. To what degree does an environmental scan involve the community in data collection activities? Does an environmental scan identify new patterns of risk or resilient behaviors to address rapidly changing or emerging public health problems? Does an environmental scan provide information within the social, cultural, religious, political and historical contexts that often shape the emergence of health problems?

Table 1. Environmental Scanning Modes

Scanning Modes	When Used	Characteristics
<i>Undirected Viewing</i>	Unanalyzable <ul style="list-style-type: none"> • Complex environment • Not enough information to make decisions • Information needs ill-defined 	<ul style="list-style-type: none"> • Organization is satisfied with limited or "soft" data as opposed to comprehensive or "hard" data • Viewing economical, but not comprehensive
<i>Enacting</i>	Unanalyzable <ul style="list-style-type: none"> • Complex environment • Not enough information to make decisions • Information needs ill-defined 	<ul style="list-style-type: none"> • Organizations intrude actively to influence events and outcomes • Information needs tend to be those required for experimentation and testing the environment • Involves identifying areas for successful interventions
<i>Conditioned Viewing</i>	Analyzable <ul style="list-style-type: none"> • Less complex environment • Enough information available to make decisions 	<ul style="list-style-type: none"> • Organization is passive about information gathering or influencing the environment • Most information is gathered from formal and well-established sources, such as industry databases and external reports • Having established procedures and sources of data is one of its advantages
<i>Searching</i>	Analyzable <ul style="list-style-type: none"> • Less complex environment • Enough information available to make decisions 	<ul style="list-style-type: none"> • Organization actively intrudes into the environment to gather an accurate set of facts • Data gathering is relatively intense and may involve intrusive actions, such as polls, surveys, focus groups and key informant interviews • Can require considerable resources

Source: Choo¹¹

The purpose of this study was to elicit lessons learned to maximize the utility of the environmental scan as a tool for public health. This process occurred through the development and implementation of an environmental scan as part of the needs-assessment phase of a project to increase cancer screening among African Americans in Baltimore, MD.

LITERATURE REVIEW

The literature revealed that there is no one established methodology to conduct an environmental scan. In fact, this seems to be a key characteristic of environmental scans. Scans have been designed in various ways and used in a range of sectors to better assess external environments. In a review of studies on environmental scans for information management and organizational learning, Choo defines environmental scanning as “the acquisition and use of information about events, trends and relationships in an organization’s external environment, the knowledge of which would assist management in planning the organization’s future course of action.”¹¹ He also states that an organization processes information to make sense of its environment, to create new knowledge and to make decisions” and that the goal of scanning is “the gaining of new knowledge that enables action.” The multidisciplinary American Society of Association Executives (ASAE) defines environmental scanning as “a systematic and continuous effort to search for important cues about how the world is changing and how these changes are likely to affect your organization.”¹²

Based on previous work, Choo states that scanning is affected by two factors: 1) the complexity of the environment and availability of information to support decision-making (“environmental analyzability”) and 2) the extent to which an organization intrudes into the environment to understand it (“organizational intrusiveness”). Within this framework, Choo identifies four modes of scanning: Undirected viewing; Enacting; Conditioned Viewing; and Searching (Table 1), which can be used alone or in combination with the design of environmental scans.

The ASAE review concurs that there is no one correct way to conduct an environmental scan, but it does identify a few characteristics of most scans.¹² First, a broad range of issues is examined, covering social, economic, political, technological and other trends. Second, information is gathered from a variety of sources, including literature reviews, surveys, interviews, focus groups and site visits. Third, leading-edge thinkers are sought from both within and beyond the profession being scanned. Finally, “out-of-the-box” thinking is encouraged by studying trends in other industries or professions. These characteristics imply that scans may rely on formal, well-established

sources of information, such as industry databases and professional reports or guidelines, or they may rely on informal, personal sources. Environmental scans can utilize high technology, such as Internet searches and national databases or low technology, such as visually assessing resources or talking to community leaders or indeed, a combination of both.

Examples of Use of Environmental Scans

The use of environmental scans by private and government sectors vary. In the private, for-profit sector, environmental scans have been used primarily for purposes of strategic planning, organizational development, information management and enhancing an organization’s ability to anticipate and respond to changes in the environment.^{11,12} Universities are increasingly utilizing environmental scans as part of their strategic planning and decision-making processes.^{14,15} Among government agencies, environmental scans have been used in both the collection and the dissemination of information. The Canadian government uses environmental scans in various areas, including public health, literacy and information management. These environmental scans are often documented in government reports and not in academic or professional literature.¹³ Developing countries are now regularly utilizing environmental scanning as a planning tool, and there is also evidence of government agencies conducting scans and increasing the use of the methodology in the nongovernmental, not-for-profit sector.⁸

Within the last five years, several environmental scans have been conducted in the public health arena in public and private sectors to assess and improve services in a variety of areas, including mental health, nutrition and violence (Table 2).¹⁶⁻²⁵ Most often, public health scans rely on quantitative (i.e., surveys) and qualitative (i.e., focus groups, key informant interviews and document content analysis) data collection methodologies. Increasingly, environmental scans utilize health databases, such as hospital information systems and government population health registries. As reflected in Table 2, environmental scans have also been used in a range of public health projects as a means to strengthen public health information technology and resources, to guide regional healthcare reform and to assist in program planning and development.

Effectiveness of Environmental Scans

Within the private sector, there is evidence that environmental scanning improves organizational performance, as measured by profitability and organizational growth. One survey of U.S. Fortune 500 companies found that organizations that used scanning had higher growth and profitability than those who did not. This

was also true for small businesses.¹¹ The benefits of scanning are not just financial. According to the ASAE, scanning allows for a creative search of emerging opportunities and necessitates a collaborative and continuous dialogue between staff and boards of organizations. Environmental scans also have proved to be an essential tool in discovering ways to implement and manage change successfully.¹³ Studies reviewed by Choo noted that scanning led to increased communication and had a positive effect on the organization in the areas of shared vision, strategic management and future orientation. In addition, scanning provided structured opportunities for people to regularly participate in discussions on planning issues.¹¹ Favorable outcomes were also reported by public health scanning studies.^{13,26} For example, a scan on women's health information resources in Ontario, Canada demonstrated that information acquisition using database technology is an effective method for conducting environmental scans.¹³

METHODOLOGY

Current data show African Americans are disproportionately impacted by cancer nationally and in Maryland.^{27,28} Screening for early detection is the

primary method for preventing death and morbidity from cancers, particularly cervical, breast, prostate and colorectal cancers.²⁷ The research team developed and utilized the environmental scan as a needs-assessment tool to develop an intervention to increase cancer screening among African Americans in Baltimore City. Three areas in Baltimore City were selected for the environmental scan, each with a hospital within it, forming the central point around which scan activities were conducted.

The environmental scan was the first of four phases in project design and implementation. It involved a rapid and comprehensive needs-assessment process that researchers would then rely on to guide site selection, project focus and content, project implementation and evaluation and dissemination of information. The process provided a unique opportunity to implement and assess the utility of an environmental scan in public health.

Data Collection Activities and Results

The environmental scan combined high and low technology, ranging from analyzing databases to listening to community leaders. It included the analy-

Table 2. Studies Utilizing Environmental Scans In Public Health

Study	Purpose of Study	Data Collection Methods
Environmental Scan of Metis Health Information, Initiatives and Programs ¹³	Improve Canadian health outcomes	<ul style="list-style-type: none"> • Review annual reports and other key documents • Internet searches • Small scale review of pertinent literature • Phone interview with stakeholders
An Environmental Scan of Research Transfer Strategies ¹⁴	Identify a range of strategies for transfer of health-related research knowledge in Canada	<ul style="list-style-type: none"> • Cross-sectional survey of 17 research organizations from academic, policy think tanks and governmental sectors
Environmental Scan on the Health and Housing Needs of Aging Lesbians ¹⁵	Assess health and housing needs of aging lesbians in Canada	<ul style="list-style-type: none"> • Phone survey • Focus groups • Personal Interviews
National Literacy and Health Research Program Needs Assessment and Environmental Scan ¹⁶	Identify gaps in knowledge in literacy and health research in Canada	<ul style="list-style-type: none"> • Face-to-face and phone interviews with 40 practitioners, researchers and policy-makers involved or interested in literacy and health issues • Focus groups
Environmental Scan 2000: Issues Facing State Mental Health Agencies ¹⁷	Assess changes in state mental health systems in the United States	<ul style="list-style-type: none"> • Interviews with state mental health agency directors
Environmental Scan on Women's Health Information Resources in Ontario, Canada ¹⁰	Identify information resources essential to informed decision-making	<ul style="list-style-type: none"> • Internet and database searches • Focus group discussions

sis of aggregate data from sources, such as census and hospital databases, as well as the collection and analysis of new data on neighborhood assets and liabilities. The environmental scan data collection and analysis process took approximately one year and provided opportunities for both learning and community mobilization. Specifically, the environmental scan included eight data collection activities:

1. **Creating an Advisory Committee:** To develop a community-based model to increase cancer screening, it was essential to identify community leaders and mobilize community participation through the creation of an advisory committee.
2. **Neighborhood Census Tract Data:** Researchers reviewed maps of Baltimore City to determine which zip codes were encompassed in each catchment area of the hospitals in the scan.
3. **Assessing Community Services and Facilities:** Researchers identified existing services and facilities within a two-mile radius of each hospital using city web sites, metropolitan-area telephone books and initial visual observations.
4. **Examining Area Hospitals:** Researchers requested information on service areas and demographic information on patients from each hospital, to better understand utilization of health services within each scanned area.
5. **Maryland Cancer Registry:** Researchers used existing data from the Maryland Cancer Registry to create a baseline of prostate, breast and colorectal cancer relevance in the selected areas. The Registry collects, maintains and reports on cancer incidence and mortality in the State of Maryland.
6. **Neighborhood Scans:** Six trained research assistants conducted neighborhood scans to obtain a realistic sense of each area, particularly with regard to potential assets and liabilities within each area. The research assistants drove and/or walked block by block within a two-mile radius of each hospital and collected data and compiled both written and photographic records. Using the Internet, researchers then found and recorded the addresses of businesses, stores and religious organizations identified during the neighborhood scans.
7. **Focus Groups:** Focus groups were used to explore participants' knowledge, awareness, behaviors, opinions, beliefs, motivations and experiences regarding breast, prostate and colorectal cancer screenings. With the assistance of

Table 2. Studies Utilizing Environmental Scans In Public Health, continued

Study	Purpose of Study	Data Collection Methods
Diabetes Environmental Scan for Alberta ¹⁸	Gain understanding of existing programs and services, barriers and opportunities relevant to diabetes in Canada	<ul style="list-style-type: none"> • Literature review • Analysis of data on the incidence and prevalence of diabetes • Telephone survey of regional health authorities and corporate pharmacy representatives
Lessons Learned from Community-Based Public Health Initiative Evaluation Efforts ¹⁹	Identify evaluation barriers, effective outcomes, successful evaluation plan models and other lessons learned (United States)	<ul style="list-style-type: none"> • Literature review • Focus groups with key experts (evaluation and research professionals and participatory research professionals)
Environmental Scan of Organizational, Technology, Clinical and Human Resource Issues ²⁰	Identify telehealth-specific gaps in policies, procedures and guidelines in Canada	<ul style="list-style-type: none"> • Literature review • Stakeholder survey • Stakeholder key informant interviews
Teaching Cultural Competence in Healthcare: A Review of Current Concepts, Policies and Practices ²¹	Collect information to develop cultural competence curriculum modules for family physicians	<ul style="list-style-type: none"> • Literature searches • Internet searches • Phone interviews with experts in the field
Environmental Scan: Research into Genetic Testing Services and Related Matters ²²	Provide overview of policy documents and reports on genetic health services	<ul style="list-style-type: none"> • Analysis of government reports, policy documents and published reports • Internet searches • Personal or e-mail contact

health agencies in each of the target areas, a total of 12 focus groups involving low-, middle- and high-income participants were conducted.

8. **Key Informant Interviews:** Seventeen key informant interviews were conducted in the catchment areas to understand cancer-screening issues from the provider's perspective. Physicians, nurse practitioners, nurses, administrative assistants, patient service advocates, financial coordinators, information specialists and medical registrar staff were interviewed by trained interviewers using semistructured interview guides on issues related to barriers to cancer screening and access to care based on race/ethnicity, socioeconomic status and types of cancer.

In summary, the scan results enabled researchers to: 1) identify 23 perspective persons to serve on the advisory committee; 2) develop a community profile; identify community assets and liabilities; 3) develop a community profile of persons served by the area hospitals; 4) assess cancer rates by zip code; and 5) understand cancer-screening issues from the perspective of the target audience and service providers.

DISCUSSION AND CONCLUSIONS

As a result of the environmental scan, the Project Team developed and implemented a pilot prostate cancer-screening project to measure the effectiveness of the intervention with hard-to-reach, African-American men, 45 years of age or older. Key intervention components evolved out of the environmental scan process, including: 1) the hiring of a male community health worker to provide extensive face-to-face community outreach; 2) community collaboration; 3) training staff and volunteers to be sensitive to 'manhood' issues associated with prostate cancer-screening; 4) small group sessions and one-on-one pre-screening counseling; and 5) use of culturally sensitive education materials. During the nine-month intervention period, a total of 312 men were screened for prostate cancer compared to 169 men screened by another organization in a similar community in Baltimore under similar circumstances.

The environmental scan proved to be a useful needs-assessment tool, allowing for the acquisition and use of information about events, trends and relationships in the neighborhoods targeted for our cancer-screening project. The experience of the research team, combined with the review of the literature resulted in a better understanding of both the potential and limitations of environmental scans as a public health tool. In summary, this environmental scan involved a rapid and comprehensive needs-assessment process that researchers relied on to guide site

selection, project focus and content, project implementation and evaluation and dissemination of information. The characteristics of the environmental scan were more similar to the RARE model than more traditional community needs assessment and planning models, such as APEXPH and PATCH. The latter two models are often used by health departments and other governmental agencies which tend to have more resources than community-based and educational institutions, such as Morgan State University. Consequently, the environmental scan placed greater emphasis on using existing information, as well as the collection of new information using qualitative research methods.

Just as the RARE model was used to address HIV/AIDS, a devastating, preventable community health problem, the environmental scan was used to address prostate cancer—a preventable health problem whose statistics also created a sense of urgency in communities most affected by this disease. Therefore, the seriousness of prostate cancer among African-American males in Baltimore required a rapid data collection process that would enable decision-makers to quickly assess the problem and develop effective and inexpensive interventions that have a high probability for success. The environmental scan process also engaged the community's input in data collection and project development activities and captured information regarding the social, cultural, historical and political ramifications that contribute to the high rate of prostate cancer among African-American men in Baltimore.

Lessons Learned

In fulfilling the purpose of this study, the following lessons were learned:

1. The environmental scan can be a vital tool in public health practice to help identify areas for moving forward immediately and provide information to guide overall strategic direction of project development. By conditioned viewing and searching, the team was able to both collect information and make decisions regarding the degree to which to intrude into the scanned environments.
2. The environmental scan is a useful process through which to engage communities, providing various opportunities to ensure ongoing contact between the research team and members of the scanned communities. The ASAE review identified this kind of consultative process as a crucial benefit of environmental scanning, ensuring dynamic and responsive action.
3. The environmental scan can be cost-effective because it can be designed according to specific research and community needs, based on avail-

able resources. Rather than compromise the scope or quality of data collected, this environmental scan resulted in a broad, yet manageable and comprehensive research process.

4. The environmental scan is a good first step, resulting in a "snapshot" of the project environment. Pertinent data and information were collected from a wide variety of sources in a timely, manageable way that provided the team with what it needed to move forward.
5. The environmental scan has limitations and did not, by definition and design, provide researchers with an in-depth understanding of each community examined. Rather, it raised awareness of questions for further study and clarification. It was important for the team to keep detailed records of each scan activity, particularly with observational or subjective data, so as not to discount any findings and to ensure future investigation in areas identified as priorities. The flexibility that makes the environmental scan so accessible and feasible in various sectors can also be a liability. The lack of clear definition or methodology for the environmental scan could weaken its efficacy for public health practice if it were confused with other research tools or processes, such as a comprehensive needs assessment.

In conclusion, the environmental scan has considerable potential to be a creative, responsive, cost-effective and mobilizing tool for public health practice. Researchers also found that the environmental framework developed by Choo¹¹ can be easily adapted to fit traditional needs-assessment models, such as APEXPH and PATCH. However, further application and critical review are necessary to make it a more effective public health tool and research methodology. Questions to be answered by future research are the following:

- What environmental scan conceptual model can be developed for public health to illustrate the use of Choo's scanning modes (undirected viewing, enacting, conditioned viewing and searching)?
- What guidelines are necessary to effectively use elements of Choo's model for public health purposes?
- What skills and resources would be needed if such a model were created?

This model refining process should not undermine the flexibility or utility of the environmental scan. However, it should help public health practitioners ensure a rigorous and comprehensive process similar to that required for other research methodologies and tools, particularly those used to address

devastating health problems in communities requiring a timely response and cost-effective interventions with a high probability for success.

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