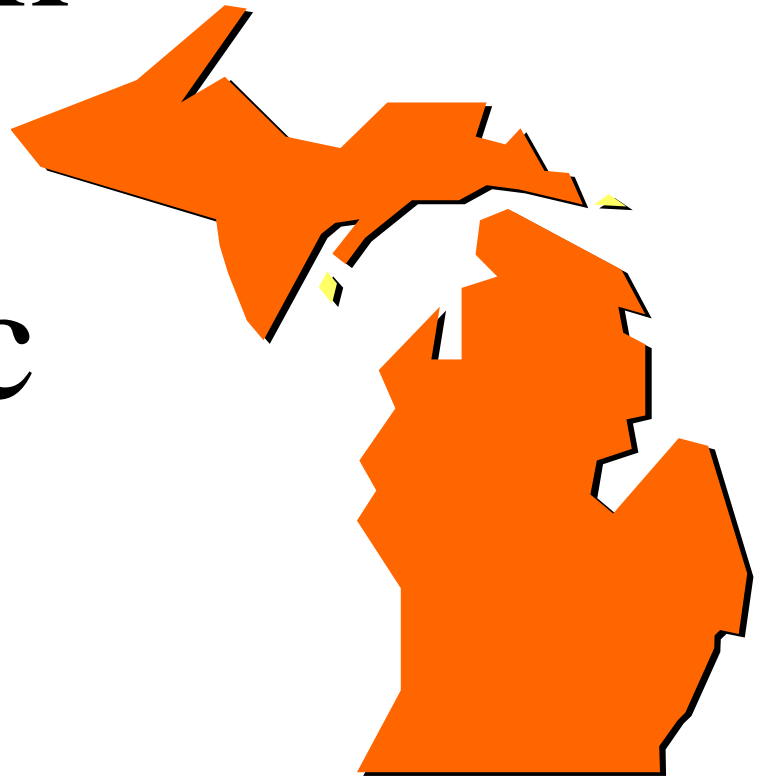


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Mission Statement

The mission of the Michigan Journal of Public Health is to promote public health practice, research and policy with specific focus on Michigan and the Great Lakes Region. We encourage contributions from the field of practice, original research, opinion and commentary. It is the expressed interest of this Journal to encourage dissemination from the field of public health practice.

Statement of Affiliation with the Michigan Public Health Association

The Michigan Public Health Association (MPHA) is the organizing entity of the Michigan Journal of Public Health (MJPH) and is responsible for the publicizing and publication of the journal. The members of the Editorial Board are solicited from among public health practitioners and researchers in Michigan, and approved by the Board of MPHA. MJPH Editorial Board members must also be members of MPHA. Members serve three year terms, but service may be terminated either through a letter of resignation to the Editorial Board or upon a majority vote of the Board of MPHA.



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STYLE:

APA, 12 point font, Times New Roman double spaced, and, 1” margin. We offer a variety of submission categories in order to welcome a varied audience within public health.

SUBMISSION CATEGORIES:

Research and Practice Articles (up to 15 pages or 3500 excluding references, words in main text, a total of 4 standard digital photographs/tables/figures, and a structured abstract of 180 words) report the results of original quantitative or qualitative public health research. These may include, but are not limited to: evaluations/reports, demonstrations of innovative programs, best practice, exemplars/community-engaged scholarship, service learning, emerging problems, evidence-based practice and preliminary findings.

Commentaries (up to 10 pages or 2500 words in main text, 2 tables/figures, and an unstructured abstract of 120 words) include scholarly essays, critical analyses, and policy papers.

Analytic Essays (up to 15 pages or 3500 words excluding references, in main text, a total of 4 standard digital photographs/tables/figures, and an unstructured abstract of 120 words) provide a forum for critical analyses of public health issues from disciplines other than the biomedical sciences, including, but not limited to: the social sciences, human rights, and ethics.

Briefs (up to 4 pages or 500 words excluding references, in main text, 2 tables/figures, and an abstract of up to 80 words) provide preliminary or novel findings. (*What about a section exclusively for new book reviews?*)

Editorials (may not exceed 1,200 words) are solicited based on recommendations from the Editorial Board, or members of MPHA. All recommendations require approval from the MJPH Editorial Board.

Letters to MJPH (must not exceed 400 words and contain no more than 10 references) are encouraged by our readers. Letters may include any public health topic.

SUBMISSION FORM:

All authors must sign and submit via surface mail the submission form along with a draft article. The form is available at:

<http://www.mipha.org/PHJournal/MJPH%20MANUSCRIPT%20SUBMISSION%20FORM.pdf>



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EDITORIAL

Welcome to Volume Two of the *Michigan Journal of Public Health*. You will have noticed this is Issue One, the Winter Issue. We are once again late in publishing, although we have reduced the delay from our Summer 2007 Issue, which was published in late Autumn. We hope to close the gap and publish the Summer 2008 issue prior to the autumnal equinox!

We are pleased to present four great articles, starting with our invited Guest Editorial from Cathy Raevsky, Chair of the Board for the Michigan Association for Local Public Health, as well as the Health Officer of the Kent County Health Department. Cathy presents a great discussion concerning three accreditation pilots in Michigan, while also expounding on our state's influential role regarding the development of local public health accreditation efforts at the national level.

Following Cathy's invited editorial, we present the first of a series of invited historical articles from Robert Mosher and Elaine Beane. Robert Mosher is a retired hospital lab director, Elaine Beane is the current Director of the Center for Advancing Community Health at the Michigan Public Health Institute. Bob and Elaine's first article presents the framework for their future articles on a rich, fascinating and detailed history of public health in Michigan from its formation through to the early years of the last century. They have been engaged in the background research that is culminating in this series for several years, and we are pleased and honored to have these articles published within *MJPH*.

We wrap up this issue with two stellar research and practice articles. The first is on cancer literacy, and represents cutting edge research in this area in Michigan. The outcomes of this work push forward the ability of public health practitioners to test cancer literacy without requiring extensive interviewer training. The second article is a groundbreaking study of tobacco use among middle school students in a major urban area, Detroit. There have been few studies like this done across an entire young urban population and we are excited to be able to present this work.

A few administrative notes.

The MJPH can now be found on its own web page, simply go to www.mipha.org and click on "Michigan Public Health Journal." This new home also contains the two previous issues, an updated Board member list, author guidelines, and the MJPH manuscript submission form.

As always, you may send me your letters and feedback (please use the form at the end of of this issue). Send these letters and feedback to clinegr@gvsu.edu.

Greg Cline, PhD
MJPH Editor



GUEST EDITORIAL

The Laurels of Local Public Health

Cathy Raevsky

In a recent column discussing the work of local public health, the president of the National Association of County and City Health Officials (NACCHO), Robert Pestronk, stated, “Our job is to improve health outcomes by preventing disease, protecting people, and promoting health. We should always be looking for better ways to do this.” In order to best serve and protect the health of citizens, local health departments must avoid resting on our laurels. Rather, we must consistently look to these laurels in the face of ever-changing threats to public health. This past year, four local health departments in Michigan set out to do just that.

In March 2007, representatives from Berrien, Genesee, Kent, and Ottawa County Health Departments attended a two-day learning session on Continuous Quality Improvement (CQI). The session was part of the Michigan Accreditation Continuous Quality Improvement Collaborative (MACQIC) in which each local health department was provided a \$10,000 grant to implement a year-long CQI project within their local jurisdiction. After a steady diet of alphabet soup (PDSA, RCI, SMART, etc.) and learning many new concepts, attendees understandably were left with their heads spinning. Driven by the desire to improve, however, these four local health departments committed the time they needed to learn the CQI process and applied that knowledge in the completion of their local projects.

Raising Awareness of Public Health in Berrien County

The Berrien County Health Department (BCHD) provided the perfect example of using data to drive improvement. Results from a Behavioral Risk Factor Survey in 2005 indicated that awareness of public health services was low among county residents. In response, BCHD partnered with a local newspaper targeting Benton Harbor - a community of high need, low socioeconomic status, and great health disparity - to inform, educate, and empower citizens about health issues and the role public health plays in addressing these issues. BCHD and leadership from the local newspaper, the Benton Spirit, planned the most effective way to impact the greatest number of residents using a 12-month promotional campaign. Information was distributed through both Benton Spirit print and electronic media (www.bentonspiritnews.com) in order to reach a large audience.

The impact of BCHD’s project went beyond the increased publicity of health department services. An improvement in the timeliness and quality of the articles that were submitted led to a decrease in the amount of time spent editing initial drafts. BCHD also increased the number of individuals participating in the writing of articles. The time invested in this CQI process has increased capacity for future projects involving the media and has established the framework for additional quality improvement projects in Berrien County.



The CQI Veterans: Genesee County Health Department

The Genesee County Health Department (GCHD) is not new to CQI efforts. In fact, the GCHD first introduced concepts of quality improvement to its employees more than fifteen years ago. In the years that followed, GCHD pursued opportunities to incorporate CQI into its corporate culture. They have used QI methodology in preparation efforts for pandemic influenza and to improve services to sexually transmitted disease clients.

GCHD identified two additional opportunities for improvement as part of MACQIC. One of these opportunities was identified through a 2006 evaluation of the electronic school disease surveillance system. A time study indicated that GCHD staff spent an average of 14.25 hours per week compiling reports from schools. Further analysis also revealed that 46.4% of these reports contained errors requiring correction by the staff. CQI tools were utilized to identify the two major errors that were occurring in the reports and corrective action involved a revision of the online reporting tool based on surveys of system users. These improvements led to an 80% reduction in the amount of time required for report processing. Through this CQI process, GCHD has increased its organizational capacity for communicable disease surveillance and continued its efforts to strengthen its culture of quality improvement.

Reaching Out to Physicians in Kent County

The Kent County Health Department (KCHD) sought to strengthen the education received by patients infected with hepatitis C. Annually, KCHD receives nearly 400 reports of hepatitis C via the communicable disease surveillance system. Educating this patient population has proven difficult for KCHD as contact information submitted via the surveillance system is often not up to date. Additionally, interviews with key informants with knowledge of the patient perspective indicated that patients infected with hepatitis C often do not receive sufficient information from their physicians to effectively manage their disease. KCHD's project focused on reaching hepatitis C patients by reducing the barriers faced by physicians in providing patient education.

Based on the results of a provider survey that identified these barriers, KCHD hosted a two-hour morning training session on the role of the primary care physician in hepatitis C diagnosis and referral. The session was conducted by the chief of gastroenterology and hepatology at Henry Ford Hospital. KCHD provided each attendee with a resource book containing multiple copies of Hepatitis C education materials on an extensive variety of topics. In order to measure the effectiveness of this effort, KCHD instituted an enhanced surveillance questionnaire to collect information from patients regarding the education received from their provider. Comparing data collected after the training to baseline data will help determine if an improvement was realized. No matter the extent of improvement realized, however, KCHD's CQI journey has strengthened internal collaboration and organizational capacity for future educational outreach efforts.

Creating a Culture of Quality in Ottawa County

After undergoing several changes in leadership, the Ottawa County Health Department (OCHD) set out to transform the organization from a traditional "silo" approach to a fully integrated and



holistic organizational model. OCHD conducted two surveys, one for line staff and one for upper level management, to establish a baseline measure of their organizational health. Together, the surveys evaluated the organization on seven categories including leadership, strategic planning, customer and market measurements, human resources, process management and business results. Responses to the survey identified themes of concerns in the areas of communication and leadership development. Focus groups were scheduled between staff and administration to provide a means for communication and to identify root causes to the issues identified. Leadership staff have created programs, including a leadership challenge and enhanced use of the county's intranet for communication, to improve upon the identified gaps.

OCHD's project is one step of a longer process in the agency's evolution to become an organization of excellence. They believe that the heart of a strong organization is its relationship with employees, who ultimately impact customers served. If an organization does not have the internal capacity through a strong culture of quality, then it cannot fully address public health issues. Customer service, teamwork, leadership development, training and communication all impact the quality of the internal organization which invariably affects the quality of public health services delivered.

Adopting CQI a Sound Investment

Learning new concepts is never easy, but in order to remain progressive in the world of public health, it is necessary. No matter how great of an improvement was realized through the completion of these projects, the true dividend of this investment was the enhanced knowledge of the CQI process and the tools available to guide improvement projects. As Benjamin Franklin said, "The best investment is in the tools of one's own trade." Through their participation in MACQIC, these four health departments have acquired skills that can be applied to future projects that further strengthen local public health.

The MACQIC steering committee has created an extensive quality improvement guidebook, including descriptive case studies of the four Michigan projects. The guidebook can be accessed at www.accreditation.localhealth.net. All of us involved in this pilot of CQI processes hope that our local health colleagues in Michigan will consider adopting CQI processes to ensure new laurels in their future.

Cathy Raevsky is the Health Officer of the Kent County Health Department and the current Chair of the Board of the Michigan Association for Local Public Health.



INVITED ARTICLE

**The Beginning of Public Health in Michigan
Michigan State Board of Health Reports, 1873-1900**

Robert E. Mosher, PhD

G. Elaine Beane, PhD

Introduction to a Series of Papers

This is the first of a series of short papers drawn from the Michigan State Board of Health (MSBH) Sanitary Convention Reports, Annual Reports, and Supplements from 1873 to 1900. The published reports, now 108-135 years old, have been scanned using Optical Character Recognition (OCR) software. Since OCR does not work well on aged paper covered with small printing, repeated proof-reading and correcting were necessary. The selections reproduced here are as accurate as we can make them. The compilation of MSBH publications that are used as the basis for this series of papers has been made available to the Michigan Public Health Association.

Our intent is to assemble excerpts from MSBH Reports from 1873 through 1900, focused on specific public health concerns. We will provide some background information and comparisons, but the MSBH authors will speak in their own words.

- This first paper looks at the genesis of the MSBH, the founders and the effect of their experiences during the Civil War on their public health interests.
- The second paper will deal with the travails of the new MSBH and its efforts to structure the flow of information and manage its relations with the 1,400 local Boards of Health.
- Later installments will focus on specific problem areas – water, food, drainage and sewage, buildings, diseases, medicines, and nuisances – which encompass anything from slaughterhouses to cholera outbreaks. We plan to include one of the nuisance reports at the end of future installment, to give readers a sense of the problems of that time.

MSBH Annual Reports and Sanitary Convention Papers

The papers presented at the meetings of the MSBH were authored primarily by members of the Board or by invited experts. Papers presented at Sanitary Conventions (held across the State) were authored partially by the members of the MSBH and partially by interested members of the local community – physicians, clergy, politicians, and occasionally the leaders of women’s societies. The quality of the papers and their accessibility vary widely: some appear as though they were written yesterday and are immediately relevant; others are embedded in a past we can no longer imagine, with ideas and references intended to be classical and religious, but not related to the topics as we now understand them. Several members of the MSBH authored publications that fit in both of these categories – showing us that intelligence and education are not always effective in challenging cultural assumptions and convictions. As you read excerpts from these 130-year-old papers, please keep in mind that the worldview of the MSBH authors



was embedded in the knowledge, economy, politics, religions, and Victorian sensibility of their time.

ACT NO. 81, LAWS OF 1873

“AN ACT to establish a State Board of Health, to provide for the appointment of a Superintendent of Vital Statistics, and to assign certain duties to Local Boards of Health.

“SECTION 1. *The People of the State of Michigan enact*, That a board is hereby established which shall be known under the name and style of the ‘State Board of Health.’ It shall consist of seven members as follows: Six members who shall be appointed by the Governor with the consent of the Senate, and a secretary, as provided in section four of this act.”ⁱ

“SEC. 2. The State Board of Health shall have the general supervision of the interests of the health and life of the citizens of this State. They shall especially study the vital statistics of this State, and endeavor to make intelligent and profitable use of the collected records of deaths and of sickness among the people; they shall make sanitary investigations and inquiries respecting the causes of disease, and especially of epidemics; the causes of mortality; and the effects of localities, employments, conditions, ingesta, habits, and circumstances on the health of the people. They shall, when required, or when they deem it best, advise officers of the government, or other State boards, in regard to the location, drainage, water supply, disposal of excreta, heating and ventilation of any public institution or building. They shall from time to time recommend standard works on the subject of hygiene for the use of the schools of the State.”ⁱⁱ

“SEC. 4 At their first meeting, or as soon as competent and suitable person can be secured, the board shall elect a secretary, who shall, by virtue of such election, become a member of the board, and its executive officer.”ⁱⁱⁱ

“SEC. 5 The secretary...shall keep his office at Lansing, and shall perform the duties prescribed by this act, or required by the board. He shall keep a record of the transaction of the board; shall have the custody of all books, papers, documents, and other property belonging to the board, which may be deposited in his office; shall, so far as practicable, communicate with other State boards of health, and with the local boards of health within this State; shall keep and file all reports received from such boards, and all correspondence of the office appertaining to the business of the board. He shall, so far as possible, aid in obtaining contributions to the library and museum of the board. ...He shall collect information concerning vital statistics, knowledge respecting diseases, and all useful information on the subject of hygiene, and through an annual report, and otherwise...disseminate such information among the people.”^{iv}

“SEC. 10 The secretary of the State Board of Health shall be the Superintendent of Vital Statistics. Under the general direction of the Secretary of State, he shall collect these statistics, and prepare and publish the report required by law relating to births, marriages, and deaths.”^v



The Michigan State Board of Health (MSBH) was authorized and convened in 1873, after three full years of organizational and political efforts seeking its formation. Dr. Henry B. Baker (who became the Secretary and Executive Officer of the MSBH and whose job description comprises much of Act No. 81 of 1873) was a strong supporter of the legislation, and worked continuously for its passage. Dr. Baker had served in the hospitals of the Civil War, and knew from experience that an organized approach to sanitation could reduce deaths. Michigan already had a State Board of Agriculture that could serve as a model for a State Board of Health. After persuading Dr. Ira H. Bartholomew – his partner in medical practice – to join in the quest for a health board, Dr. Baker enlisted the Michigan State Medical Society (MSMS) as supporters. In 1870, Dr. Bartholomew was elected President of MSMS, and appointed Dr. Baker to “assist the Secretary of State in the compilation of vital statistics in accordance with the State law.”^{vi}

Earlier that year, Dr. Baker had received a report from the country’s first state board of health (Massachusetts) and had drafted a bill providing for a State Board of Health in Michigan. “Soon after the fall election he had a conference with Senator-elect I. M. Cravath of Lansing, who introduced the State Board of Health bill and ...wrought vigorously for the passage of this proposed legislation. The bill was not favorably reported from the committee to whom it was referred, possibly because one member of that committee was a dealer in drugs and patent medicines, and may have thought the proposed legislation might interfere with his business.”^{vii}

Reviewing this failure, Dr. Baker and his committee of supporting physicians a) realized that naming the members of the Board in the bill had helped to defeat it, and b) they needed to develop public support for passage of the bill. For the next two years, they worked to draw attention to two carefully selected public health dangers – illuminating oils and poisonous wall papers. Both led to deaths and injuries among the wealthy as well as the poor, and both could be presented to the public in interesting ways, some quite spectacular.^{viii}

The physicians also realized that they needed additional political support. “The retiring and incoming governors were persuaded to make favorable recommendations in their messages to the legislature. Having in mind the proposed establishment of the Board, Doctor Bartholomew was elected to the legislature. He introduced a bill that differed from the preceding one in that it did not dictate ...who should be appointed members of such a Board. Professor Kedzie lectured before the legislature on ...poisonous wall papers, dangerous illuminating oils, and deaths from typhoid fever....During some of Doctor Kedzie’s experiments showing the explosiveness of light oils, legislators retired from the hall stating that they did not care to risk their lives.”^{ix}

It is important to note the contribution of Dr. Bartholomew to the successful preparation for approval of the MSBH legislation; he had been the first mayor of Lansing. “During the early years of the existence of the city of Lansing, and for many years, Dr. Bartholomew was a conspicuous and honored citizen. He served as mayor of the city three times in succession.”^x Doubtless his time in office had taught Dr. Bartholomew much about the process of mobilizing a constituency and gaining the positive attention of legislative bodies. Dr. Baker chose his partisans well.

The Legislature was finally persuaded that a State Board of Health could be tolerated after Dr. Robert C. Kedzie’s spectacular demonstration of lighting-oil flammability at the Capitol



Building. While highly flammable lighting-oil was not the most pressing of public health problems, it made the point that the marketplace was dangerously out of control, people were dying in flames, and that fires involving entire towns – or even Legislative chambers – could be started by one volatile cup of lamp oil.

The first MSBH was an activist group. They investigated problems, sought to build a constituency, and (to the degree feasible) pressured the local Boards of Health and the State Legislature to improve the conditions for health. The MSBH had no statutory authority to fix health problems, a function that was vested in the approximately 1,400 local Boards of Health. This set up a dynamic that is still relevant today.

Since the germ theory of disease was still being debated during the late 1800s, and there were few effective treatments for diseases (lots of patent medicines, but few effective treatments), most of the energies of the MSBH were focused on environmental problems that were thought to affect health. Environmental problems were legion and are still shocking in their severity. The efforts of the MSBH to improve the sanitation of the land, water, air, and buildings, and to place some controls and standards on patent medicines, food, lighting-oil, and other dangerous aspects of life were not well received by those whose livelihood depended on maintaining the *status quo*. Commercial interests with contacts in the Legislature continued sporadic efforts to disband the MSBH, evict them from their rooms in the Capitol Building, and rescind the minimal funding for the Secretary and publication of MSBH reports.

The MSBH attempted to rally support and involve important local citizens in the work of health by holding Sanitary Conventions in the major cities and county seats of Michigan. The Conventions were modeled after the Agricultural Conventions that were used by the Michigan Board of Agriculture and the Agricultural College to both disseminate and gather information. This was a clever approach to building a constituency, and is still employed today; now we call such meetings conferences or town hall meetings, but the effect still is to engage local leaders in the issues. The members of the MSBH performed tremendous amounts of work, in the field, the laboratory, and the lecture hall. All of this work was voluntary, and was continued for 25-30 years with no monetary compensation whatsoever.

It would be difficult today to find a group so broadly intelligent, committed to their goals, willing to work long hours for little-or-no-pay, willing to accept vilification when necessary, and willing to share whatever credit there might be with any locally significant figure willing to join in the quest. In their own way, they were heroes.

The First Michigan State Board of Health

Governor John J. Bagley, who served from 1873 to 1876, commissioned the following persons as members of the MSBH:^{xi}

Homer O. Hitchcock, MD (Kalamazoo)
Zenas E. Bliss, MD (Grand Rapids)
Robert C. Kedzie, MD (Lansing)
Rev. Charles H. Brigham (Ann Arbor)
Henry F. Lyster, MD (Detroit)



Rev. John S. Goodman (East Saginaw)

At their first meeting on July 30, 1873, in the offices of the Secretary of State, Dr. Hitchcock gave an introductory address that outlined the work of the Board and justified that work. It is a good speech, emphasizing the Board members' responsibilities, comparing the societal costs of the Civil War to the costs of sickness and death, and exhorting the Board to become warriors against disease. It also is, in the style of its day, wordy and a bit extravagant in its language. Here are excerpts from Dr. Hitchcock's speech (including, near the end, oratory from Dr. Baker).

“For some years some of us have been laboring earnestly for the establishment of such a Board in this State. The arguments for its establishment were many and weighty, and the words free and earnest with which we urged it. As it is far easier for most people to show that *something ought to be done*, than definitely to point out *what that something is*; to lay burdens upon others' shoulders than to assume them themselves, so we found real pleasure in urging the preparation of a burden for *somebody's* shoulders, not stopping to think ‘what if it should be let down upon *our own*?’ And I imagine that each one of us received a little shock one day and, for a time at least, an abatement of his zeal in the cause of Preventive Medicine when our good Governor gently laid upon us his hand and the burden of making a State Board of health *popular with*, because *useful to* the people of the State.”^{xii}

“People are accustomed to look upon the loss of life and treasure in time of war as something fearful to contemplate; one of the greatest calamities to the State. And the whole story of the State's loss by war is not told in the number of lives and the amount of treasure destroyed, but society is demoralized, families are broken up, marriages and births are prevented, the constitutions of many of the young men are broken by the hardships of the field or the hospital, and they are thus disabled to the State, and many of them transmit to their children enfeebled constitutions, susceptible to disease, thus securing that the race, so far as they are concerned, shall soon run out.

“War, with all its attendant calamities, destruction of life and property, demoralization of society, and its tendency to the extinction of the race can and ought to be averted....But war, in which this State has materially suffered, has occurred but once in the 36 years of her history as a State, and has therefore brought to her an average loss for each of those years, of only about 600 men, and, in round numbers, \$500,000 in treasure; whereas, during those very four years of war and each preceding and succeeding one, there have been preventable causes of disease death silently at work that have cost the State far more in lives and treasure...”^{xiii}

“There is in the medical profession a whole army of noble, devoted men engaged in a hand-to-hand fight with our great enemy – disease. All honor to their work! But our work must not be confounded with theirs, and our reports must not seek to be receipt-books, mere guides to the cure of disease.

“But our Governor has made us the advanced guard of this army, placed us on this advanced picket line that we may give warning of the very first approaches of the enemy;



indeed, that we may go as scouts even into his very camp, and learning all the secrets of his strategy, may there strip him of his power by taking away the very pabulum on which he feeds....”^{xiv}

“I bespeak from every member of this board, harmonious, earnest, faithful, though unpaid, labor in this cause...In the words of one who, I venture to hope, will be chosen the secretary of this board, ‘Grander victories, of greater importance to the people, remain to be achieved than any which have heretofore resulted from warlike methods. To the peaceful hero who shall call forth and so marshal facts and generalize the scattered forces of knowledge as to lead to a victory over any one of the prominent causes of death which now annually destroy our citizens by hundreds or by thousands, humanity may well accord a higher praise than to the most successful of warlike generals.’...Gentlemen, I welcome you to this work, grand, self-sacrificing, and sublime.”^{xv}

The Board then elected Dr. Henry B. Baker as permanent Secretary of the MSBH and Superintendent of Vital Statistics, and Dr. Hitchcock as the MSBH President. “It is probable that (Dr. Bartholomew) would have been appointed among the first members of the State Board of Health except that, being a member of the legislature, he was therefore not eligible.”^{xvi}

The MSBH and the Civil War

The United States Civil War from 1861-1865 was the first American opportunity for application of improved military health practices developed in Europe during the Crimean War of 1854-1856. A team of 38 British nurses lead by Florence Nightingale was sent to the Crimea by the British Sanitary Commission; this innovation demonstrated that the usual high mortality rate among military wounded could be sharply reduced.

“Nightingale moved quickly to have brought ashore the stalled shiploads of medical supplies, cots, and mattresses into the wards. Both the wards and the men who filled them were scrubbed down, and fresh, nourishing meals were brought to the half-starved soldiers. Nurse Nightingale’s ongoing sanitation measures soon reduced the ward death toll from the usual 42 percent to 2 percent.”^{xvii}

There had been medical advances as well, with improved surgical instruments and techniques and the development of anesthesia. All of these advances were applied during the Civil War, where battles produced tens of thousands of casualties; Gettysburg alone produced over 100,000 casualties, two-thirds of them wounded soldiers needing surgery and hospital care.

“About the only public health work that had been done in this country ...had been done in the army. The army physician’s pay did not depend upon the number of patients he had, but the extent of his labors did have a direct relation to the number of his patients. The instructions from the Surgeon-General’s office were voluminous and related almost exclusively to the prevention of sickness among soldiers. Three years experience as an army surgeon undoubtedly gave Doctor Baker the idea that a State public-health service would be of value.”^{xviii}

All of the physicians appointed to the first MSBH had served in the Civil War in one capacity or another, as had many of the subsequent Board members. It was a life-changing experience,



traumatizing but energizing; once you had observed the things that could be done to reduce disease and death among soldiers in huge encampments and in hospitals, you wanted to take that knowledge and apply it in civilian life. The army being more organized and controlled than civilians, this task was not an easy one. Dr. Baker, whose tenacity, zeal, and energy drove the process resulting in the MSBH, had a background and personality that uniquely fitted him for this task.

Henry Brooks Baker, AM, MD, was born in 1837 in Brattleboro, Vermont; his childhood was difficult. His father died and his mother remarried when young Henry was three years old. The family moved first to Massachusetts and then to Michigan, settling in Mason in 1850. At about that time, Henry (age 13) left home and worked to support himself, attending school at intervals. After teaching school in Illinois, he returned to Michigan in 1861; he read medicine with Dr. I. H. Bartholomew in Lansing and attended lectures in medicine and in chemistry at the University of Michigan. With this background, in 1862 he enlisted in the 20th Michigan Infantry Volunteers, Company A, a unit composed largely of State capitol clerks. “He served during the first two years as Hospital Steward ...being in reality an assistant at the operating table whenever and wherever there were battles in which his division was engaged. He was present at about every battle in which his regiment took part.”^{xix} In 1863-4, he acted as Assistant Surgeon, and in July 1864 he became the medical officer of the regiment, a position he held until the end of the war.

After his 1866 graduation in surgery from the Bellevue Hospital Medical College in New York City, Dr. Baker practiced medicine in Lansing with Dr. Bartholomew and then in Winona (now Bay City). He returned to Lansing in 1870 to compile the State Vital Statistics (as a representative of the MSMS), and to take up the battle for establishing the MSBH. Dr. Baker thus had experience in early self-sufficiency, teaching school, keeping records (as Hospital Steward), battlefield surgery, hospital organization and management, and general medical practice. He was driven, determined, and organized; he had also decided that a life in public health and vital statistics was more appealing than a life in surgical practice.^{xx}

Homer O. Hitchcock, MD, was born in Westminster, Vermont in 1827, the youngest son in a family of nine children. A speech impediment prevented him from becoming a Congregational minister, but he overcame it to deliver one of the commencement orations at his 1851 graduation from Dartmouth College in New Hampshire. “His courage and unfaltering will carried him through triumphantly.”^{xxi} He was principal of Orford Academy, NH, for two years, then studied medicine with his brother, Dr. Alfred O. Hitchcock, in Massachusetts. He graduated in 1855 from the College of Physicians and Surgeons in New York City and for a time was a resident medical officer of Bellevue Hospital in that city.

In 1856, he married Fidelia Wellman of Cornish, NH, and they moved to Kalamazoo, Michigan. During the Civil War, he was a volunteer surgeon to the board of enrollment and for many years after the war, he was examining surgeon to the United States pension bureau. He was the first appointee to the new MSBH in 1873, and served as President and member until 1880. Dr. Hitchcock did not go to war, but he certainly observed the poor health of those enlisting and the often miserable condition of veterans seeking military pensions. He was an advocate for hygiene, sanitation, and education all his life, dying at age 61 in 1888.



Robert Clark Kedzie, AM, MD, ScD, was born at Delhi, New York in 1823. He received an AB degree in chemistry (1847) from Oberlin College, and in 1851, he received an MD in the first graduating class of the newly formed University of Michigan Medical School; interestingly, his thesis concerned the epidemiology of a cholera outbreak in Kalamazoo. He practiced medicine in Kalamazoo and Vermontville, Michigan for eleven years. In early 1862, he enlisted in the 12th Michigan Infantry as a Surgeon. During the Battle of Shiloh (April 1862), he was captured and imprisoned. He was paroled, as were many officers of both armies, but resigned his commission because of poor health.

At the age of 40, he made the decision to change his profession and became Professor of Chemistry at the Michigan Agricultural College, moving his family onto Faculty Row. He had a long career at MAC, was revered as a great teacher, and was a major figure in the growth and development of what is now Michigan State University. He collected meteorological data and set up systems for broader gathering of this data from 1864 to 1902. At the urging of Dr. Baker, he developed methods and systems for observing atmospheric ozone levels from 1871 to 1880.

Dr. Kedzie was involved with the Michigan State Board of Agriculture, and was an early Baker recruit to the process that led to legislative authorization of the MSBH. He was appointed to the first MSBH, and served for a total of eight years, being President of the Board for the last four. He also was President of the Michigan State Medical Society, the American Public Health Association, and the Sanitary Council of the Mississippi Valley, Vice President of the American Medical Association and the American Association for the Advancement of Science, and a Fellow of the American Academy of Medicine. When he died in 1902 at age 79, he was memorialized by the MSBH as “this brilliant, gifted, useful and truly good man.”^{xxii} Traumatized and sickened by the war, he reinvented himself in an extraordinarily successful manner, going on to become a leader in many different fields.

Henry Francis Lyster, AM, MD, was born in Ireland in 1837 into an educated family that moved to Detroit, Michigan, when he was nine years old. Both of his degrees were received from the University of Michigan, the first in 1857 (when he was 20) and the second in 1859. He enlisted in the Fifth Michigan Infantry in 1861, and served as Assistant Surgeon, Surgeon, and Brigade Surgeon through the end of the war in 1865. He was a surgeon through 17 major battles, including Bull Run, Gettysburg, and the Wilderness. Returning to Detroit, he had an extensive medical practice and was broadly active in the medical community, being a member of city, county, and state Medical Associations, the National Association of Railway Surgeons, and the National Association of Medical Directors of Life Insurance Companies. He was a founder, president, and professor of the Michigan Medical College and taught at other medical schools, including the University of Michigan.

As a member of the first MSBH, he was interested in vital statistics and early actuarial methods, drainage and its influence on health, alcohol and its health effects, and the prevention of consumption. He had encountered all of these health factors in his Army service, and never let go of them, as is shown by the statistics he compiled for insurance companies. His health was poor for several years before his death at age 58, probably of consumption. He died on a Michigan Central train while on his way to Santa Fe, New Mexico, in search of a more beneficial climate.^{xxiii}



Zenas Emory Bliss, MD, was born in Madison County, New York, in 1832. He graduated from the Medical Department of the University of Michigan in 1855 and was a physician and surgeon practicing in Grand Rapids. In 1861, he volunteered as Assistant Surgeon of the Third Michigan Infantry; he later was promoted to surgeon and to Brevet Lieut. Col, US Volunteers. After the war, he returned to Grand Rapids, and in 1873 was appointed to the first MSBH. His major public health interest was case histories of trichiniasis (a food-borne parasitic disease). Dr. Bliss served on the MSBH for a little more than a year; because of seriously impaired health, he resigned the office in September 1874. He died less than 3 years later in 1877 at age 45. His life is an illustration of Dr. Hitchcock's comment on war: "And the whole story of the State's loss by war is not told in the number of lives and the amount of treasure destroyed, but society is demoralized, families are broken up, marriages and births are prevented, the constitutions of many of the young men are broken by the hardships of the field or the hospital, and they are thus disabled to the State."^{xxiv}

Consider the ways in which all of these physicians, some young, some middle-aged, were affected by the Civil War, and through them, the war affected the first MSBH. The positive effects of the war were improved technologies and the demonstrated power of organization; the negative effects of the war were those listed by Dr. Hitchcock.

- Dr. Baker: Once he had made up his mind to enlist, Henry Baker (then working as a teacher) quickly got sufficient training that he could qualify for a hospital post, and once there he worked tirelessly to acquire surgical experience and promotion. Further surgical education after the war made him qualified to practice, but he did so for only a short time. He kept his profession, but exercised it through the collection and analysis of statistics and the building of public health knowledge and systems. Dr. Baker proved himself to himself, but on a different battlefield.
- Dr. Hitchcock: Coming from an established family, Homer Hitchcock was first a minister-to-be, then a teacher, and finally a physician; he shared a Bellevue Hospital connection with Dr. Baker. His own strength and determination were such that, while the Civil War disrupted his life, he did not leave home or his practice. He witnessed the effects of the war, but did not experience them. Firmly grounded in his family and community, he seems the strongest and most balanced personality among the MSBH members. He was a mentor for Dr. Baker, and named one of his sons "Henry". Dr. Hitchcock stands as the father figure for the Michigan State Board of Health.
- Dr. Kedzie: Robert Kedzie left a well-established medical practice to go to war, and was captured during Shiloh, his first major battle. Even for officers, POW camps were disease-ridden and hard to forget. Once released, he fell back on his undergraduate training in chemistry, and offered his services to the still-small Michigan Agricultural College as a Professor of Chemistry. He was a great lecturer and teacher, with a flair for the dramatic, as he showed the Legislature in 1873. He had broad interests in the patterns of climate and disease, the chemistry of food and patent medicines, and the ways in which the environment, nutrition, education, and health interact. He and Dr. Baker shared interests in climate, health statistics, and chemistry, and were allies -- the powers behind the development and growth of the MSBH.
- Dr. Lyster was a very bright young man with multiple degrees by the age of 22. His military career was impressive in that he was a participant in most of the major battles of the Union



Army and lived through it. In Detroit, he was very well connected in the medical community and the education community. He had a large practice, taught, and did medical exams for insurance companies; his papers for the MSBH are statistical analyses of data he collected in that work. It would be tempting to think that he emerged unscathed from his war experiences, but his public health work kept returning to drainage (which is a huge concern for armies that camp and put up hospital tents on the ground), alcohol (which solves certain problems for soldiers, but creates others), and consumption (TB -- which he observed in army hospitals and private practice and which is likely what killed him at age 58).

- Dr. Bliss volunteered for service as an army surgeon just a few years after he received his MD degree. He sought military rank, and was promoted several times. He too made it through four years of battleground service, and came home to practice quietly in Grand Rapids. The effect of the war on Dr. Bliss appears to have been directly physical (although the psychological effects may be assumed). He brought the health effects of the war home with him, and they brought him to death by age 45. His influence on the first MSBH was through other members' memory of what killed him.

These five physician members of the first Michigan State Board of Health are representative of Civil War physicians, enlisting as assistants, new medical graduates or as established medical practitioners, they all emerged as survivors with both benefits and detriments from their war experiences. That they were willing and even eager to devote their limited time and energy to the Public Health enterprise speaks to their own character and to the potential for organized solutions to problems, as they had witnessed in the war. The problems that they faced in Michigan were resistant to organization, but the members of the MSBH did not give up. They continued to persevere, as did their successors.

Members of the MSBH from 1873 to 1900

This alphabetized list shows the members, their degrees or honorific titles, and home city. Many of those listed served multiple terms. Dr. Baker, of course, served as Secretary for the entire period, and became the first Director of the Michigan Department of Public Health:

John Avery, MD, Greenville
Henry B. Baker, MD, Lansing
Fred R. Belknap, MD, Niles
Zenas E. Bliss, MD, Grand Rapids
Rev. Charles H. Brigham, Ann Arbor
Delos Fall, MS, Albion
Rev. John S. Goodman, East Saginaw
George H. Granger, MD, Bay City
Mason W. Gray, MD, Pontiac
Arthur Hazlewood, MD, Grand Rapids
Homer O. Hitchcock, MD, Kalamazoo
Rev. Daniel C. Jacokes, DD, Pontiac
Collins H. Johnston, MD, Grand Rapids
Robert C. Kedzie, MD, Lansing
John H. Kellogg, MD, Battle Creek



Henry F. J. Lyster, MD, Detroit
Hon. Aaron V. McAlvay, Manistee
D. A. MacLachlan, MD, Detroit
Samuel G. Milner, MD, Grand Rapids
Frederick G. Novy, ScD, MD, Ann Arbor
Hon. J. LeRoy Parker, Flint
Edwin A. Strong, AM, Grand Rapids
C. V. Tyler, MD, Bay City
Victor C. Vaughan, MD, PhD, Ann Arbor
Hon. Frank Wells, Lansing

ⁱ *Michigan State Board of Health, Annual Report for the Year Ending September 30th, 1873, p2.*

ⁱⁱ *Ibid, p2.*

ⁱⁱⁱ *Ibid, p2.*

^{iv} *Ibid, p2 and p3.*

^v *Ibid, p3.*

^{vi} *MacClure, Theo R., Sanitary Knowledge Twenty-five Years Ago, Supplement to the Annual Report of the Michigan State Board of Health for 1897. (Theo R. MacClure was Chief Clerk, State Board of Health Office.)*

^{vii} *Ibid.*

^{viii} *Ibid. The poisonous wall papers were printed heavily with pigments containing copper arsenate. These became poisonous dust which, shortly after installation, was present in quantities sufficient to cause illness and death. Dr. Kedzie assembled 100 large books of wallpapers with these poisonous pigments and distributed them to libraries around the state. The books were titled, in good Victorian style, Shadows from the Walls of Death.*

^{ix} *Ibid. It was Dr. Bartholomew who invited Prof. Kedzie to speak to the Legislature.*

^x *Henry B. Baker, Death of Hon. Ira H. Bartholomew, MD, Who Introduced in the Legislature and Successfully Advocated the Bill to Establish the Michigan State Board of Health, State Board of Health, Report of the Secretary, 1890, pg.li.*

^{xi} *Michigan State Board of Health, Annual Report for the Year Ending September 30th, 1873, p4.*

^{xii} *Ibid, p4.*

^{xiii} *Ibid, p5.*

^{xiv} *Ibid, p6.*

^{xv} *Ibid, p7.*

^{xvi} *Henry B. Baker, Death of Hon. Ira H. Bartholomew, MD, Who Introduced in the Legislature and Successfully Advocated the Bill to Establish the Michigan State Board of Health, State Board of Health, Report of the Secretary, 1890, pg.li.*

^{xvii} *C. Keith Wilbur, MD, Civil War Medicine, The Globe Pequot Press, Old Saybrook, Connecticut., 1998, p7.*

^{xviii} *MacClure, op cit.*

^{xix} *MacClure, ibid, p 42.*

^{xx} *Summarized from MacClure (ibid) and other Baker biographies.*

^{xxi} *Baker, HB, State Board of Health, Report of the Secretary, 1889, pp lvii-lx. The Hitchcock biosketch is summarized from this source. The Bliss biosketch is summarized from this source.*

^{xxii} *Baker, HB, State Board of Health, Report of the Secretary, 1903, pp xv-xvii. The Kedzie biosketch is summarized from this source and other Kedzie obituaries and biographies.*

^{xxiii} *Baker, HB, State Board of Health, Report of the Secretary, 1895, pp lxxxv-lxxxvi. The Lyster biosketch is summarized from this source and other Lyster obituaries.*

^{xxiv} *MacClure, op cit, p 14. The Bliss biosketch is summarized from this source.*



RESEARCH AND PRACTICE ARTICLE

Toward the Development of Cancer Literacy Assessment Tools

Karen Patricia Williams, Ph.D.

Mark Reckase, Ph.D.

Omara Rivera-Vazquez, Ph.D.

Michigan State University

Interamerican University of Puerto Rico

ABSTRACT:

Background: This study represented the first that documents the development of breast and cervical cancer literacy assessments that can be administered orally by laypersons.

Methods: Critical indicators of cancer literacy were identified through a review of pertinent literature and interviews with ethnically diverse women. The pilot-test consisted of a 29-question assessment for language appropriateness. A score of 75% was established as the threshold for functional cancer literacy.

Results: The assessment tools demonstrated a high level of internal consistency. Paired t-test analysis of pre- and post-intervention tests showed that the instrument was sensitive to changes in literacy of breast and cervical cancer as well as improvements in functional cancer literacy.

Conclusion: The analysis demonstrated that the instrument is a reliable and valid indicator of breast and cervical cancer literacy. These assessment instruments can provide researchers and educators a tool to measure functional cancer literacy that can enhance their ability to tailor appropriate health interventions and promotions.

INTRODUCTION:

Health literacy has captured broad attention since the 2004 Institute of Medicine (IOM) of The National Academies report *Health Literacy A Prescription to End Confusion* (Nielsen-Bohlman, Panzer & Kinding, 2000). This report was followed by the American Medical Association's book *Understanding Health Literacy Implications for Medicine and Public Health* (ed. Schwartzberg, VanGeest & Wang, 2000). In the IOM publication (Ratzan and Parker, 2000) define health literacy as "The degree to which individuals have the capacity to obtain, process and understand basic health information and services needed to make appropriate health decisions." This challenges researchers and health educators to develop educational tools for varying literacy levels and to design instruments that measure health literacy that can be integrated into interventions. The Institute of Medicine has reported there are a limited number



of health literacy instruments and those currently used do not consider oral language skills or may not capture the full scope of the constructs of health literacy (Nielsen-Bohlman, Panzer & Kinding, 2000). In addition, Williams and colleagues noted another limitation with the current structured health literacy assessments, such as the Test of Functional Health Literacy in Adults (TOFHLA) and Rapid Estimate of Adult Literacy in Medicine (REALM), was noted (Williams, Mullan, & Fletcher, 2006). The vocabulary of the current structured health literacy assessments is not representative of a woman's functional literacy for a specific disease, like breast cancer. Being able to read the word "cancer" does not mean a woman has a functional understanding of breast cancer that will allow her to adhere to screening guidelines. Williams and colleagues expanded the definition of health literacy by making it specific to breast and cervical cancer. "Breast and cervical cancer literacy is a woman's functional understanding of her personal and familial risk of the disease, including how to minimize her risk and the risk of her family through preventive early detection screenings and life style changes and understanding how to access the health system and engage providers to minimize her risk and the risk of her family."

As we contemplated assessments for our own intervention, Kin KeeperSM Cancer Prevention, an intervention that focused on African American women who were eligible for public health programs and had varying degrees of literacy (i.e. the ability to read and write), it was clear from the literature (Meade, 2005; Williams, Baker, & Hoing, 1998; Lindau, Tomori, & Lyons, 2002; Baker, Parker, & Williams, 1997) that breast and cervical cancer literacy would have to be fully woven throughout the cancer prevention education intervention. This means that appropriate assessment tools would need to be designed to provide data about the importance of health literacy in engaging women in cancer prevention and screening programs (Lee, Arozullah, & Cho, 2004). To mesh with the proposed intervention, the tools would have to: 1. Be able to be administered orally, 2. Be simple enough that a layperson, like a community health worker, could administer them in non-clinical settings and, 3. Be able to capture a woman's functional understanding of breast and or cervical cancer.

METHODS:

The first task was to develop an assessment that measured a women's functional understanding of her personal and familial risk of breast and cervical cancer. There were three main components to the approach taken toward instrument development. These components included domain definition, the use of critical indicators to develop the assessment's questions, and pilot testing the newly created assessment tool. Each one of these components was rigorously tested to ensure validity at each step.

Domain Definition

The first step was to define the domain of knowledge that would be covered by the instrument. The domain was defined through a review of the literature and through the use of the critical incident technique (Guion, 1998). The critical incident technique was used because the time allotted for responding to the instrument needed to be kept no more than one hour to gain cooperation from the women in the study. This meant that full domain coverage was not possible. Rather, critical indicators of levels of knowledge were identified through interviews of a small sample of women. This second step involved interviewing women who mirrored the



target population, namely women who are Medicaid eligible. After obtaining approval from the University Committee of Research Involving Human Subjects, a total of seven women were recruited from Michigan-based community-based organizations. The women represented diverse ethnic backgrounds; African American (n=2), Latina (n=2), Asian American (n=1) and Native American (n=2). Three were over 40 years of age and were in good health. Selecting women from diverse ethnic backgrounds provided us with a cultural perspective for future research.

The participants were recruited through collaboration with local community organizations. Community leaders referred Medicaid eligible women from diverse ethnic groups. Participants received a stipend for their participation in a 1-hour interview that took place at a local community clinic. The interview protocol included questions such as: “Do you recall how you were first exposed to cancer?”; “If I ask you to tell me your personal risk for getting breast cancer what would you say?”; “At what age and how often should a woman conduct a self-breast examination, clinical breast examination or a mammogram?”; and “What do you know about your family’s risk for getting cervical cancer?” The interviews were transcribed by a professional stenographer and analyzed in terms of emerging patterns, dimensions and critical indicators. Data obtained from this last step, based on interviews, was used to develop the cancer literacy assessment tools. Following the extraction of the critical indicators, the process resulted in the development of 16 questions on breast cancer literacy and 12 questions on cervical cancer literacy. The transcripts of the targeted interviews were carefully analyzed to determine the topics that differentiated the women who seemed to have the most knowledge and those who had a little.

Using Critical Indicators to Create Assessment Tool

The second main component was the development of the questions for the assessment instrument. The steps described above involve the development of the critical indicators. Once these were identified, the first step of this component was to list them as descriptive phrases. In addition, the desired level of knowledge about each topic was specified. Second, questions were identified that should elicit the level of knowledge each woman had about the topic. Third, questions were pilot tested on another small sample of five women to make sure that the language was appropriate for the specific population for the study, and that the responses to the questions would be sufficiently informative to allow reliable judgments of levels of knowledge. Working with a reading specialist to edit the questions to be at the 5th grade reading level, the research team made changes and revisions to the instrument based on feedback obtained from these interviews. These resulted in 4 questions being revised. Finally, after completion of the final version of the breast and cervical cancer literacy assessment tools, several health professionals from the Michigan State Breslin Cancer Center reviewed the instruments. The group was composed of professionals with extensive work experience in areas pertaining to clinical cancer trials and cancer education a total of seven oncology experts reviewed the assessments. These experts proposed a score of 75% of the maximum as the cut score for functional breast and cervical cancer literacy. This cut off score is also supported in the literature on grade-level ability for individual readers in the Institute of Medicine Report (2004).



Pilot- test of Breast and Cervical Cancer Assessment Tools

Pilot testing of the breast and cervical cancer literacy assessment was conducted with the community health workers and their respective supervisors who would impart cancer literacy to African American women participating in already established health promotion programs. Prior to the Kin KeeperSM Cancer Prevention Intervention training none of the participants had been trained in cancer prevention. A total of 16 women (2 supervisors and 14 community health workers) were assembled for training in cancer literacy at Michigan State University. The 16-hour training was modeled on the Kin KeeperSM Cancer Prevention Intervention Curriculum and Workbook© (Williams & Lawshe, 2006). The participants were administered the assessments under field conditions and a facilitator read the questions and answers for the participants.

After the pilot study, a final version of the assessment instrument was prepared for use as part of the intervention. When the study data was collected, the data from the instruments was analyzed to both describe the level of knowledge and skills at each point in the study and to determine the reliability and validity of the instrument. For the former analyses, score distributions and descriptive statistics were produced. The reliability of the instrument was determined by computing coefficient alpha. Construct validation was the conceptual basis for collecting validity evidence. Two approaches were taken. The first is to identify groups that should differ in their level of literacy and determine whether the instruments could detect the expected differences. The second approach is to check whether the literacy scores were correlated with variables that should be related to literacy and not correlated with variables that should not be related. In addition, validity evidence was obtained both through expert judgment of the content coverage of the instrument. The scores from the assessment instruments were also correlated with demographic measures and other indicators to determine if the pattern of correlations was consistent with the hypothetical construct implied by the domain definition. A pre-post design was used to collect the necessary data and the results were analyzed using t-tests to determine if the instruments were sensitive to expected differences in literacy.

In summary, using the critical indicator approach, we designed two (breast and cervical) cancer literacy assessments that could be used together or separately. We pilot tested a 29-question assessment instrument for language appropriateness and established a score of 75% as the threshold for functional cancer literacy. This undoubtedly raises the question of do we need separate health literacy assessment tools to measure different diseases? Although this presents a worthwhile inquiry it is not in the scope of this paper to answer this question. In this section, we presented our process, the steps in developing the assessment tools, piloting the assessments with community health workers and analysis using standard statistical tests.

RESULTS:

Assessment Development

The research team analyzed the data by exploring emerging themes, critical indicators, and dimensions for both breast and cervical cancer. The first emerging theme was breast cancer awareness. Critical indicators of breast cancer awareness included first exposure to breast cancer, knowledge of breast cancer, and understanding of preventative breast cancer care guidelines.



Based on information gathered from the participants of the first pilot test to develop critical indicators, exposure to breast cancer has been experienced through direct influence from family members and/or friends and indirectly through mass media means such as television ads or documentaries. Most of the participants demonstrated lack of knowledge regarding the different types of exams available to detect breast cancer. More specifically, participants seemed highly confused when asked about their knowledge of the terms “breast self-exam, clinical breast exam, and a mammogram.”

The majority of the participants did seem to know basic preventative/control breast cancer care guidelines and mentioned age 40 as the optimal age to begin screening for breast cancer. However, when asked “How often do you or have you conducted a self-breast examination?” most participants responded that they do not do any monthly breast exams. The participants also demonstrated some degree of understanding on how to prevent/control breast cancer. Specifically, they elaborated on their individual risks for getting cancer and understanding of their family risks. However, it is important to note that a lack of knowledge of available community resources was evident. None of the participants were able to mention a single resource available in their communities to assist them if they discovered a lump or had any cancer-related questions/concerns.

Critical indicators of cervical cancer awareness included first exposure to cervical cancer, knowledge of cervical cancer, and understanding how to prevent/control cervical cancer. Overall, responses demonstrated that participants were not able to make a connection with cervical cancer and Pap Smear screening. Participants were first exposed to the concept of cervical cancer directly by family members and also through information provided by their health care providers mainly in the form of the need for a Pap Smear due to pregnancies. Most of the participants lacked knowledge on cervical cancer other than what has been generally explained to them by their health care providers. They did indicate knowledge of some guidelines such as screening, having an exam after becoming sexually active, and following up with a health care provider on any cervical cancer questions/concerns. In regards to understanding how to prevent/control cervical cancer the resonating themes included limiting the amount of sexual partners, regular testing specifically after first becoming sexually active and/or after giving birth.

Participants mentioned the importance of regular testing to be able to detect cervical cancer at an early stage where it could be controlled. Further elaboration was obtained on participants’ individual risks for getting cancer and understanding of their family risks. Participants seemed to be unsure about cervical cancer being hereditary and mentioned a regimen of exercise and a healthy diet as key components to prevention/control of cervical cancer. This study was conducted before the media campaign on cervical cancer and the HPV vaccine.

Pilot

The community health workers and their respective supervisors completed pre and post tests on breast and cervical cancer literacy. From a construct validation perspective, if the instrument is assessing cancer literacy, the post test scores should be higher than the pre-test scores. The results in Table 1 show that this was indeed the case. The mean scores improved and the



proportion above the cut score of 75% of the maximum also increased (see Table 2). Analysis of variance is constrained in this pilot study by the small sample size (n=16). However, improvements in literacy scores resulting from Kin KeeperSM intervention appear to be independent of age, education, income level, and other potentially confounding variables (Table 3).

Internal consistency of the literacy assessment is high. Cronbach's Alpha for the 16 questions in the breast cancer assessment is .85, and for the 12 questions in the cervical cancer assessment it is .87. Combining these assessments into an overall measure of cancer literacy returns a Cronbach's Alpha of .91.

DISCUSSION:

This study represented the first study, according to our literature review, that documents the development of breast and cervical literacy assessments that measure functional literacy combined with instruments administered orally by a layperson. The combined approach makes a unique contribution to the science of health literacy. In addition to showing the design process, we reported the results of piloting the two cancer literacy assessment tools. Increasingly as researchers and health educators design interventions aimed at addressing the cancer disparity gap, they will be forced to design health literacy instruments that specifically measure a cancer site (Williams, Mullan, & Fletcher, 2006). Such instruments will enable them to more accurately tailor their interventions.

It was valuable to work with community health workers who were also representative of the underserved women we aimed to recruit into our intervention. The community health workers served as a check and balance. This methodology was in keeping with community based participatory research (Minkler, 2003) as well as instrument design (Johnson, Willeke, & Steiner, 1998). All of the women regardless of their role in our study provided us with a realistic picture of measuring the functional breast and cervical cancer literacy. Their participation gave us a perspective of women who are eligible for public health services and have varying literacy levels. For example, in the process of developing the critical indicators and domains for the assessments, the structured interviews revealed that the study participants had both cultural and age perspectives of breast and cervical cancer (Meade, 2005; Chavez, McMullin, Mishra, & Hubbell, 2001). We also noticed that across cultures and ages, women had a hard time differentiating between clinical breast examination and a mammogram. In the pilot with community health workers this was also the case where 75% of them were confused about the differences between clinical breast examination and a mammogram.

Functional cancer literacy entails a woman's ability to understand the basics about breast and cervical cancer screening, prevention and control. How women define breast and cervical cancer in their own mind as well as their understanding of preventive and early detection screening is the difference between functional literacy and non-functional literacy, ultimately impacting their screening practices. If a woman thinks mammograms and clinical breast examinations are the same, then it is likely she would think that during the annual check up in the doctor's office she received a mammogram when in fact the provider performed a clinical breast examination. Or, if she thinks they have the same purpose, she may be less likely to adhere to screening guidelines.



From this woman's perspective she believes that she is adhering to mammogram screening guidelines.

If a woman thinks that cervical cancer is hereditary, she might assume that since no one in her family had it, then she does not need a Pap test although she is sexually active. Or, if she only associates the Pap test with prenatal visits and not as a cervical cancer screening, then she is likely to not to get screened once she passes her childbearing years, although she may be sexually active.

Having a pilot sample of community health workers and their supervisors proved to be effective for a couple reasons. When the workshop facilitator administered the assessments orally, she was modeling how the community health workers should administer the instruments once they were in the field. She read questions and answers choices. Participants were able to follow along regardless of their reading level. This is a critical because in the field, we anticipate that women will have various degrees of reading comprehension as well as breast and cervical cancer prevention and control comprehension. The goal is to measure what they know, regardless of their literacy skills. With people who struggle with literacy, their oral skills are often more developed than their written literacy skills (Baker, Parker, & Williams, 1998). This means that a woman could understand the aspects of breast cancer prevention and be compliant to the specified guidelines, yet not be able to complete a survey that reflects her knowledge or behavior. Administering the assessments orally enabled us to gain a more accurate measure of participants' comprehension of functional breast and cervical cancer literacy without inaccuracies that could result from limited reading skills.

Using the matched pair *t*-test, we were able to analyze the measurement of functional breast and cervical cancer literacy with women who were considered health literate in one public health issue, other than cancer. The community health workers were skilled in assisting their clients to navigate the health care system as it related to either material child health or diabetes and were adept in administering health promotion education. However, their cervical cancer literacy pre-test mean score of (56.7) was well below the 75% standard compared to their breast cancer literacy pretest mean score (75). Their post mean scores increased significantly for cervical (81.2) and breast (86.7). It is plausible that exposure to breast cancer awareness through the media has markedly outpaced cervical cancer awareness marketing. At the time of data collection for this study, the cervical cancer awareness television commercials had not made their debut. These findings further confirm that health literacy is more than being able to read and write (Nutbeam, 2000).

The limitations of this study included the lack of a control group to compare pre and post test cancer literacy scores. In addition, although the data analysis was subjected to reviews by a panel of experts in the subject area and inter-rater validation, there is still the danger that researchers' bias and values may have influenced interpretations. Also, given the small sample size from interviews and community health workers add a potential for bias and value influences on the part of the researchers. However, in spite of these limitations the strength of this study lies in its ecological validity in that the instrument development is based on real accounts from community participants and health workers working in a variety of settings. Overall, this study provides scope for more research.



The Institute of Medicine reported health literacy measurements are limited (Neilsen-Bohlman, Panzer, & Kinding, 2000). While researchers are attempting to answer the call to expand health literacy assessment, the fundamental question will be. *What do we want to measure?* Do you want to measure a “macro” comprehension of health literacy or do you want to measure a “micro” comprehension of the health issue at hand? The former contributes to the science globally and the latter contributes to solving the health issue.

The next step for this research is to conduct another pilot test with actual target audience to determine usability of the breast and cervical cancer assessment tools. Further, instruments will be put in the field to determine its’ psychometric properties. The reliability and validity of the cancer literacy assessment tools will need to be determined by measuring the internal consistency of items, item structure and functionality.

*Table 1.
Paired Samples Test on Pre- and Post- Intervention Literacy Scores*

	Pre- Intervention on Mean Scores	Post Intervention on Mean Scores	Mean Difference in Score (Post – Pre)	SE Mean	t ⁴	df	p ⁶
Breast Cancer	12.75	14.88	2.125	0.831	2.57	15	0.022
Cervical Cancer	6.88	9.75	2.87	0.735	3.910	15	0.010
Overall	19.63	24.63	5.000	1.390	3.596	15	0.003

*Table 2.
Paired Samples Test on Pre- and Post- Intervention Functional Literacy Pass Rate*

	Pre- Intervention on Pass Rate	Post- Intervention on Pass Rate	Mean Difference in Pass Rate(Post- Pre)	SE Mean 2	t ⁴	df5	p ⁶
Breast Cancer	0.750	0.938	0.188	0.101	1.861	15	0.083
Cervical Cancer	0.313	0.875	0.563	0.128	4.392	15	0.001
Overall	0.563	0.938	0.375	0.125	3.000	15	0.009



*Table 3.
Improvements in Functional Literacy of Community Health Workers by Demographic Variables*

		Pretest		Post Test	
		Fail Count	Pass Count	Fail Count	Pass Count
Age	27 to 45	1	7	0	8
	46-64	4	2	0	6
Marital Status	Married	0	5	0	5
	Single/Never Married	0	4	0	4
	Divorced	4	0	1	3
	Widowed	2	0	0	2
Education	High School Diploma	1	1	1	0
	Some College	2	3	0	5
	College Degree	3	3	0	6
	Graduate Degree	0	2	0	2
Income	\$0-20,000	4	2	1	5
	\$20-40,000	0	3	0	3
	Over \$40,000	2	4	0	6
Employment status	Regular full- or part-time	3	9	1	11
	Retired or stopped working	3	0	0	3
Health status	Very good	1	2	0	3
	Good	1	5	0	6
	Average	4	1	1	1
	Poor	0	1	0	1

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REFERENCES:

- Baker, D.W., Parker, R. M., Williams, M. V., et al. (1997). The Relationship of Patient Reading Ability to Self-Reported Health and Use of Health Services. *American Journal of Public Health*, 87(6):1027-1030.
- Baker, D. W., Parker, R. M., & Williams, M. V., et al. (1998). Health Literacy and the Risk of Hospital Admission. *Journal of General Internal Medicine*, 13(12):791-798.
- Chavez, L., Hubbell, F. A., McMullin, J. M., Martinez, R. G., & Mishra, S. I. (1995). Structure and Meaning in Models of Breast and Cervical Cancer Risk Factors: A Comparison of Perceptions among Latinas, Anglo Women, and Physicians. *Medical Anthropology Quarterly: New Series*, 9(1):40-74.
- Chavez, L. R., McMullin, J. M., Mishra, S. I., & Hubbell, F. A. (2001). Beliefs Matter: Cultural Beliefs and the Use of Cervical Cancer-Screening Tests. *American Anthropologist*, 103(4):1114-1129.
- Guion, R. M. (1998). *Assessment, measurement, and prediction for personnel decisions*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Johnson, R. L., Willeke, M. J., & Steiner, D. J. (1998). Stakeholder Collaboration in the Design and Implementation of a Family Literacy Portfolio. *American Journal of Evaluation*, 19(3): 339-353.
- Kutner M, Greenberg E, Jin Y, Paulsen C (2006). The Health Literacy of America's Adults: Results From the 2003 National Assessment of Adult Literacy (NCES 2006-483); 2006
- Lee, S. Y., Arozullah, A. M., Cho, Y. (2004). Health Literacy, Social Support and Health: A Research Agenda. *Social Science and Medicine*, 58(7):1309-1321.
- Lindau, S. T., Tomori, C., Lyons, T., et al. (2002). The Association of Health Literacy with Cervical Cancer Prevention Knowledge and Health Behaviors in a Multiethnic Cohort of Women. *American Journal of Obstetrics and Gynecology*, 186(5), 938-943.
- Meade, C. D., (2005). Cancer, Culture and Literacy: Critical Next Steps in Improving Care for Diverse Populations. *Cancer Control*, Vol 12;2005:1-2.
- Minkler, M. & Wallerstein, N., eds. (2003). *Community-Based Participatory Research for Health*. First ed. San Francisco: Jossey-Bass.
- Neilsen-Bohlman, L., Panzer, A. M., & Kinding, D. A., eds., (2000). Health Literacy: A Prescription to End Confusion. Washington, DC: The National Academies Press.



- Nutbeam, D. (2000). Health Literacy as a Public Health Goal: A Challenge for Contemporary Health Education and Communication Strategies into the 21st Century. *Health Promotion International*, 15,(3) 259-267..
- Ratzan, S., & Parker, R., (2000). What is Health Literacy? In: Neilsen-Bohlman, L, Panzer, AM, Kinding, D.A., eds. *Health Literacy: A Prescription to End Confusion*. Washington, DC: The National Academies Press; 31-58.
- Schwartzberg, J. G., VanGeest, J., and Wang, C., eds. (2005). Understanding Health Literacy: Implications for Medicine and Public Health. American Medical Association; 3-16.
- Williams, K. P., Mullan, P. B., & Fletcher, F. (2006). Working with African American Women to Develop a Cancer Literacy Assessment Tool. *Journal of Cancer Education*. In Press.
- Williams, K. P., & Lawshe, D. C., (2006). The Kin KeeperSM Cancer Prevention Intervention Curriculum Guide & Workbook.
- Williams, M., Baker, D., & Honig, E., et al., (1998). Inadequate Literacy Is a Barrier to Asthma Knowledge and Self Care. *Chest*, 114, 1008-1015.



RESEARCH AND PRACTICE ARTICLE

The Detroit Youth Tobacco Survey: Results from Middle School Students

Calvin Trent, PhD

Julie Gleason-Comstock, PhD, CHES

Gary Petroni, MPA

Streater, PhD

William Ridella, MPH, MBA

ABSTRACT:

Background: The Detroit Youth Tobacco Survey (DYTS) provided representative data from middle school students, 84.7% of whom were African-American/Black, on self-reported prevalence of tobacco use and awareness, smoking cessation, peer and family influence, environmental tobacco smoke, media exposure and access to tobacco.

Results: Over half of the students (53.0%; +/-4.1) used some form of tobacco at least once, with the majority trying cigarettes (47.5%; +/-3.9) and about a quarter (23.1%; +/-3.5) trying cigars. Ten percent (10.2%; +/-2.3) tried bidis or kreteks, and 7.4% (+/-1.4) tried smokeless tobacco. Of middle school students who smoked, nearly one out of four (23.2%; +/-3.1) had their first cigarette before age eleven. Smokers were more likely to have parents who smoked. The majority of middle school students who smoked would like to quit. A third had practiced ways to say “no” to tobacco at school and a quarter had participated in a community event discouraging them from using tobacco.

Conclusion: Additional consideration should be given to innovative strategies for middle school students for smoking prevention, reduction of tobacco use and minimizing exposure to environmental tobacco smoke.

Key Words: tobacco and youth, tobacco and middle school students, tobacco and African American youth

INTRODUCTION:

The U.S. Surgeon General’s Report *Preventing Tobacco Use Among Young People* noted the vulnerable adolescent ages of 10 through 18 years for smoking initiation. The Report suggested psychosocial risk factors for initiating tobacco use among children and adolescents usually progress through stages in a process which generally takes about three years (US HHS, 1994).

The National Youth Tobacco Survey (NYTS) was designed to provide a baseline for comparing progress toward meeting the *Healthy People 2010* goals for reducing tobacco use among youth.



The NYTS began in 1999 and has been conducted bi-annually since 2000. It is administered in middle schools and high schools. This national survey is representative of students in the 50 States and the District of Columbia (CDC, 2000; CDC, 2003; CDC, 2005).

As the designated public health agency for Detroit, the Department of Health and Wellness Promotion (DHWP) responsibilities include identifying health risks, educating the public, preventing and controlling disease, injury and exposure to environmental hazards. DHWP is a Michigan Department of Community Health accredited local public health agency (Detroit, 2007). DHWP, in collaboration with the City of Detroit Public Schools and the Center for Population Health at the Southeastern Michigan Health Association, worked with the Centers for Disease Control and Prevention (CDC) to conduct a city YTS survey in 2000 for Detroit middle and high school students. In 2000, Detroit was the tenth largest city in the United States and the first city to conduct a YTS (Detroit, 2002; Detroit, 2001).

Significance

From a local public health perspective, the Detroit YTS is important because it is the only comprehensive survey providing data on tobacco use by Detroit public middle school students, the majority of whom are African-American or Black. This paper will focus on the results from the middle school sample. Given the vulnerability of middle school youth, reflection on the results from the Detroit YTS is particularly important to understanding why youth begin to smoke and finding ways to prevent them from starting.

Survey Design and Content

DHWP and the Detroit Public School District, with the technical assistance of the CDC, used a statistically-based sampling method to yield a representative sample of 22 middle and 22 high schools from across the City. The sample included approximately a fourth of all schools within City limits. All students within randomly selected classes were eligible to participate.

The anonymous, self-administered survey was developed by the CDC Office of Smoking and Health. It included questions about tobacco use, exposure to environmental tobacco smoke, minor's ability to purchase or obtain tobacco products, knowledge and attitudes about tobacco, and familiarity with pro- and anti-tobacco media messages. Current use of bidis, cigarettes, cigars, kreteks, pipes and smokeless tobacco was defined as use on one or more of the 30 days preceding the survey. Current tobacco use was defined as use on one or more of the 30 days preceding the survey.

RESULTS:

Although middle school and high school students were surveyed, only the data from the middle school students are presented here. There were 1,940 middle school students who completed the survey. Middle school grade composition was 35.5% sixth graders, 33.2% seventh graders, and 31.3% eighth graders. Survey demographics are provided in Table 1. Slightly more than half were female (50.2%) and 49.7% were male. The majority (84.7% were African-American or



Black. Almost ten percent were equally divided between White (4.7%) or Hispanic/Latino (4.7%).

*Table 1: Detroit Youth Tobacco Survey
Middle School Students Demographics*

Gender	
Female	974 (50.2%)
Male	966 (49.8%)
Race/Ethnicity	
Black or African-American	1643 (84.7%)
White	90 (4.7%)
Hispanic or Latino	90 (4.7%)
American Indian/Alaska Native	52 (2.7%)
Asian	49 (2.5%)
Hawaiian/Other Pacific Islander	16 (.8%)
Grades	
Sixth Grade	689 (35.5%)
Seventh Grade	644 (33.2%)
Eighth Grade	607 (31.3%)

Results from the eight major categories of the survey are presented in three groups: (1) Prevalence, Smoking Cessation and Access to Tobacco, (2) Susceptibility and Media Exposure and (3) Tobacco Awareness, Family/Peer Influence and Environmental Tobacco Smoke.

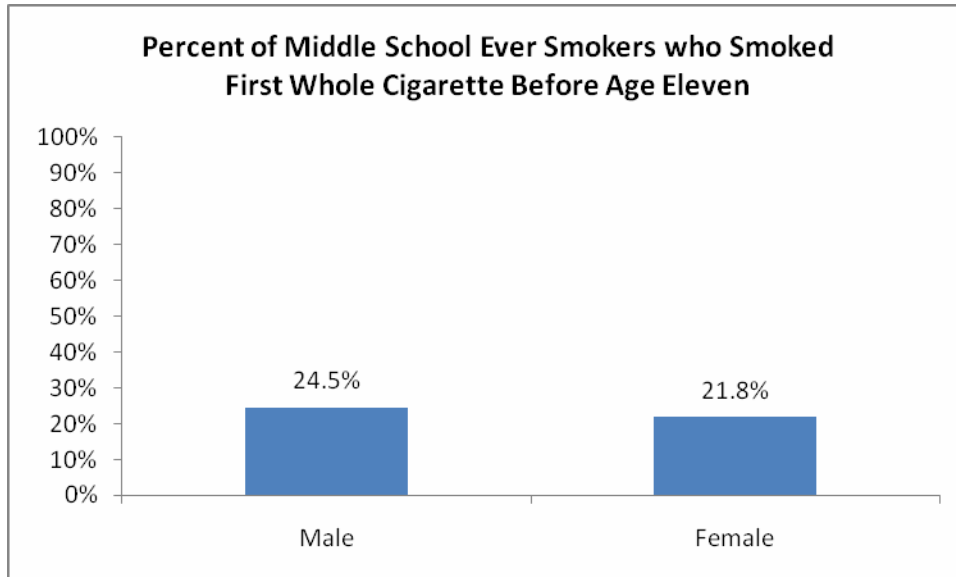
Because this was a sample survey, results are reported with confidence intervals. A 95% confidence indicates that the actual percentage lays somewhere between the upper and lower bounds of this interval for the entire school population. For example, if a percentage is reported as 19.7 (+/-5.0), the actual percentage is somewhere between 14.7% and 24.7%.

Prevalence, Smoking Cessation and Access to Tobacco

Over half (53.0%; +/-4.1) of all middle students in Detroit had used some form of tobacco at least once and one in ten was a current smoker. In contrast, nationally only one in eight middle school students reported using some form of tobacco (American Legacy Foundation, 2004). Nearly one out of four (23.2%; +/-3.1) middle school students who ever smoked began before age eleven. As displayed in Table 2, slightly more male than female youth reported smoking before age eleven.



*Table 2: Detroit YTS Middle School Students
Percent Who Smoked First Whole Cigarette Before Age Eleven by Gender*

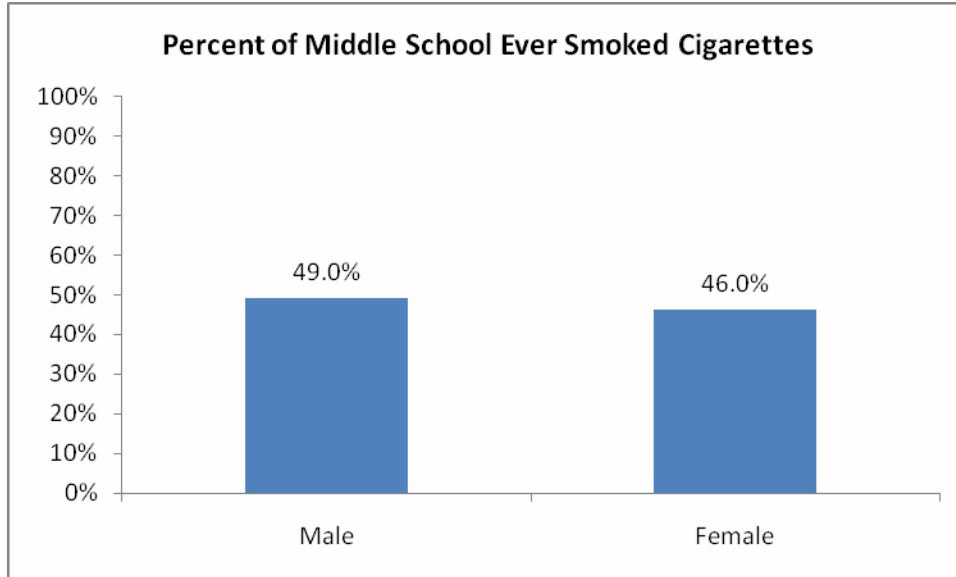


The majority of students tried cigarettes (47.5%; +/-3.9) and slightly less than a quarter (23.1%; +/-3.5) tried cigars. Among those who smoked cigarettes, about half (54.1 %; +/-6.0) of them usually smoked menthol cigarettes. Table 3 shows male students report slightly more tobacco use than their female counterparts. Less than two percent (1.7%; +/-0.7) of Detroit middle school students were frequent smokers who smoked cigarettes on 20 of the last 30 days. This compares to 2.7% of middle school students nationally (CDC, 2000).

Less common forms of tobacco use were included in the survey. Ten percent (10.2%; +/-2.3) tried bidis (i.e., small brown cigarettes from India) or kreteks (i.e. clove cigarettes), and a few (7.4%; +/-1.4) tried smokeless tobacco.



*Table 3: Detroit YTS Middle School Students
Percent Ever Smoked Cigarettes by Gender*



The majority of current smokers believed that they could stop smoking at any time, but as shown in Table 4, quitting may sound easier than it really is. Over half of current smokers said that they wanted to quit smoking and almost half have tried at least once in the past year. Only a fifth of current tobacco users have participated in programs to help them stop using tobacco.

Access to tobacco was not as difficult as one may have expected for middle school youth. As shown in the table only a fourth of the students who tried to buy cigarettes in the past month were asked for proof of age. Less than half were refused purchasing cigarettes in stores.

*Table 4: Detroit YTS Current Middle School Student Smokers:
Smoking Cessation and Access to Tobacco*

	Percent	+/-
Say they want to stop smoking cigarettes	58.9	8.7
Have tried to quit smoking at least once in the past year	46.7	7.4
Tried to quit smoking at least twice in their lifetimes	34.4	9.4
Asked for proof of age when buying cigarettes from a store	24.9	10.1
Were refused cigarettes in store because of their age	44.6	13.4

Susceptibility and Media Exposure

Students were just as likely to see pro-tobacco messages as anti-tobacco messages. Most students, 85.1% (+/-2.1) saw tobacco ads on the Internet, television, or in movies some or most of the time and 76.9% (+/-3.2) had seen or heard an anti-smoking commercial in the past 30



days. Current smokers were almost four times as likely to be receptive to tobacco advertising: almost twenty percent (19.7%; +/-4.2) of current smokers were receptive to tobacco ads, compared to about five percent (5.3%; +/-1.7) of nonsmokers. Despite reporting being less receptive, students who had never smoked reported that they would use/wear tobacco products. This finding was more prominent for males (23.0%; +/-4.0) than females (17.1%; +/-3.1).

As shown in Table 5, the majority of those who did not smoke expected to stay that way. Fewer than 6% of the nonsmokers thought they would try a cigarette soon or within the next year. However, as they projected longer into the future, there was a slight increase to 6.3% (+/-1.8) who thought they would be smoking five years from now. Additionally, over 40% (43.9%; +/-8.2) of current middle school smokers expected that they would still be smoking in five years.

Table 5: Detroit YTS Middle School Students Never Smokers and Susceptibility to Smoking

	Never smoked who will try cigarette soon		Never smoked who think they will smoke cigarettes next year	
	Percent	+/-	Percent	+/-
Male	5.9	2.4	4.0	2.3
Female	5.5	2.4	1.8	1.1
Total	5.7	1.9	2.8	1.5

Tobacco Awareness, Peer/Family Influence, and Environmental Tobacco Smoke

Most middle school students believed that tobacco is harmful and addictive, whether they currently smoked or not. Over three quarters, or 75.8% (+/-2.9) of middle school students believed that young people risk harming themselves if they smoked between 1 and 5 cigarettes a day, and the majority (85.4%; +/-2.9) thought people can get addicted to tobacco just like cocaine or heroin. Slightly more than a third or 37.5% (+/- 4.1) of middle school students had practiced ways to say “no” to tobacco at school within the survey year. An even lower percentage, (24.5%; +/-3.6) had participated in a community event to discourage young people from using tobacco.

Middle school students who smoked were approximately twice as likely to believe that smoking looks cool and that smokers have more friends. Slightly more than a quarter, or 26.1% (+/-5.8) of current smokers thought that smoking looks cool, compared to only 10.4% (+/-1.3) of middle school students who did not smoke. Middle school students who were current smokers reported having more friends (44.0%; +/-6.8), compared to only 20.5% (+/-4.0) that do not smoke.

Students who smoke were more likely to have parents who smoke. About 68.0% of middle school students who smoke reported that they had a parent that smokes, compared to 54.7% of those who do not smoke. The majority of students had spoken with their parents about tobacco. About two-thirds of the students (67.2%; +/-2.6) had been told by at least one parent or guardian that tobacco is dangerous.



Environmental Tobacco Smoke (ETS) is an issue for all middle school students and the majority (80.3%; +/-2.9) believed that ETS is harmful, whether they smoked or not. Over one-third of students who didn't smoke were exposed to ETS at home and with peers. Almost two-thirds (61%; +/-5.8) of those who currently used tobacco lived with someone who smokes, compared to 42.1% (+/-5.4) of students who have never smoked. Almost twice as many current tobacco users rode in a car with someone who was smoking on more than one day in the past week as those who had never smoked.

DISCUSSION:

The results of the Detroit Youth Tobacco Survey suggest that tobacco use among middle school students is an important public health issue for the Detroit community. Over half of all middle school students reported using some form of tobacco at least once, most often menthol cigarettes. About one in ten was a current smoker; greater than the national sample of one in eight middle school students. Of middle school students who smoke, nearly a fourth had their first cigarette before age eleven.

As found in national surveys of middle school students, cigarettes and, to a lesser extent, cigars were the most predominant form of tobacco use. However, Detroit led the nation in the number of middle school students who have tried bidis or kreteks. Nationally, less than three percent of middle school students had reported using these novel tobacco products. In Detroit, this figure was slightly over ten percent. This finding suggests an emerging public health problem among youth, particularly in Detroit.

The Detroit Youth Tobacco Survey results also provide a rich picture of the challenges faced by middle school students from peers and family, and in home and social environments. Over half of middle school students who smoke would like to quit, however, only a fifth of them had participated in programs designed to assist them in quitting. Less than a quarter of all middle school respondents had participated in a community event discouraging young people from using tobacco and only a third had practiced ways to say "no" to tobacco at school. Although the majority of students believed that smoking was harmful and addictive, a fourth of those who currently smoke believe that smoking makes them look cool and that smokers have more friends.

Familial influence appears to play a role in smoking. Studies indicate that twelve year olds of parents who smoke are about twice as likely to begin smoking between the ages of thirteen and twenty-one as those whose parents do not smoke. Three-fifths of smokers compared to two-fifths of non-smokers lived with a smoker.

LIMITATIONS:

This study has several limitations. Despite precautions to ensure anonymity, the survey relied on self-report data. There was no way to ascertain the role social desirability played in answering the questions. Also, only currently enrolled Detroit Public School students who were present on the day of the survey completed the YTS. Private and alternative schools in Detroit did not participate in this survey. Thus these findings may not generalize to all middle school students



in general. Lastly, the survey only included limited items on external factors that may help elucidate causal factors for early tobacco use. These factors would be important in the targeting and design of prevention and smoking cessation interventions.

DIRECTIONS FOR FUTURE STUDY:

Future study is needed to examine the role of ethnicity in youth tobacco use. Results from the 2002 NYTS reported that African-American students in middle school were more likely to report “ever smoking” (37 percent) than White (31%), Hispanic (35%), or Asian-American (24%) (American Legacy Foundation, 2004). Research with African-American students in a rural middle school suggested that smoking identity may start as soon as middle school and that school-based culturally conscious smoking prevention and cessation programs could be used to reach both students and parents to potentially alter adolescent smoking habits (Muilenburg, Johnson & Kohler, 2006). Other studies suggested more research needs to be conducted to learn about environmental factors in urban communities that either facilitate smoking or act as barriers to cessation for African middle school students who will become young adults (Kelder, Prokhorov, Barrsos, Murray et al., 2003; Stillman, Bone, Avila-Tang, Smith et al., 2007).

Innovative intervention approaches that target middle school youth should be explored. In addition to schools, community service providers are important resources. One example is well child screening and education. U.S. Preventive Services Task guidelines recommend children and adolescents have an annual health care visit during which time all patients should receive confidential preventive services, including being screened, educated and counseling on health risk behaviors such as alcohol and tobacco use (IoM, 2007). In Medicaid Health Management Organizations that serve Wayne County, in which the City of Detroit is located, 65 – 82% of the two middle school age groups have annual well-child visits (Michigan, 2006). At a recent Michigan public health conference session on enhancing tobacco reduction in pediatrics, it was noted 50% of adolescent smokers have well-child visits (Peterson, 2007). These visits offer the opportunity for physicians to query youth about the extent to which tobacco is used in the child’s home, including use by parents, siblings and other family members, and to encourage smoke-free homes (IoM, 2007).

Further analysis and dissemination of the Detroit Youth Tobacco Survey could provide valuable in providing data for full implementation of evidence-based strategies and policy development, particularly for African-American urban youth, their families and communities.

A complete copy of the Detroit Youth Tobacco Survey report is available from the City of Detroit Department of Health and Wellness Promotion, 1151 Taylor, Detroit, Michigan 48201, or the Center for Health Promotion, Southeastern Michigan Health Association, 3011 West Grand Boulevard, Suite 200, Detroit, Michigan, 48202. The authors would like to encourage other large cities to join Detroit and New York City in implementing the Youth Tobacco Survey in their city. Communication should be sent to Dr. Calvin Trent at the City of Detroit Department of Health and Wellness Promotion.

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Authors: Calvin Trent, PhD is General Manager for Special Populations Health at the City of Detroit Department of Health and Wellness Promotion (DHWP) TrentC@health.ci.detroit.mi.us. Julie Gleason-Comstock, PhD, CHES is an Assistant Professor in the Center for Urban Studies (CUS), Office of the Provost and Department of Family Medicine and Public Health Sciences, School of Medicine, Wayne State University, Detroit (jgleason@med.wayne.edu). Gary Petroni, MPA is Director of the Center for Population Health in the Southeastern Michigan Health Association, Detroit (gpetroni@ameritech.net). Alicia Streater, PhD is a Research Associate in CUS (astreater@wayne.edu). William Ridella, MPH, MBA, is DHWP Deputy Director (RidellaW@health.ci.detroit.mi.us).



REFERENCES:

American Legacy Foundation. (2004). *Cigarette Smoking Among Youth*. First Look Report 13: Results from the 2002 National Youth Tobacco Survey. Washington, DC.

www.americanlegacy.org

Centers for Disease Control and Prevention. (2005). Tobacco use, access and exposure to tobacco in media among middle and high school students – United States, 2004. *Morbidity and Mortality Weekly Report* 54(12): 297 – 301. Accessed April 1, 2005.

<http://www.cdc.gov/MMWR/preview/mmwrhtml/mm5412al.htm>

Centers for Disease Control and Prevention. (2003). Tobacco use among middle and high school students – United States, 2002. *Morbidity and Mortality Weekly Report* 52:1096 –8. Accessed April 1, 2005. <http://www.cdc.gov/MMWR/preview/mmwrhtml>

Centers for Disease Control. Smoking & Tobacco Use. Accessed November 26, 2007.

http://www.cdc.gov/tobacco/data_statistics/surveys/NYTS

Centers for Disease Control. (2000). Youth tobacco surveillance – United States, 2000. *MMWR Surveillance Summaries* November 2, 2001/50(SS04);1-84. Accessed March 19, 2008.

<http://www.cdc.gov/mmwr/preview/mmwrhtml/ss5004al.htm>

Detroit. City. Health Department (2002). *2000 Data Book*. Prepared by the Office of Health Policy, Planning and Grants Management.

Detroit. City. Health Department (2001). *Detroit Youth Tobacco Survey 2000*. Prepared by the Center for Population Health, Southeastern Michigan Health Association. Detroit, June 15, 2001. Survey Coordinators: Julie Gleason, PhD, CHES and Gary Petroni, MPA.

Detroit. City. Department of Health and Wellness Promotion (2007). Home Page: Welcome to the City of Detroit's Department of Health and Wellness Promotion. Accessed November 29, 2007. <http://www.dethealth.org>

Institute of Medicine (IoM). (2007). *Ending the Tobacco Problem: A Blueprint for the Nation*. Board on Population Health and Public Health Practice (BPH). Released on May 24, 2007. Appendix F: Halpern-Felsher, B. Intervention for Children and Youth in the Health Care Setting. Accessed November 6, 2007. <http://www.iom.edu>.

Kelder, S., Prokhorov, A., Barros, C., Murray, N., Orpinas, P. & McCormick, L. (2003). Smoking differences among African American, Hispanic and White middle school students in an urban setting. *Addictive Behaviors* 28:513-522. doi:10.1016/S0306-4603(01)00259-3

Michigan. State. Department of Community Health (2006). *Michigan Medicaid HEDIS 2006 Results: Statewide Aggregate Report*. Access to care ages 7 – 11 years and 12 – 19 years, pp 6-7, 6-8, 6-9. Accessed November 30, 2007. www.michigan.gov



- Muillenburg, J., Johnson, W. & Kohler, C. (2006). Self-identification of smoking status in a middle school populations: assessing smoking behaviors through students' personal perceptions. *Journal of Cancer Education* 21:4: 2598-262.
- Peterson, T. (2007). Enhancing tobacco reduction in pediatrics: strategies for pediatric care providers and offices. *Michigan Premier Public Health Conference*. Dearborn, Michigan, October 17, 2007. Sponsored by the Michigan Association for Local Public Health (MALPH), Lansing, Michigan. www.malph.org
- Stillman, F., Bone, L., Avila-Tang, E., Smith, K., Yancey, N., Street, C. & Owings, K. (2007). Barriers to smoking cessation in inner-city African-American young adults. *American Journal of Public Health* 97:8: 1405 – 1408.
- U.S. Department of Health and Human Services (1994). *Preventing Tobacco Use Among Young People: A Report of the Surgeon General*. US Department of Health and Human Services, Centers for Disease Control and Prevention, Coordinating Center for Health Promotion, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 1994. <http://www.cdc.gov/tobacco>.



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