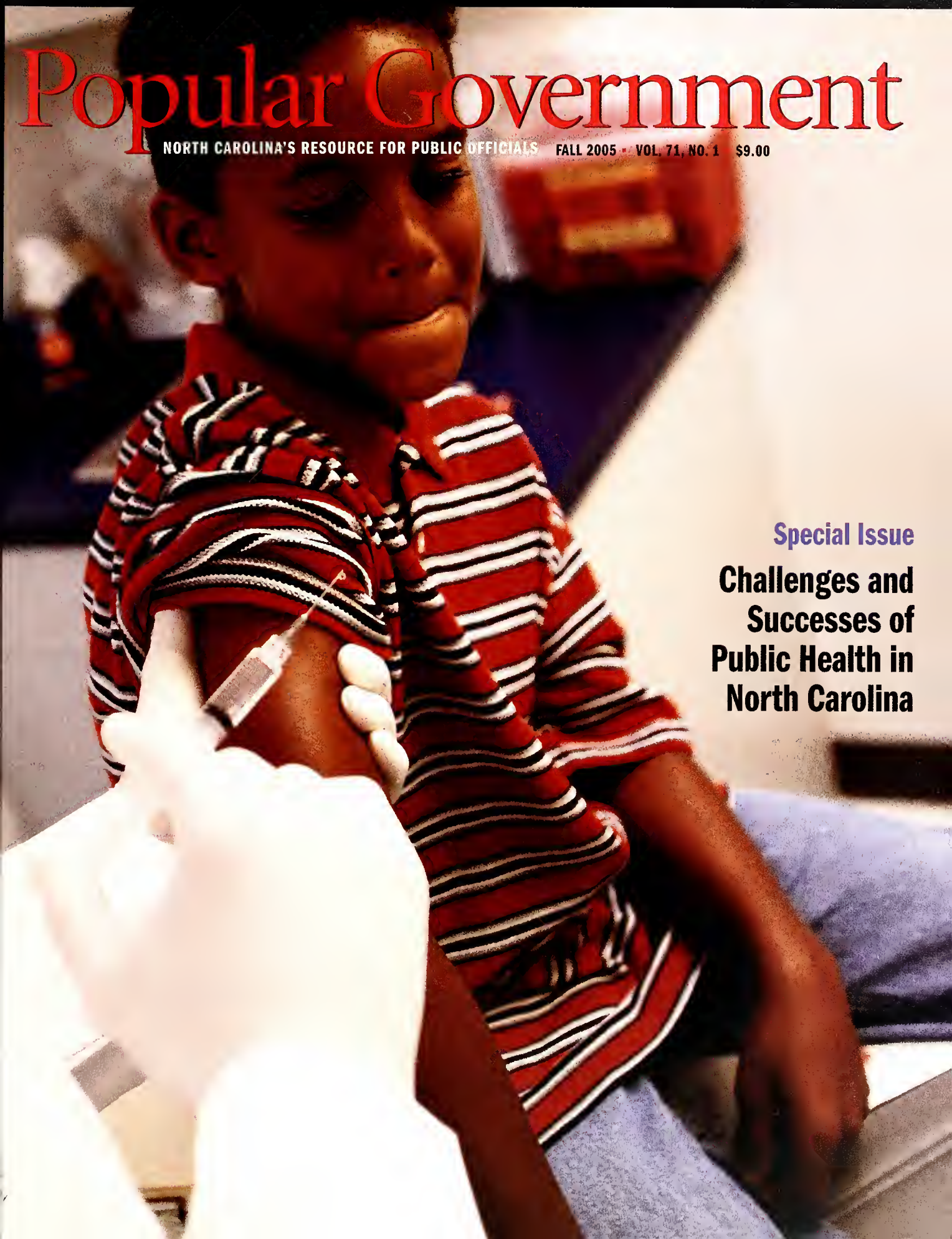
PUBLISHED BY THE SCHOOL OF GOVERNMENT ■ THE UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL

Popular Government

NORTH CAROLINA'S RESOURCE FOR PUBLIC OFFICIALS FALL 2005 • VOL. 71, NO. 1 $9.00



Special Issue

Challenges and Successes of Public Health in North Carolina

Popular Government

James Madison and other leaders in the American Revolution employed the term "popular government" to signify the ideal of a democratic, or "popular," government—a government, as Abraham Lincoln later put it, of the people, by the people, and for the people. In that spirit *Popular Government* offers research and analysis on state and local government in North Carolina and other issues of public concern. For, as Madison said, "A people who mean to be their own governors must arm themselves with the power which knowledge gives."

EDITOR
John B. Stephens

GUEST EDITOR
Aimee Wall

MANAGING EDITOR
Angela L. Williams

ISSUE EDITOR
Margo Johnson

DESIGNER
Maxine Mills Graphic Design

EDITORIAL STAFF
Roberta Clark, Nancy Dooly, Lucille Fidler, Jennifer Henderson

EDITORIAL BOARD
A. Fleming Bell, II, Robert P. Joyce, Patricia A. Langelier, Ann Cary Simpson, Aimee Wall, Richard Whisnant

DESIGN STAFF
Robby Poore, Daniel Soileau

MARKETING/SUBSCRIPTION SERVICES
Katrina Hunt, Chris Toenes

DISTRIBUTION STAFF
Tom Buske, Mark Jarrell

Popular Government (ISSN 0032-4515) is published three times a year by the School of Government. Address: CB# 3330 Knapp-Sanders Building, UNC Chapel Hill, Chapel Hill, NC 27599-3330; telephone: (919) 966-5381; fax: (919) 962-0654; website: www.iog.unc.edu. Subscription: $20.00 per year + 7% tax for NC residents.

POSTMASTER: Please send changes of address to Mark Jarrell, School of Government, CB# 3330 Knapp-Sanders Building, UNC Chapel Hill, Chapel Hill, NC 27599-3330; telephone: (919) 966-4155; fax: (919) 962-2707; e-mail: jarrell@iogmail.iog.unc.edu.

The material printed herein may be quoted provided that proper credit is given to *Popular Government*. © 2005 School of Government, The University of North Carolina at Chapel Hill.

This publication is printed on permanent, acid-free paper in compliance with the North Carolina General Statutes. Printed on recycled paper with soy-based ink. Printed in the United States of America. *Popular Government* is distributed without charge to city and county officials as one of the services provided by the Institute of Government in consideration of membership dues. The School of Government of The University of North Carolina at Chapel Hill has printed a total of 8,700 copies of this public document at a cost of $8,702 or $1.00 per copy. These figures include only the direct cost of reproduction. They do not include preparation, handling, or distribution costs.

UNC
SCHOOL OF GOVERNMENT

School of Government, UNC at Chapel Hill

Established in 1931, the Institute of Government provides training, advisory, and research services to public officials and others interested in the operation of state and local government in North Carolina. The Institute and the University's Master of Public Administration Program are the core activities of the School of Government at The University of North Carolina at Chapel Hill.

Each year approximately 14,000 public officials and others attend one or more of the more than 200 classes, seminars, and conferences offered by the Institute. Faculty members annually publish up to fifty books, bulletins, and other reference works related to state and local government. Each day that the General Assembly is in session, the Institute's *Daily Bulletin*, available in print and electronic format, reports on the day's activities for members of the legislature and others who need to follow the course of legislation. An extensive website (www.sog.unc.edu) provides access to publications and faculty research, course listings, program and service information, and links to other useful sites related to government.

Operating support for the School of Government's programs and activities comes from many sources, including state appropriations, local government membership dues, private contributions, publication sales, course fees, and service contracts. For more information about the School, the Institute, and the MPA Program, visit the website or call (919) 966-5381.

DEAN
Michael R. Smith

SENIOR ASSOCIATE DEAN
Thomas H. Thornburg

ASSOCIATE DEAN FOR OPERATIONS
Patricia A. Langelier

ASSOCIATE DEAN FOR DEVELOPMENT AND COMMUNICATIONS
Ann Cary Simpson

ASSOCIATE DEAN FOR FINANCE AND INFORMATION TECHNOLOGY
Bradley G. Volk

FACULTY

Gregory S. Allison
Stephen Allred (on leave)
David N. Ammons
A. Fleming Bell, II
Maureen M. Berner
Frayda S. Bluestein
Mark F. Botts
Joan G. Brannon
Mary Maureen Brown
Anita R. Brown-Graham
William A. Campbell
Anne M. Dellinger
Shea Riggsbee Denning
James C. Drennan
Richard D. Ducker
Robert L. Farb
Joseph S. Ferrell
Milton S. Heath Jr.
Cheryl Daniels Howell
Joseph E. Hunt
Willow Jacobson
Robert P. Joyce
Diane Juffras
David M. Lawrence
Janet Mason
Laurie L. Mesibov
Jill D. Moore
Jonathan Morgan
David W. Owens
William C. Rivenbark
John Rubin
John L. Saxon
Jessica Smith
Carl Stenberg
John B. Stephens
Charles A. Szypszak
Vaughn Upshaw
A. John Vogt
Bradley G. Volk
Gary A. Wagner
Aimee Wall
Mark Weidemaier
Richard Whisnant
Gordon P. Whitaker

ARCHIVAL COPY DO NOT
REMOVE FROM LIBRARY

C.3

Popular Government

Fall 2005 • Volume 71, Number 1

This issue of *Popular Government* explores various components of North Carolina's public health system. Rather than cover the waterfront in a single issue, we present a selection of public health programs and initiatives that address both well-known and emerging issues important to leaders in nonprofit and government settings.

North Carolina's state health director, Leah Devlin, begins the issue with an article defining public health and identifying some of the recent challenges and successes of the state's public health community. The range of topics that follow is as expansive as public health itself. Articles addressing jail health programs, methamphetamine labs, septic systems, and tobacco prevention and control convey to readers some of the current pressure points. Although most of the articles focus on specific issues, they represent some of the discipline's fields, including environmental health, disease prevention, health education, and provision of direct medical care.

The articles reinforce many of the themes in Devlin's lead. Each one demonstrates that the work of public health expands and adapts with every new challenge—for example, the rapid growth of clandestine methamphetamine laboratories. Each also highlights the different roles played by federal, state, and local governments and the private sector in ensuring the health of a community.

We welcome your comments on this issue and your ideas for future articles on other aspects of public health in North Carolina.

—Aimee Wall, Guest Editor, and John B. Stephens, Editor

ON THE COVER

Immunizations are the foundation of preventive health strategies in North Carolina.

Articles

INSTITUTE OF GOVERNMENT
UNIVERSITY OF NORTH CAROLINA LIBRARY

Departments

New Public Health Law Website from the School of Government

Recently the School launched a new website, **www.ncphlaw.unc.edu**, to help manage the vast amount of public health law information and resources available from the School. The site contains information about courses and specific topics in the public health field. It offers a significant amount of legal information, such as answers to frequently asked questions; links to published bulletins, articles, and books; and copies of materials used in past courses. Finally, it provides links to other School websites related to public health law:

- Adolescent pregnancy, at www.adolescentpregnancy.unc.edu
- Animal control law, at www.ncanimalcontrol.unc.edu
- Medical confidentiality, at www.medicalprivacy.unc.edu

Faculty members expand and update the site regularly. Visit it if you have questions, or contact one of the faculty members: Milton Heath, Jill Moore, or Aimee Wall.

North Carolina Public Health: Priming the Pump of Improved Health for All

Leah Devlin

The birth of public health is generally credited to a nineteenth-century London physician named John Snow. In 1854, during a particularly deadly outbreak of cholera, he located known cases of cholera on a map of the city. They appeared to be concentrated around a single public well.

Even though germ theory had not yet been developed, Dr. Snow reasoned that the water in the well was a likely source of the disease. He removed the handle from the pump and happily monitored a steady decline in cholera cases as a result. The science of epidemiology and the practice of public health were born.

Improving the Quality of Life for All People

The water pump still stands as an emblem of public health success. It is time for North Carolina to prime that pump by strengthening the state and local public health infrastructure to achieve greater health improvements for all the state's residents.

In North Carolina the public health mission is to promote and protect the highest-possible level of health for all residents. Public health also works to ensure that communities are healthy places in which to live. From that perspective it often has been said that the community is the "patient" in public health.

The core science of public health is epidemiology, the study of disease within populations. Public health also embraces biostatistics, health education, environmental protection, the practice of medicine, and the important concept of prevention.

The author is state health director in the Division of Public Health, North Carolina Department of Health and Human Services. Contact her at leah.devlin@ncmail.net.

Public Health's Ten Essential Services

I. Assessment

Monitor health status to identify and solve community health problems (e.g., community health profiles, vital statistics, and health status).

Diagnose and investigate health problems and health hazards in the community (e.g., epidemiologic surveillance systems and laboratory support).

II. Policy Development

Inform, educate, and empower people about health issues (e.g., health promotion and social marketing).

Mobilize community partnerships and action to identify and solve health problems (e.g., convening and facilitating community groups to promote health).

Develop policies and plans that support individual and community health efforts (e.g., leadership development and health system planning).

III. Assurance

Enforce laws and regulations that protect health and ensure safety (e.g., environmental health rules).

Link people to needed personal health services and ensure the provision of health care when otherwise unavailable (e.g., services that increase access to health care).

Assure competent public and personal health care workforce (e.g., education and training for health care providers).

Evaluate effectiveness, accessibility, and quality of personal and population-based health services (e.g., continuous evaluation of public health programs).

Research for new insights and innovative solutions to health problems (e.g., links with academic institutions and capacity for epidemiologic and economic analyses).

Source: Reprinted from Pub. Health Functions Steering Comm., Am. Pub. Health Ass'n, Public Health's Ten Essential Services (Washington, D.C.: the Association, July 1994), available at www.phppo.cdc.gov/nphpsp/10EssentialPHServices.asp.

North Carolina's public health system includes local public health agencies that serve every county in the state, the Division of Public Health (DPH) in the North Carolina Department of Health and Human Services, the Division of Environmental Health in the Department of Environment and Natural Resources, and a multitude of partners at the state, regional, and local levels. Notable among these partners are health care providers, the media, business, community-based organizations, schools, and the statewide network of community-based health improvement partnerships known as Healthy Carolinians (see the article on page 5).

The following three core functions define public health's work:

- Assessment of health status and health needs to guide planning and program development
- Policy development to enable the implementation of public health interventions
- Assurance that necessary public health services are available to everyone

These core functions have been clarified further with the identification of ten essential public health services (see the sidebar on this page). Every local health department in North Carolina provides these services to fulfill its mission of improved health for all people.

Implementing Public Health at the Local Level

Just like Dr. Snow's water pump, public health interventions play out at the community level. North Carolina is blessed with an extensive network of local public health agencies that serve all 100 counties. The local system is made even stronger through the oversight of local boards of health, which collectively bring more than 800 community volunteers to guide policy development for local health departments. Given county government's role in appointing these community leaders and its role in providing local funding, the role of county commissioners and county managers is critical.

Local health departments and their boards face enormous challenges daily. Proliferation of methamphetamine laboratories, shortages of flu vaccine, investigations of communicable diseases, and emergency responses to hurricanes capture headlines. However, these incidents mask the ongoing and extraordinarily high level of effort needed to sustain routine public health work, such as promotion of child health, inspection of restaurants, permitting of wells, prevention of West Nile virus, immunization of children, assistance with family planning, health education, and prevention of heart disease and stroke.

Local health departments also play a role in helping eliminate health disparities across populations. Minorities bear an undue burden of disease in North Carolina. This clearly is an unacceptable situation, requiring more innovative programs and services, greater cultural competency, increased outreach, and an ability to overcome language barriers. Also, it is important to recognize that the roots of poor health are in social and economic factors that result in fewer opportunities to engage in healthy behaviors and less access to critical health care services.

In addition to performing the types of community-based work just described, local health departments are a critical part of the state's safety net. In every county a mix of preventive health care services is provided: prenatal care, promotion of child health, assistance with family planning, prevention and treatment of sexually transmitted diseases, and immunization and nutrition programs for women and children. Some health departments also provide basic primary care.

Local health departments must be strong leaders, not only in caring for the

How Healthy Are North Carolinians?

North Carolina's governmental public health system, frequently in collaboration with local Healthy Carolinians Partnerships, is responsible for assessing the health of the state's residents and working to achieve the highest-possible level of health for all. It uses a variety of measures in this assessment, including rates of morbidity (illness) and mortality (death), personal and life-style risk factors (e.g., incidence of smoking and amount of physical activity), environmental risk factors (e.g., poverty levels and immunization rates), and health system factors (e.g., physicians per capita). Although it is not possible to predict whether current trends in these measures will continue, researchers can make informed estimates based on existing but limited information.[1]

North Carolina (and the nation as a whole but to a greater extent) is currently experiencing a downward trend in overall mortality (that is, in deaths due to all causes). This trend is likely to continue as advances in medical care and technology become more widely available and as prevention programs reach more residents at risk. Similarly, cancer mortality rates are expected to continue to decline in the foreseeable future, following a trend that started in the early 1990s. A dramatic downward trend in heart disease mortality has leveled off in the past few years, however, both in the state and nationwide. Following steady decline in the 1980s, North Carolina's rates for stroke mortality have leveled off since 2000, mirroring national trends. These types of leveling trends usually persist over time. Significant levels of health disparities are expected to continue into the foreseeable future in the area of chronic disease.

Consistent with national trends, North Carolina's percentage of adults who are obese has increased considerably over the past thirteen years. The obesity epidemic is expected to continue, although not at the same rate of increase as for the past ten years. In a related measure, diabetes mortality rates are expected to continue to increase, reflecting recent trends in the incidence of obesity among adults and children.

North Carolina's infant mortality rate has consistently been about 15 percent higher than that of the nation. Rates for North Carolina and the United States have experienced a leveling off in recent years after some dramatic decreases. This steadying of the rate is likely to continue, or the rate may even increase slightly. The national infant mortality rate increased in 2002 for the first time in forty years.

Adult North Carolinians have reported smoking at a significantly higher rate than American adults have. In 2003, for example, North Carolina adults reported smoking at a rate 12 percent higher than U.S. adults as a whole did. Adult smoking rates have held steady in North Carolina for the past ten years, although a slight decrease was reported in 2003.

Compared with the United States as a whole, North Carolina adults are more likely to perceive themselves as being in fair or poor health. The difference between the state and the nation has increased recently, with state residents reporting being in fair or poor health 17 percent more frequently than the nation as a whole in 2003. As the population ages, the developing trend of self-reported health being "fair" or "poor" is likely to continue.

Every year for the past twenty years, the United States has had a higher rate of new HIV/AIDS cases than North Carolina has had. However, the gap between the state and the national rates decreased recently as North Carolina experienced a 68 percent increase in the rate of cases from 1999 through 2003. It is unclear whether this increase will continue.

North Carolina has had a consistently higher rate of primary care physicians per capita than the nation as a whole. Since 1989, the rate has increased from 6.8 per 10,000 population to 8.6, a jump of 26 percent, surpassing the increase in the national rate. North Carolina continues to experience an increase in the number of physicians per 10,000 population, and this trend should continue at both the state and the national level.

From 1992 to 2000, the rate of North Carolina adults reporting no health insurance was typically lower than that of the United States. However, since 2001 the percentage of North Carolina adults reporting no health insurance has increased 51 percent (from 11.5 to 17.4 percent) and is now higher than the U.S. average. Lack of health insurance usually reflects socioeconomic trends. Because of erosion of employer-supported coverage, many North Carolinians have lost their health insurance in the past two years. Until there is a reversal in this trend, North Carolina will probably continue to have a greater percentage of uninsured than the nation.

For many years, North Carolina's poverty rates were close to those shown by the nation as a whole. However, during the last three years, the state's poverty rate has begun to climb, reflecting the loss of jobs in the textile industry. This increase pushed the state poverty rate to 25 percent above the national average in 2003. The increase will continue until there is a reversal in the state's economy.

This small sampling of health status measures underscores the urgency of the public health mission in North Carolina. Reversal of many of the negative trends will not occur quickly and will require significant investments in the infrastructure of the medical care and public health system.

Note

1. All data in this sidebar were provided by the State Center for Health Statistics. *See* www.schs.state.nc.us/SCHS/.

individuals in the community but also in bringing together the community as a whole to identify health problems and generate creative, collective strategies for health improvement.

Most North Carolinians are willing to support public health measures with tax dollars.[1] Further, in a recent survey of the people who visited their local health department, 80 percent felt that the service they received was "very good" or "excellent."[2] A major new initiative to continue building on this quality is the development of an accreditation system for state and local health departments. North Carolina is a national leader in this effort to ensure that every county provides the ten essential public health services. In the beginning stages of this initiative, ten local health departments have become

fully accredited. (For more information on the accreditation program, see the article on page 12.)

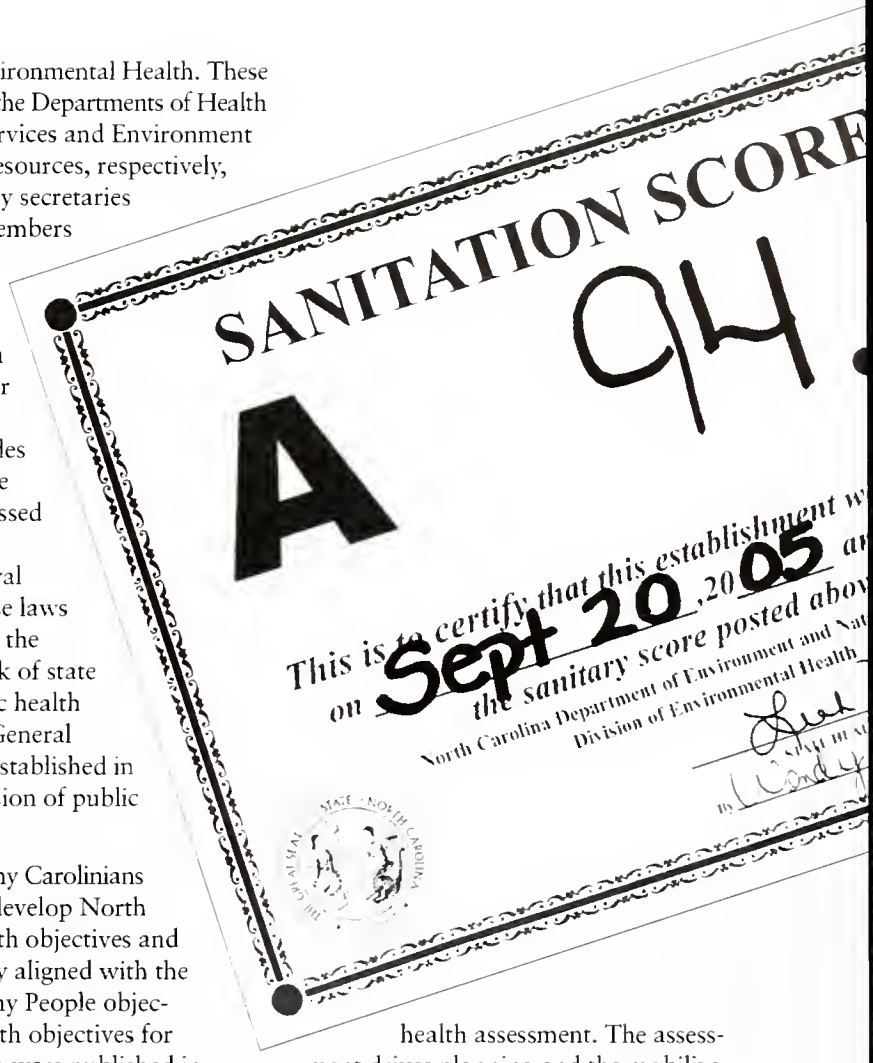
In North Carolina, local health departments are funded by a mixture of county, state, and federal funds. Although the financial proportions vary by the size of the county, on a statewide basis, local support for public health constituted almost 80 percent of total local public health expenditures for fiscal year 2002–03.[3] Another 18 percent came from the federal government, which is a major funder of public health initiatives through direct grants. A small portion came from nongovernmental grants. About 0.5 percent came from state government in that year at the local level.

Implementing Public Health at the State Level

State-level public health largely comprises the efforts of the DPH and the Division of Environmental Health. These divisions are in the Departments of Health and Human Services and Environment and Natural Resources, respectively, which are led by secretaries who are key members of the governor's cabinet. The North Carolina Commission for Health Services provides the rules that support the related laws passed by the North Carolina General Assembly. These laws and rules guide the regulatory work of state and local public health agencies. The General Assembly has established in statute the mission of public health assessment. The assessment drives planning and the mobilization of community assets. This process brings together community health and safety interests and programs to develop a common agenda that is endorsed by county leaders. North Carolina Health Objectives for 2010 serve as targets for county-level prioritization.

Over the past dozen years, the HC Partnerships have accomplished the following:

- Increased resources for primary care clinics, dental clinics, and pharmaceutical support programs to under- and uninsured North Carolinians
- Identified resources for adolescent health clinics and school nurses
- Mobilized resources to build walking paths, bicycling trails, and recreation centers and supported progressive physical education policies at schools
- Developed and implemented community-based health promotion programs and advocated for policies



Healthy Carolinians: A Good Community Investment

Mary Bobbitt-Cooke

State and local governments are constantly trying to find ways to build partnerships between the public and private sectors in order to maximize community involvement and use limited resources more efficiently. Healthy Carolinians (HC), a network of public-private partnerships representing public health, hospitals, schools, churches, businesses, community members, and elected officials, is a unique example of how such partnerships can mobilize resources for improvement of community health.

North Carolina has addressed the national Healthy People objectives through HC, a statewide initiative.[1] The initiative started by executive order in 1991, when Governor James Martin established the Governor's Task Force on Health Objectives for the Year 2000, which later became the Governor's Task Force for Healthy Carolinians (GTF–HC), to develop North Carolina's health objectives and ensure that they aligned with the national Healthy People objectives.[2] The health objectives for North Carolina were published in 1992. The GTF–HC challenged all counties in North Carolina to mobilize community resources to address the problems defined in the state and national objectives. It believed that if communities determined their own health priorities, they would mobilize and address them.[3] This strategy resulted in HC, a network of community-based, public-private partnerships across North Carolina. The network places resources, decision making, and accountability where health is created and supported—in the community.

To date, the GTF–HC has certified seventy-four HC Partnerships, representing eighty-three counties (see Figure 1). Currently, ten more counties are working toward certification.[4] Most HC Partnerships are county based; six cover multiple counties.

The HC Partnerships identify and prioritize health issues. They start with committed leadership that guides a comprehensive, collaborative community

The author is director, Office of Healthy Carolinians/Health Education, in the North Carolina Division of Public Health. Contact her at mary.bobbitt-cooke@ncmail.net.

health and the essential services. Its role in creating strong public health policy and providing critical funding for services that focus on prevention of and early intervention in health diseases and conditions is vitally important to North Carolinians.

State-level public health works to support local implementation of public health programs in a variety of ways: obtaining federal funds through grants and contracts, overseeing distribution and management of federal and state funds, providing technical assistance in program implementation, ensuring quality through Medicaid reviews, offering training in a variety of disciplines, and more. In addition, state-level public health directly provides the State Medical Examiner services, the State Center for Health Statistics research, the Central Cancer Registry, and the Birth Defects Registry. The DPH also records all the births and the deaths through its Vital Records Program, and it issues related legal documents.

Through the Children's Developmental Evaluation Centers, the DPH provides direct services to children with developmental needs (for example, nurturing and emotional support, adequate nutrition, and intellectual stimulation). Also, it manages the statewide effort in early intervention services.

Numerous state-level task forces and coalitions mandated by the legislature or commissioned by the governor receive staff support from the DPH: the Child Fatality Task Force, the Heart Disease and Stroke Prevention Task Force, and the Governor's Task Force for Healthy Carolinians, to name just a few. In addition, state-level public health administers about $40 million in the direct purchase of care, ranging from drugs for people living with HIV to services for children with special needs.

Finally, the DPH maintains critical linkages to the Centers for Disease Control and Prevention and other federal agencies to provide additional capacity or technical assistance in times of crisis. State-level partnerships with the Departments of Environment and Natural Resources, Crime Control and Public Safety, and Agriculture and Consumer Services also are critical in supporting the health of communities. Further, the state and local public health efforts complement each other and provide synergy to achieve the maximum impact of improved health for all.

Strengthening Public Health's Infrastructure

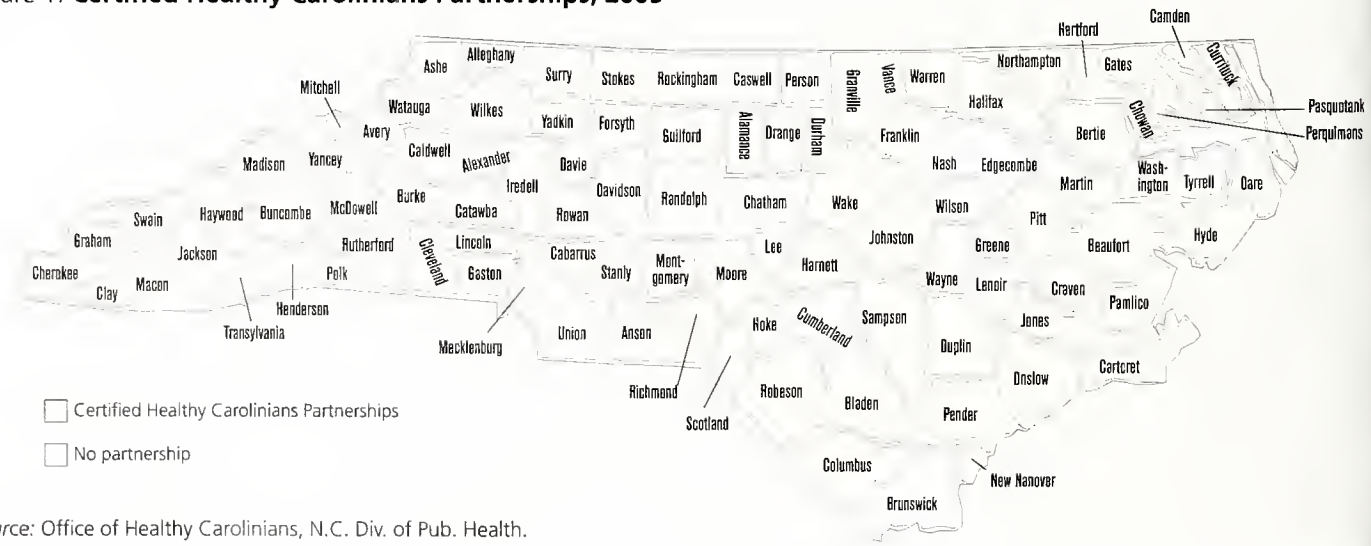
Since September 11, 2001, public health leaders across the country have been challenged with an intriguing question: How can the country's "wake-up call" on preparedness translate into adequate support for the nation's other critical

at schools, worksites, and public places that reduce smoking and improve nutrition choices

- Created the Sewer and Water Assistance Program to provide funding that helps low-income people install or repair water or sewer systems
- Addressed chronic diseases through diabetes clinics accessible to populations at risk; community-wide, multilevel programs to address blood pressure and cholesterol problems; and extensive cancer prevention education and screening
- Responded to needs of older adults at the community level through support for parish nursing programs

Although the results of the HC Partnerships are positive, the funding has been irregular. Much of it is from local governments and foundations. The Kate B. Reynolds Charitable Trust and the Duke Endowment have generously supported these local efforts to improve community health. Also, funding from federal agencies (e.g., the Department of the Interior and the Department of Health and Human Services) has flowed into communities across the state. The partnerships have been awarded small grants from chronic disease and health promotion programs in the North Carolina Department of Health and Human Services, Division of Public Health (DPH), and from other community-oriented programs in various state agencies. The Office of Healthy Carolinians in the

Figure 1. **Certified Healthy Carolinians Partnerships, 2005**



Source: Office of Healthy Carolinians, N.C. Div. of Pub. Health.

public health needs? In other words, how can public health leaders and policy makers "prime the public health pump" to achieve improved health for all—and not just in times of terrorist threat or disaster.

In the aftermath of September 11, when the federal government stepped in with significant new funding for emergency preparedness and response, many in the public health community hoped that policy makers also might give public health's other essential core infrastructure much-needed attention and resources. However, many states, including North Carolina, fell on hard economic times, and public health infrastructure struggled, along with other important public needs.

In the aftermath of September 11, when the federal government stepped in with significant new funding for emergency preparedness and response, many in the public health community hoped that policy makers also might give public health's other essential core infrastructure much-needed attention and resources.

Although the DPH sustained budget reductions of more than $27 million in fiscal years 1999–2000 through 2004–05, there have been significant public health achievements in more recent times. In the past two years in particular, the General Assembly has provided additional resources for school health nurses, AIDS drug assistance, multicounty collaboratives called "incubators," early intervention services, and targeted efforts to eliminate the burden of health disparities in minority populations. It also has provided funding for accreditation of local health departments—a significant step forward in investing in the public health infrastructure. Further, it has passed important new health legislation related to a number of issues, including methamphetamine, petting zoos, bioterrorism, and smoke-free environments.

Sustaining this progress is incredibly important. During the twentieth century, average life expectancy in the United States increased by about 50 percent, from 50 years of age in 1900 to about 75 in 2000. Of course, not all segments of the population enjoy the increased life span equally. This fact underscores the persistent and important public health challenge of eliminating health disparities. Most of the credit for increased life expectancy during the twentieth century must go to public health efforts in improved environmen-

DPH supports these community partnerships by providing technical support, consultation, and training.

Each year from 2001 to 2003, the General Assembly appropriated limited funding to support the HC Partnerships, but these funds were not ongoing.[5] The 2005 General Assembly has appropriated $500,000 for HC. Most continuing support comes from local public health agencies and hospitals through their budgets, dedicated staff, and in-kind contributions.

The HC Partnerships have served as a bridge between hospitals and other health and human service agencies in the community. Thirty-five percent of them are hospital based, and 45 percent, public health department based. The remaining 20 percent stand alone or are associated with another community organization. Hospitals and local public health agencies have committed leadership, resources, and influence that are critical in community health improvement. Communities benefit when health care agencies and practitioners join with other private and not-for-profit agencies and community members to address health issues.

Although every partnership is different, two case studies demonstrate the essential roles that the HC Partnerships play in planning, coordination, communication, collaboration, and resource development to address significant health issues and improve quality of life at the community level. The case studies illustrate how the HC Partnerships can help advance the three core functions of public health: assessment, policy development, and assurance.[6]

One significant initiative, which brought together the health department, schools, and the hospital, was the establishment of school-based health centers in four middle schools and four high schools in the county.

Cleveland County: Alliance for Health

The Alliance for Health is a not-for-profit organization that is closely involved with the Cleveland County Health Department. It is housed in the health department, and its coordinator is a contract employee. The alliance was founded in 1996 and became a certified HC Partnership in 1998. It serves as a forum for coordinating the efforts of local agencies and dedicated volunteers, ensuring that resources are used effectively and have the greatest impact. Since it began, the alliance has assisted its partners in implementing more than sixty initiatives and has brought more than $2 million to Cleveland County in grants and awards.

In 2000 the alliance conducted a community health assessment in collaboration with the local health department. It determined that child health, specifically access to health care, was a high priority. Its objective was to increase the number of accessible locations where children and youth, newborn through eighteen years of age, could receive comprehensive medical and dental preventive services.

The alliance collaborated in putting several strategies into action. One significant initiative, which brought together the health department, schools, and the hospital, was the establishment of school-based health centers in four middle schools and four high schools in the county. The alliance assisted in the planning and the coordination that brought these school-based health centers to Cleveland County Schools. Start-up funds for this initiative came

tal sanitation (through such measures as better handling of solid waste and assurance of safer drinking water) and enhanced control and prevention of infectious diseases (through such measures as more inoculations, improved surveillance, and better education).

There have been many advances in the science of prevention, among them new health information, innovative health screenings, new immunizations, better understanding of disease transmission, more sophisticated laboratory technology, and better built environments to promote healthy behaviors.

These advances can translate into enormous public health improvements. That is critical because the needs also are enormous. In national rankings North Carolina stands in the lower third or the lower half on almost every health outcome, from infant mortality to infectious disease to chronic disease.[4] (For trends in and projections on these and other health measures, see the sidebar on page 4.) When North Carolina's health problems are so dire and the opportunities at hand are so potent, when local and state health departments stand poised but not as battle-ready as needed, strengthening the public health infrastructure becomes a critically important investment for every person living in North Carolina.

Over the past fifteen years, North Carolina has made numerous attempts to strengthen its public health infrastructure. In 2004 the North Carolina Public Health Task Force was created and charged with recommending ways of improving the quality and the accountability of the state and local public health system, improving health outcomes, and eliminating health disparities. The task force issued its final report, the *North Carolina Public Health Improvement Plan*, after a process that was unique for two reasons.[5] First, the plan was written by an extremely diverse group of stakeholders from all significant public health constituencies. The fifty-six-member body included state and local health officials, members of the General Assembly, county commissioners, board of health members, physicians, and lay partners.

Second, the task force generated and invited public debate to develop the plan's recommendations, in a way that no other commissions and task forces have done. Each of the six working committees of the task force (Accreditation, Accountability, Structure and Organization, Workforce Development, Planning and Outcomes, and Finance) developed interim recommendations. Members of the task force then went out into the community and held three regional town meetings to present these interim recommendations and listen to public comment on them. Public comment via e-mail also was solicited.

from public and private sources: health departments, schools, hospital foundations, the BellSouth Foundation, and the Duke Endowment. Today the effort is supported through receipts (Child Health Insurance Program, Medicaid, and other third-party insurance) and funding from public health, schools, and the hospital. The current annual operating budget for the eight centers is approximately $725,000, which does not include significant in-kind donations made at each site, such as space and utilities.

The results of these school-based health centers are impressive and demonstrate the value of this initiative. Of the 8,600-plus students in the eight middle and high schools, 3,352 (39 percent) were seen at the schools' health centers during the 2003–04 school year. Combined, these students made 11,971 medical visits to the health centers during that school year. They sought medical help for various conditions or needs, including allergies, asthma, diabetes, headaches, sprains, accidental injuries, and physical examinations to participate in sports. At the four middle school centers, health professionals managed more than 8,000 prescription medicines, such as insulin for diabetics.

During each visit the children who were seen at the centers were asked in a survey, "If there wasn't a health center at your school, where would you go to get help?" Of the 11,971 visitors, 49.7 percent said that they would not get any care, 31.7 percent said that they would go to their doctor, 2.2 percent said that they would go to the hospital emergency room, and the remainder didn't know. The visitors also were asked, "If there wasn't a health center at your school, would you stay at school or leave school and go home?" Seventy-two percent indicated that they would stay at school even though they were sick, and 28 percent said that they would go home. Because these schools have health centers, 92 percent of the students received care and returned to class; only 8 percent were too sick to stay at school and went home.

These survey results strongly support the conclusion that the school-based health centers help children by increasing their access to health care and al-

A school nurse works in one of the school-based health centers that were initiated by Cleveland County's Healthy Carolinians Partnership.

HC Partnerships

Implementing North Carolina's *Public Health Improvement Plan*

The *North Carolina Public Health Improvement Plan* was presented to the General Assembly in October 2004. Its eighteen recommendations addressed both chronic infrastructure needs ($32 million) and gaps in critical services ($40 million).

The General Assembly has taken action in 2004 and 2005 to implement some of the plan's recommendations. It has approved significant new funding for school health, HIV/AIDS drugs, accreditation of local health departments, incubators, early intervention services, and elimination of the enormous health disparities in North Carolina. Also, the DPH went ahead with plans to establish an Office of Public Health Accountability. Further, planning is under way to replace the State Laboratory for Public Health and the North Carolina Medical Examiner's Office, both of which are completely outdated and inadequate facilities for the demands placed on them by today's public health challenges.

During the twentieth century, average life expectancy in the United States increased by about 50 percent, from 50 years of age in 1900 to about 75 in 2000.

Applauding the Incredibles

The public health system and community, and the elected officials who support it, can take pride in a series of accomplishments in recent years that can fairly be called "incredible."

Impact of the task force's report. The continued impact of the work of the North Carolina Public Health Task Force 2004 is a welcome reminder of the quality of its recommendations and testimony to the powers of collaboration. The excellence of its *Public Health Improvement Plan* can be credited not only to the task force members and staff, who pursued their important work over eighteen months, but also to the many people across North Carolina who contributed their personal time and energy to the ongoing deliberations. The report is a public document in the best sense of the term. That it was written so well in the midst of a lengthy fiscal crisis speaks volumes about the dedication of the public health community and those who work to support it.

National recognition. In 2004, North Carolina's efforts to build a stronger system for emergency preparedness and response were recognized nationally. The Trust for America's Health report, a highly regarded assessment of emergency

lowing them to stay in school and learn. The results also demonstrate that the school-based health centers are helping the community by ensuring that health care is provided in an efficient, cost-effective method: students are using the centers rather than the emergency room at the hospital.

Another example of success enjoyed by the Alliance for Health is the outcome of local efforts to encourage the school board to adopt a 100 percent tobacco-free campus policy for schools. The local health department took the lead in bringing the proposal to the school board. The alliance, through its diverse membership, advocated for passage of this policy by making telephone calls, writing letters to the editor, and personally contacting school board members. The policy was adopted and became effective July 1, 2005.[7]

Pitt County: Pitt Partners for Health

Pitt Partners for Health is one of the oldest HC Partnerships. Since its inception in 1994, it has actively pursued a variety of initiatives to improve health in Pitt County. In 1996, in collaboration with the Pitt County Memorial Hospital, the Pitt County Health Department, and the Brody School of Medicine, Pitt Partners conducted an intensive health survey of 1,000 representative households across the county. From the findings, it concluded that the county's diabetes rate was 50 percent higher than that of the rest of the state and that the death rate from diabetes was significantly higher among the African-American population in the county than among whites and other racial or ethnic groups. At the time, diabetes was the fourth-leading cause of death in Pitt County.

Pitt Partners coordinated planning and implementation of the Reducing Risk with Community and Churches through Assessment, Referral, and Education Project (CARE), which works with African-American churches in the county to facilitate diabetes education,

Livingstone Baptist Church, part of Pitt County's Healthy Carolinians Partnership, received the Blackmon leadership award for its efforts to eliminate disparities in health care among racial and ethnic groups.

HC PARTNERSHIPS

preparedness, ranked North Carolina number 1 in the country (with Florida).[6] At the time of the report, 81 percent of North Carolina's local health departments had a dedicated bioterrorism planner on staff, and 90 percent had completed an assessment of the preparedness of their workforce. The state also had opened new regional public health laboratories, established a bioterrorism Biosafety Level III lab, and deployed the North Carolina Hospital Emergency Surveillance System. North Carolinians everywhere are safer as a result.

Response to hurricane damage. During 2004, Hurricanes Ivan and Frances brought extensive damage to the western part of the state. There were eleven deaths reported, 120 homes lost, and an additional 16,234 homes damaged. North Carolina's newly developed regional surveillance teams (established with federal emergency-preparedness funding made available after September 11, 2001) conducted a series of rapid needs assessments to enable the fair and efficient distribution of relief during this serious crisis. The public health response to these hurricanes, as well as those in the past, exemplifies how effective public health can be with adequate resources.

Handling of disease outbreaks. Serious outbreaks of communicable diseases occurred in 2004. An *E. coli* outbreak of more than 100 cases was attributed to exposure to contaminated animals at the 2004 State Fair. A number of children still remain on dialysis from their infection. A Legionella outbreak linked to a contaminated ventilation system in a mountain community resulted in two deaths. The state also experienced, for the first time in a decade, person-to-person transmission of measles. In all these cases, the public health response was swift and effective.

The state always has struggled to battle sexually transmitted diseases but has made significant progress in recent years with syphilis and HIV. In 1999, North Carolina had the fourth-highest rate of syphilis infection in the nation. As a result of a targeted effort in the communities most affected, the state's rate of syphilis infection has fallen by 79 percent. In the HIV/AIDS arena, progressive action by the General Assembly allowed the state to eliminate the waiting list for HIV/AIDS drugs and enroll 800 new patients to receive these lifesaving medications. Also, the State Laboratory for Public Health announced a new method of testing for acute HIV infection that will lead to earlier diagnosis and treatment. This is the first test of its kind in the country, symbolic of the work of this important, nationally regarded facility.

A diabetic tests the level of sugar in her blood with a glucose-testing device.

screening, and treatment for the African-American community. CARE began in the Pitt County Health Department with broad-based input and support from the community. Pitt Partners received $900,000 from the Pitt Memorial Hospital Foundation to initiate the project.

After CARE was established, the management, funding, and leadership gradually were transferred to the Cornerstone Missionary Baptist Church, an African-American church in Greenville. CARE then was expanded to include twelve more African-American churches and one support group representing several other churches. CARE provided each church center with educational material, blood pressure cuffs, scales, file cabinets, and other resources to help its parishioners. During the first few years, more than 2,500 people were screened for diabetes, the majority of them African Americans. Of those screened, 60 percent were identified as being at risk. People without a personal physician were linked with primary care doctors. Fifty lay health advisers from the churches were trained to maintain a church-based support group. An Indigent Care Fund was established to pay for medications for disadvantaged people with diabetes.

The diabetes mortality rate in the county has decreased, moving diabetes from the fourth-leading cause of death to the fifth (for the changes in Pitt County's death rate from diabetes 1999–2002, as compared with North Carolina's, see Table 1).

In Pitt County the 1999 death rate from diabetes was 32.1 per 100,000 people. In 2002 the rate was 24.7 per 100,000, a 21.3 percent decrease. For the same period, there was only a slight decrease in the diabetes death rate statewide. The burden of the disease has decreased as high-risk people have improved their ability to control the disease.

Currently, CARE does not have funds to continue screening. The lack of funds may change the progress that Pitt County has made since 1996. However, twenty lay health advisers are working at all the

Table 1. **Diabetes Death Rate: Comparison of Pitt County with North Carolina, 1999–2002**

Year	Pitt County Rate/100,000	North Carolina Rate/100,000
1999	32.1	26.8
2000	29.0	25.7
2001	21.5	26.6
2002	24.7	26.5

Source: N.C. State Ctr. for Health Statistics, 2 North Carolina Vital Statistics, Leading Causes of Death—1999, 2000, 2001, and 2002 (Raleigh: NCSCHS, 2000, 2001, 2002, 2003), available at www.schs.state.nc.us/SCHS/data/vitalstats.cfm.

church sites, providing support and education to diabetics. In 2004 the GTF–HC awarded the first Charles Blackmon Leadership Award for the Elimination of Health Disparities to Cornerstone Baptist Ministries for the progress it has made in responding to the diabetes health problems in the African-American communities of Pitt County.

Conclusion

As these two case studies demonstrate, when there is a strong vision for improvement in community health, combined with committed leadership, coordination, and collaboration, great things can happen.

Healthy Carolinians is an important strategy for addressing public health issues. The HC Partnerships work well to bridge gaps between state and local resources. For example, by working through the HC Partnerships, state public health programs have access to multiple local agencies and a diverse group of committed residents who will adapt the public health programs as well as enhance and expand them with additional resources. The DPH has a rich history of working shoulder to shoulder with the HC Partnerships on childhood obesity, physical activity, diabetes control, cardiovascular health, cancer prevention and control, tobacco control, and injury prevention. Healthy Carolinians Partnerships are an important component of North Carolina's public health infrastructure. They translate state goals into concrete local action; mobilize local resources across business, not-for-profit, and government sectors; and help communities respond to new health challenges.

Notes

1. The national Healthy People objectives are published in U.S. Dep't of Health and Human Services, Healthy People 2010 (Washington D.C.: U.S. Government Printing Office, 2000).

2. U.S. Dep't of Health and Human Services, Healthy People 2010 (Washington D.C.: U.S. Government Printing Office, 2000). In 1991, Governor James Martin issued Executive Order No. 148, which established the Governor's Task Force on Health Objectives for the Year 2000. Shortly after Governor James B. Hunt took office in 1994, he extended the life of the task force through Executive Order No. 56. In 1999, in Executive Order No. 147, Governor Hunt changed the name of the task force to the Governor's Task Force for Healthy Carolinians, revised the membership, and directed it to establish the 2010 health objectives for North Carolina. In 2002, newly elected Governor Michael Easley issued Executive Order No. 13, which extended the life of the task force until the present.

3. Report of the Governor's Task Force on Health Objectives for the Year 2000 (Raleigh: Nov. 1992).

4. Healthy Carolinians Partnerships are certified every four years by the GTF–HC. Standards for certification can be found on the HC website, at www.HealthyCarolinians.org.

5. The General Assembly appropriated $1 million for HC ($10,000 per county) in fiscal years 2000–01 and 2001–02. In fiscal year 2002–03, it appropriated $750,000 ($7,500 per county). The 2005 General Assembly has appropriated $500,000 for HC.

6. The Institute of Medicine, in its landmark publication *The Future of Public Health* (Washington, D.C.: National Academy Press, 1988), articulated a set of core functions for public health: assessment of health status and health needs to guide planning and program development; policy development to enable the implementation of public health interventions and assure that communities are healthy; and assurance that necessary health services, both personal and public, are available to everyone.

7. Information about the county's 100 percent tobacco-free schools policy can be found at www.clevelandcountyschools.org (follow "Tobacco Free Schools" hyperlink) (last visited July 13, 2005).

Reduction of unwanted pregnancies. North Carolina's efforts to reduce unintended pregnancies were given a boost in 2004 with the approval of the federal family planning waiver. Newly expanded family planning services now will become available to women aged 19–55 and men aged 19–60 at or below 185 percent of the federal poverty level. It is estimated that this program will save $38 million during the first five years alone and help avert almost 7,500 unintended pregnancies. This effort to make certain that babies are born into families who are planning for them is a critical strategy in lowering the state's infant mortality rate, which crept up in 2004.

Improving success in school. New funding has provided for an additional 195 school nurses for North Carolina's public schools and for 100 nurse and social worker "child and family teams." The state's inadequate ratio of nurses to students has been a chronic problem and, for many students, has contributed to a lower level of academic achievement. The new funding, based on task force recommendations, resulted in twenty-four counties meeting the nationally recommended nurse-student ratio of 1:750 in 2004. This is an important step in safeguarding the health of the state's children and thus the state's future. North Carolina's Early Intervention Program, which serves children with developmental delays or at risk for them, completed its transition to public health in 2004. Together these two developments will contribute to higher levels of student readiness and academic performance.

Accomplishments in chronic disease control and prevention. Several notable accomplishments were made in this area:

- Implementation of the Violent Death Reporting System
- Release of the statewide Genomics Plan
- Initial development of an Acute Stroke Registry prototype
- Release of the suicide prevention guide, *Saving Tomorrows Today*
- Release of Food and Physical Activity Standards for North Carolina schools

Additionally, more than half of the state's 115 local public school systems now are completely tobacco-free, thanks in large part to funding from the North Carolina Health and Wellness Trust Fund.

New rules governing public health. The regulatory authority of North Carolina's public health system is an important underpinning of the many programs and services that the system provides. Last year the North Carolina Commission for Health Services undertook a variety of measures to strengthen public health:

- Adoption of a new set of rules establishing decontamination

The North Carolina Institute for Public Health

Edward L. Baker

The North Carolina public health system has changed significantly over the last several years in response to challenges at the national, regional, and state levels. Public recognition of the need for a strong public health infrastructure following September 11, 2001, and the anthrax attacks the same year resulted in much-needed improvements in information systems, laboratories, epidemiology, workforce training, and communication capacity. In fact, a 2004 survey by the Trust for America's Health ranked North Carolina as one of the top states in the nation in level of public health preparedness.[1]

Despite substantial progress, many challenges remain, both nationally and in North Carolina. The North Carolina Institute for Public Health (NCIPH), the service and outreach arm of the top-ranked School of Public Health at the University of North Carolina (UNC) at Chapel Hill, is actively engaged with the state's public health community in several important new initiatives to address the challenges by improving the state's public health infrastructure. Specifically, NCIPH is involved in (1) evaluating and educating the public health workforce; (2) administering a pilot accreditation program intended to bolster organizational capacity at the state and local levels; and (3) coordinating cross-county collaborations among local public health agencies through the Public Health Incubators Initiative.

The author is director of the North Carolina Institute for Public Health. Contact him at ed_baker@unc.edu.

Public Health Workforce

A study recently completed by NCIPH revealed that 49 percent of North Carolina's public health workforce is forty-five years of age and older.[2] Within the next five years, up to 25 percent of the workforce will retire, leaving the ranks depleted. They will be particularly depleted of people with the experience and the institutional knowledge to lead the response to public health threats and emergencies.

Beyond the aging of the workforce, public health professionals are leaving because the pay in public health has not kept up with that in other fields in which they can find employment. Particularly at the state level and below, and more conspicuously in North Carolina and other southern states than in other parts of the country, epidemiologists, biostatisticians, and others trained in public health, as well as nurses and other health care professionals, can find more remunerative positions in hospitals, private industry, academia, and research than they can in public health.

A possible contributor to the underpayment of public health practitioners is the relatively low level of formal training among them. A landmark report in 2002 from the Institute of Medicine spotlighted that many who work in public health lack the formal training needed for the complex tasks they face daily.[3] According to the Centers for Disease Control and Prevention (CDC), 78 percent of the nation's public health officials lack advanced training, and more than 50 percent have no basic health training at all.[4] In North Carolina the numbers are similar.[5]

NCIPH offers public health workers a wide range of continuing and executive education programs. For example, NCIPH houses the nation's largest office of continuing education located in a school of public health. Further, it is in-

standards for illegal methamphetamine laboratories

- Major revision of the on-site sewage rules related to identification of soil wetness conditions
- Adoption of a new set of rules governing the sanitation of primitive camps
- Major revision of the on-site sewage rules related to innovative sewage systems
- Adoption of rules to establish a reporting system for syndromic surveillance, for use by hospital emergency rooms[7]

Looking at the Road Ahead

Recent progress in strengthening the infrastructure of North Carolina's public health system is a good start, but much is yet to be accomplished.

To realize the potential benefits of accreditation, North Carolina must continue to refine the system and work to achieve accreditation of all local health departments as well as the state Division of Public Health.

A crisis has emerged in the public health workforce in terms of recruiting new young professionals into public health as well as training and retaining the current workforce in today's highly competitive workplace market. In addition, many state and local staff are approaching retirement. Affordable, practical solutions that can be implemented in a timely manner need to be articulated and put into place. The *Public Health Improvement Plan* recommends scholarships and internships as a good start. North Carolina is fortunate to have a premier School of Public Health and its Institute for Public Health as a major partner, not only in addressing workforce issues but also in accrediting local health departments, supporting regional collaborations, and undertaking many other ventures.

The General Assembly has recognized the promise of regional collaboration among health departments, and North Carolina's new group of incubators is making good progress on a variety of common issues. The progress of these incubators must be monitored closely so that the state can capitalize on the economies of scale that they will surely realize and the best practices that they will certainly identify. (For more information on the incubators, see the article on page 12.)

Major work still needs to be done in community health assessment, a core public health function. DPH's Office of Healthy Carolinians continues to be a critical effort to engage communities in identifying the most important health issues and bringing all of the partners together to improve health outcomes (for more information on

volved in five major management and leadership initiatives: the national Public Health Leadership Institute, the Emerging Leaders program, the PREVENT (Preventing Violence through Education, Networking, and Technical Assistance) initiative, the Management Academy for Public Health, and the Southeast Public Health Leadership Institute. In addition, through the North Carolina Center for Public Health Preparedness, also housed at NCIPH, a wealth of online training materials has been developed, providing the workforce with job-relevant, state-of-the art training and educational opportunities.

Clearly, more can and should be done to continue to build the knowledge and the skills of frontline public health workers as they seek to address the threats to community health, both now and in the decades ahead. Partnerships between these practitioners and academic colleagues hold promise for addressing future challenges.

According to the Centers for Disease Control and Prevention, 78 percent of the nation's public health officials lack advanced training, and more than 50 percent have no basic health training at all.

Organizational Capacity

Unlike other health institutions and other public-sector institutions, local and state public health agencies have lacked formal performance standards and accreditation processes. Recently, along with a range of national partners, the CDC has led the creation of national public health performance standards for state and local public health systems and for public health governing bodies. Now that these standards exist, a few states are creating formal systems of agency assessment and accreditation.

The national standards were developed to guide state and local public health organizations as they seek to define and deliver essential public health services. Essential services are processes used in public health to prevent epidemics, injuries, and environmental hazards; promote healthy behaviors; respond to disasters; and ensure quality and accessibility of health services.

North Carolina is in the vanguard of the national movement to establish accreditation systems for public health agencies. A pilot project to develop policies and procedures for local health agency accreditation is now under way through a partnership between NCIPH, the State Division of Public Health, and local health directors. To date, ten local health agencies have successfully completed the accreditation process, which consists of agency self-assessments, peer site visits, and review and action by an accreditation board. Those completing the process have identified a wide range of benefits to their organizations' functioning, including some examples of revenue enhancement. In August 2005 the North Carolina General Assembly made the accreditation program permanent and provided funding for ongoing operations.[6]

Improvement of Collaboration among Local Health Agencies

Public health practice in North Carolina has a strong tradition of local autonomy. The state's eighty-five local health agencies often act as autonomous entities providing health services to one or more counties.

the work of this office, see the article on page 5). For maximum health impact, this community-based work should be expanded on.

In the area of critical service gaps, the state must continue to build comprehensive school health programs. Its plan to achieve the 1:750 nurse-student ratio will help address unmet health needs of children and ultimately improve their success in school. The North Carolina State Board of Education has been an outstanding leader by requiring thirty minutes of daily physical activity by fall 2006. In addition, tremendous opportunities lie ahead in developing innovative school health policies in nutrition, physical activity, and tobacco use, and a stronger health education curriculum.

Stemming a growing epidemic of HIV infection and AIDS also will require additional resources and creative strategies such as needle exchange and support of community-based minority organizations and faith organizations. HIV/AIDS represents North Carolina's greatest health disparity, with minorities being affected nine times more than whites. The number of new infections has increased for the third year in a row, and currently more than 15,000 people in North Carolina are living with HIV/AIDS.

Strategies to prevent chronic diseases, the leading causes of death and disability in North Carolina and the nation, remain critically underfunded. New funds could be directed toward prevention of tobacco use, promotion of physical activity, and improvement of nutrition.

Also, injuries represent the leading cause of years of life lost, and many injuries can be entirely prevented.

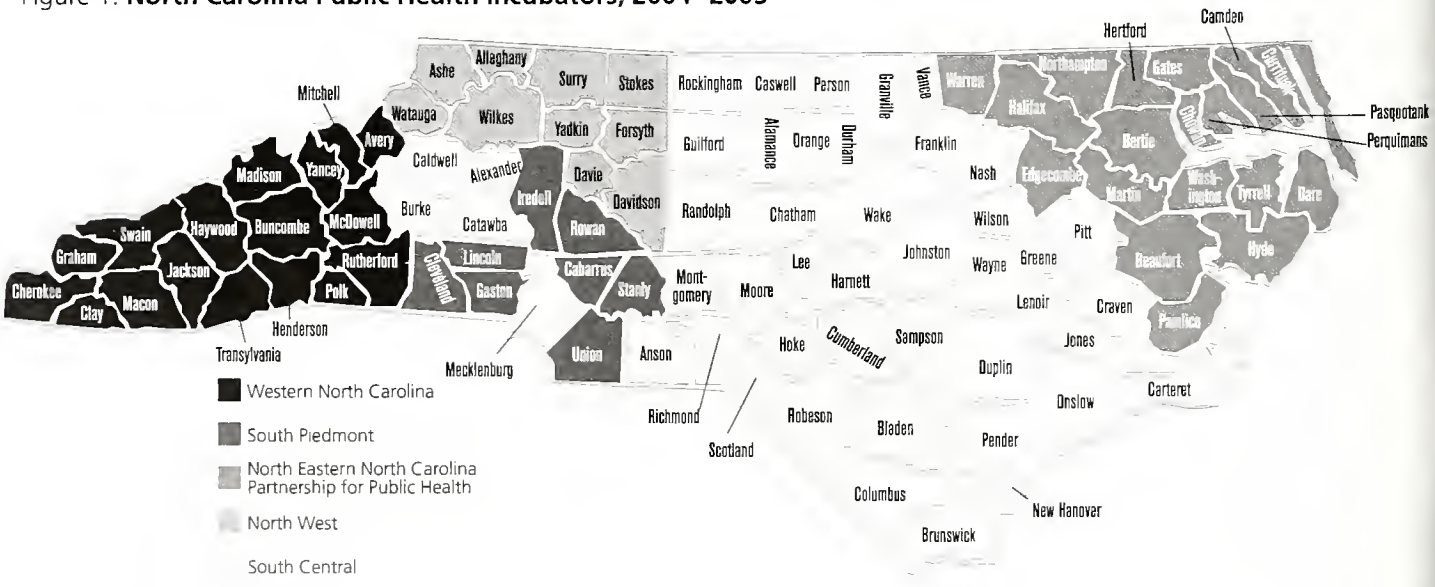
Immunizations continue to be the foundation of preventive health strategies in North Carolina. The universal vaccine program and the public-private partnership with the medical community remain critical components of immunization efforts. However, the cost of new vaccines for meningitis, pertussis, pneumococcal disease, and other diseases is challenging North Carolina's ability to provide them for all children.

The universal vaccine program and the public-private partnership with the medical community remain critical components of immunization efforts. However, the cost of new vaccines for meningitis, pertussis, pneumococcal disease, and other diseases is challenging North Carolina's ability to provide them for all children.

One way in which North Carolina is attempting to support these local agencies is through the Public Health Incubators Initiative, which is designed to encourage cross-county collaborations. In 2003 the North Carolina General Assembly authorized the creation of innovative partnerships for design and delivery of public health services. Modeled after business incubators, which foster local collaboration and innovation around economic development, public health incubators foster more effective and efficient allocation of resources for public health. NCIPH acts as the coordinator for this program, providing consultation and technical assistance in response to locally identified needs.

The public health incubators grew out of the North Eastern North Carolina Partnership for Public Health, which has demonstrated the efficacy of such a partnership. Since its inception in 1999, participants in the partnership have shared and secured funds, undertaken several joint initiatives, and hired a central staff that serves all partnership health departments. Economies of scale, an audience that attracts funding agencies, and collaboration on a common set of public health priorities have served the partnership well.

Figure 1. **North Carolina Public Health Incubators, 2004–2005**



Source: N.C. Inst. for Pub. Health.

Conclusion

North Carolina is fortunate to have a public health system that is well led by public health professionals valued by the community. The state's public health partnerships are truly extraordinary. These critical liaisons with agriculture, law enforcement, other health care providers, schools, foundations, businesses, community-based organizations, and sister human services agencies cannot be taken for granted. They have to be nurtured and strengthened in the years ahead. The government's public health infrastructure requires renewal and reinvestment to sustain these partnerships and to achieve improved health outcomes for all people living in North Carolina. Dr. Snow's pump—the state and local public health infrastructure—must be primed. It must be strengthened with sustainable resources to ensure North Carolina's improved health in the coming years.

The futures of the public health system and the public's health in North Carolina are closely linked. Resources necessary to sustain an adequate public health system should be considered an investment, not an expense. The investment needs to be an adequate one, and sustained long enough for North Carolina's residents to realize the benefits. The stakes are too high to do otherwise. As Thomas Jefferson once said, "Without health, there is no happiness." Dr. Snow in 1845 would probably have agreed with him, and so do North Carolinians in 2005.

Notes

1. N.C. State Ctr. for Health Statistics, A Survey of Public Health Knowledge, Attitudes and Behavior in North Carolina (Raleigh: NCSCHS, Oct. 2001).
2. *Id.*
3. Lisa Hollowell, Public Health Fiscal Analyst, Fiscal Research Div., N.C. General Assembly, "North Carolina Department of Health and Human Services, Division of Public Health," PowerPoint presentation (Mar. 2005), available from Hollowell, at lisah@ncleg.net.
4. *North Carolina,* in United Health Foundation, America's Health: State Health Rankings (2004 ed. Minnetonka, Minn.: the Foundation, 2005), available at www.unitedhealthfoundation.org/shr2004/states/NorthCarolina.html.
5. Pub. Health Task Force, N.C. Div. of Pub. Health, North Carolina Public Health Improvement Plan (Raleigh: NCDPH, Jan. 15, 2005), available at www.ncpublichealth.com/taskforce/taskforce.htm.
6. Trust for America's Health, Ready or Not? Protecting the Public's Health in the Age of Bioterrorism (Washington, D.C.: the Trust, 2004).
7. In times of emergency, hospitals and the public health system are overwhelmed with calls from the "worried well," people who may not actually be at risk but are concerned and need information. "Syndromic surveillance" is a newly implemented automated system that helps callers find the right resources for their concerns.

Relying on lessons learned from the partnership, these newly created public health incubators (see Figure 1) have moved ahead quickly, formally establishing governance structures, identifying strategic directions, and conducting baseline public health assessments. Target health problems include diabetes, health disparities among racial and ethnic groups, illness in people who are elderly, and other urgent concerns identified in community health assessments. Although the incubators cannot fully address all the large and complex issues facing the state, they are an important step in enhancing local capacity to meet serious public health challenges.

Target health problems include diabetes, health disparities among racial and ethnic groups, illness in people who are elderly, and other urgent concerns identified in community health assessments.

Conclusion

NCIPH provides a unique resource to the state in execution and management of these and other major programs, facilitating access to services designed to improve delivery of essential public health services at the local level. The pioneering academic-practice partnerships build on decades of interaction between the UNC School of Public Health and the North Carolina practice community and serve as models for the rest of the nation. Through such efforts, NCIPH is realizing its mission, "Serving our state, leading the nation."

Notes

1. Trust for America's Health, Ready or Not? Protecting the Public's Health in the Age of Bioterrorism (Washington, D.C.: the Trust, 2004).
2. North Carolina Institute for Public Health, A Report on the Public Health Workforce of North Carolina (Chapel Hill: NCIPH, 2004), available at www.sph.unc.edu/nccphp/wfds_assess_rpts/Statewide.pdf.
3. Institute of Medicine, Who Will Keep the Public Healthy? Educating Public Health Professionals for the 21st Century (Washington, D.C.: National Academy Press, 2003).
4. *Id.*
5. *See* NCIPH, Report on the Public Health Workforce.
6. Act of Aug. 8, 2005, SL 2005-369 (establishing a Local Health Department Accreditation Board in the North Carolina Institute for Public Health, requiring the Commission for Health Services to develop rules governing accreditation, and requiring all local health departments to become accredited); Appropriations Act, SL 2005-276 (allocating money to the Department of Health and Human Services). The detailed allocation of $700,000 for accreditation appears in the Joint Conference Committee Report on the Continuation, Expansion and Capital Budgets (Raleigh: Fiscal Research Div., N.C. General Assembly, Sept. 8, 2005), the unofficial version of which is available at www.ncga.state.nc.us.

Public Health behind Bars: Health Care for Jail Inmates

Jill Moore

In a recent year in North Carolina, local jails admitted more than 400,000 people. Some of them were admitted more than once, so this figure does not reflect the total number of individuals who spent time in North Carolina's jails that year. But it does suggest that the number was quite large. The vast majority of those who enter jails are released into the community shortly after entering—usually in less than two weeks.[1] Jail inmates are more likely than the general public to have health problems—including high rates of drug and alcohol abuse and communicable diseases such as tuberculosis and syphilis—so clearly their health can affect the overall health of a community. If their health needs are not addressed while they are in jail, any communicable conditions that they have may spread. Further, their chronic conditions may worsen, perhaps resulting in a need for more costly care on their release, which may be borne by public clinics or hospitals.

Local governments that operate jails are legally obligated to make health care available to the inmates. As the number just reported suggests, this can be a daunting task. Providing health care is not a jail's primary mission, but it is a critical function that jails must perform, and under much more challenging circumstances than most health care providers face. In recent years, several trends have converged to make jail

The author is a School of Government faculty member who specializes in public health law. Contact her at jill_moore@unc.edu.

health care more difficult—but also more important—than ever:

- More inmates: The number of people incarcerated in county jails in North Carolina more than quadrupled from the 1970s to the 1990s.[2] By 1998 the average daily population of inmates was about 13,250 statewide.[3] The vast majority of inmates are "pretrial detainees"—people who have been charged with crimes but not yet tried and convicted.[4]
- Sicker inmates: Inmates are in poor health relative to the general population. In a 2002 report to Congress, the National Commission on Correctional Health Care noted that the prevalence of mental illness, chronic illness, and communicable disease is higher among inmates than among the general population.[5] Some illnesses suffered by inmates, such as diabetes and hypertension, require complicated medication regimens. Other illnesses, such as active infectious tuberculosis, potentially pose risks to other inmates and jail personnel, if they are undetected or improperly managed.
- Costlier care: Health care costs have soared, and they continue to rise at a rate that exceeds the general rate of inflation. The National Commission for Correctional Health Care has asserted that, at the state level, expenditures for inmate medical care are increasing by about 10 percent each year.[6]

In addition to potentially threatening public health, lapses in jail medical care can be personally tragic. In recent years in North Carolina, there have been several inmate deaths related to unmet medical needs.[7]

Also, a number of inmates have committed suicide. Such incidents do not necessarily point to lapses in medical care, but they do demonstrate the importance of recognizing and attending to inmates' mental health needs as well as their physical ones.

This article briefly reviews government's legal duty to provide health care to inmates. It then describes the ways in which jail health care is provided in North Carolina and discusses some of the challenges that inmate medical care creates for local governments that operate jails.

The Legal Duty to Provide Health Care to Inmates

North Carolina jails are legally obligated to provide health care to inmates. This requirement comes from both federal and state law.

Federal Constitutional Law: The "Deliberate Indifference" Standard

Nearly thirty years ago, in *Estelle v. Gamble*, the U.S. Supreme Court ruled that the government has an obligation to provide medical care to those whom it incarcerates, and that failure to provide such care may violate inmates' constitutional rights. Jail medical care is considered a condition of confinement. When conditions of confinement are extremely severe or inadequate, they can amount to cruel and unusual punishment in violation of the Eighth Amendment. In *Estelle* the Court held that the Eighth Amendment can be violated by the failure to provide necessary medical care. The Court reasoned,

When conditions of confinement are extremely severe or inadequate, they can amount to cruel and unusual punishment in violation of the Eighth Amendment.

> *An inmate must rely on prison authorities to treat his medical needs; if the authorities fail to do so, those needs will not be met. In the worst cases, such a failure may actually produce physical "torture or a lingering death," the evils of most immediate concern to the drafters of the Amendment. In less serious cases, denial of medical care may result in pain and suffering which no one suggests would serve any penological purpose. The infliction of such unnecessary suffering is inconsistent with contemporary standards of decency . . .*[8]

The *Estelle* Court concluded that the Eighth Amendment is violated by a jail official's "deliberate indifference [to an inmate's] serious medical needs."[9]

What constitutes "deliberate indifference" under this ruling? The U.S. Supreme Court has held that a jail official is deliberately indifferent to an inmate's serious medical needs only if the official *actually knows* that the inmate has a serious medical need and fails to take reasonable steps to deal with it.[10] Deliberate indifference therefore is more than just negligence. An inmate may have a solid claim for medical malpractice or negligence under state laws but still not be able to show that the circumstances were so harsh or inadequate that they violated his or her constitutional rights. For example, in *Estelle* the inmate had a series of medical diagnoses, including hypertension and cardiac arrhythmia, and a long history of interactions with prison detention officers and medical staff regarding the care of those problems. The inmate acknowledged that he had received treatment but claimed that additional treatment options should have been pursued. The Court held that the allegations were not sufficient to amount to a violation of the inmate's constitutional rights. At most they stated a claim of medical malpractice that should be pursued in state court.[11]

To establish the constitutional violation, an inmate also most show that the need the jail official disregarded was a "serious medical need." Federal courts have held that a serious medical need is "one that has been diagnosed by a physician as mandating treatment or one that is so obvious that even a lay person would easily recognize the necessity for a doctor's attention."[12]

All jail staff members with some responsibility for medical care may potentially be held liable for deliberate indifference—from the medical staff who actually provide the care, to the detention staff who may be the first to become aware that an inmate is exhibiting a serious medical need, to the jail administrator who is responsible for jail health policies and staff training.[13]

People who are not employees of the jail also may be held liable for violating Eighth Amendment rights if they are

North Carolina Jail Medical Plans

Section 153A-225(a) of the North Carolina General Statutes requires all local government units that operate a jail to have a jail medical plan. The plan must meet the following criteria:

- Be designed to protect the health and welfare of the inmates and to avoid the spread of contagious diseases
- Provide for the medical supervision of inmates and for emergency medical care, to the extent necessary for inmates' health and welfare
- Provide for the detection, the examination, and the treatment of inmates who have tuberculosis or sexually transmitted diseases

State regulations, commonly known as the North Carolina Jail Health Standards, specify certain issues that the medical plan must address. It must describe the health services that are available to inmates, and include policies and procedures addressing each of the following:

- Health screening of inmates on admission
- Routine medical care for inmates
- Management of inmates with chronic illnesses or known communicable diseases or conditions
- Administration, dispensing, and control of prescription and nonprescription medications
- Management of emergency medical problems, including emergencies related to dental care, chemical dependency, and pregnancy[1]
- Maintenance and confidentiality of medical records
- Privacy during medical examinations and conferences with qualified personnel

The regulations also specify that jails must have a sick-call procedure that allows inmates to communicate their health complaints each day. In addition, the regulations prohibit inmates from performing any medical functions in the jail, and require the jail medical plan to be reviewed annually.[2]

The regulations are enforced by the Jails and Detention Section of the Division of Facility Services, in the state's Department of Health and Human Services.

Notes

1. State regulations define "emergency medical problem" as "a serious medical need, including severe bleeding, unconsciousness, serious breathing difficulties, head injury, severe pain, suicidal behavior or severe burns, that requires immediate medical attention and that cannot be deferred until the next scheduled sick call or clinic." 10A NCAC 14J .0101(14).
2. 10A NCAC 14J .1001.

involved with inmate medical care. In a case that originated in a North Carolina prison, the U.S. Supreme Court held that a physician who provided medical services to prison inmates on a part-time, contractual basis could be held liable for such a constitutional violation.[14]

North Carolina Law: The Duty to Provide "Adequate" Care

Long before the U.S. Supreme Court issued its decision in *Estelle*, the North Carolina Supreme Court recognized the state's common law duty to provide medical care to inmates. In a 1926 case, *Spicer v. Williamson*, the court wrote, "The prisoner by his arrest is deprived of his liberty for the protection of the public. It is but just that the public be required to care for the prisoner, who cannot, by reason of the deprivation of his liberty, care for himself."[15] In 1992 the North Carolina Supreme Court reiterated this principle in *Medley v. North Carolina Department of Correction*. Drawing an analogy between the dependency of inmates on their custodians for medical care and the dependency of children on their parents, the court concluded that the state has a nondelegable duty to provide adequate medical care for inmates.[16]

Although the court in *Medley* referred repeatedly to the duty to provide "adequate" medical care, it did not define the term or set standards for determining adequacy. However, the court's conclusion that the Department of Correction was liable for injuries that the inmate suffered as a result of a physician's negligence suggests that to be considered adequate, inmate health care in North Carolina must conform to the usually accepted standards of practice for health care providers.[17]

North Carolina law also requires local governments that operate jails to adopt jail medical plans that are "adequate" to protect inmates' health and welfare.[18] The statute that imposes this requirement does not define "adequate," but it, along with regulations in the North Carolina Administrative Code, provides some guidance (see the sidebar on this page). The ultimate decision about whether a jail medical plan is adequate is made by the local health director. He or she must consult with the local mental health, substance abuse, and developmental disabilities authority and then approve the plan "if it is adequate to protect the health and welfare" of the inmates.[19]

Although they are not as straightforward as they might be, North Carolina statutes, regulations, and cases make clear that the state's standard for determining the sufficiency of the care provided to inmates is more stringent than the federal standard of deliberate indifference.

Jail Health Care in North Carolina

North Carolina jails meet their duty to provide routine medical care in several ways. Some hire their own health care provider, who becomes an employee of the jail or the sheriff's office. Others contract with a private health care provider or arrange for the local health department to provide services in the jail. Some jails use these methods in various combinations. For example, a jail might employ a nurse and also contract with a

private physician to direct and supervise the provision of care in the jail.

A small number of North Carolina jails have medical staff in the jails twenty-four hours a day, seven days a week. At the other end of the spectrum, a few jails have no health care provider on staff or on contract and must transport inmates to a local hospital or another community health care provider for any routine or emergency medical need.

State regulations require jails to have policies and procedures for responding to medical emergencies. Although all jails should be able to provide first aid or cardiopulmonary resuscitation around the clock, only rarely does a North Carolina jail have the equipment or the staff necessary to respond fully to a medical emergency.[20] As a result, most jails use emergency medical service agencies and hospital emergency departments for emergency care.

Challenges for North Carolina Jails

Inmate health care poses complicated challenges for North Carolina jails: Inmates are more likely than the general population to have serious medical problems, some of which may threaten the health of other inmates or jail personnel. Also, there is tension inherent in the jail's obligation to ensure adequate health care for inmates while maintaining the security of the facility. Further, the health care that inmates require can be extremely costly, but the resources available to pay for it may be quite limited.

The Nature of Inmates' Health Needs

There is ample evidence that inmates have more severe health problems than the general population. A 2002 report to Congress by the National Commission on Correctional Health Care compiled some of this evidence and reached the following conclusions: [21]

- Inmates are more likely to have serious communicable diseases than the general population. Between 13 and 19 percent of all HIV–positive people in the United States were incarcerated in 1997 (the year studied in the report). Inmates are five times more likely to have AIDS than noninmates. Tuberculosis is at least four times more common among inmates than among noninmates, and the figure may be higher. Nearly a third of all people with hepatitis C were incarcerated at some point during 1997, as were as many as 15 percent of all people with hepatitis B.
- Many inmates suffer from chronic diseases that require management during their incarceration. During the years studied in the report, 8–9 percent of inmates had asthma, 5 percent had diabetes, and 18 percent had hypertension.
- Large percentages of inmates suffer from mental illnesses. The report considered jail and prison inmates separately and found that in jails alone, up to 20 percent had anxiety disorders and up to 15 percent suffered from major depression. Between 4 and 9 percent had posttraumatic stress disorder, between 1 and 3 percent had bipolar disorder, and about 1 percent suffered from schizophrenia or another severe form of psychosis.[22]

Jails' ability to deal with the rising numbers of inmates with serious health problems varies. For example, some North Carolina jails have special "negative pressure" rooms that allow them to isolate inmates with tuberculosis from the general population, but many jails do not have such facilities.[23] Local jails sometimes can transfer inmates with medical needs beyond the jail's capacity to the state prison system.[24]

Jail detention staff and health care providers alike must attend to inmates' well-being and the facility's security simultaneously. The need to preserve security can create tremendous challenges for health care in jails.

The Nature of the Jail Environment

The primary mission of local jails is to detain potentially dangerous people in a secure setting. The provision of health care to inmates is a necessary function of jails, but it is not their sole function or even their most important one. Jail detention staff and health care providers alike must attend to inmates' well-being and the facility's security simultaneously. The need to preserve security can create tremendous challenges for health care in jails.

For example, jails in North Carolina are required to have policies and procedures regarding privacy during medical examinations and conferences with medical personnel.[25] The regulation that imposes this requirement does not elaborate on how it is to be achieved. National standards for accrediting jail health programs urge jail health care providers to conduct clinical encounters in private whenever possible and to permit detention officers to observe or listen to the encounter only if the inmate "poses a probable risk to the safety of the health care provider or others."[26] The purpose of protecting privacy is the same in the jail as it is in any other health care setting—to encourage honest and complete communications so that the patient can receive the most appropriate care. At the same time, a greater security risk undeniably exists when trained security personnel are not present: medical equipment can become a weapon, or a health care provider can become a hostage. Jail administrators may feel caught between two liability risks: the risk of providing inadequate medical care and the risk of inadequately protecting jail employees and other inmates.

Detention officers must escort inmates to health care providers. This requirement can lead to delays in inmates receiving care. In routine situations, delays may be unavoidable and reasonable, but in emergency circumstances, delays may be life- or health-threatening.

When inmates must leave the facility for care, a greater risk of escape exists. Some North Carolina jails make a point of not telling inmates the times and the dates of their medical appointments outside the jail so that the inmates cannot notify friends or family members

who might assist them in an escape attempt. Following the same rationale, jail officials often keep inmates in the dark about when they will be transferred from one jail to another, or from jail to prison. A frequent complaint of jail medical staff is that they too are not notified when inmates are to be transferred. This oversight can cause serious disruptions in an inmate's care if it deprives medical staff of the opportunity to prepare necessary medical records and medications to send with the inmate.

Finally, jails rarely have medical staff present around the clock, but inmates can become ill at any time. North Carolina jails are legally obligated to obtain emergency medical care for inmates when it is needed.[27] A state regulation defines "emergency medical problem" and includes in the definition any medical need that cannot be deferred to the next regularly scheduled sick call or clinic.[28] Whether or not to defer a medical need—a decision that can be difficult for health care providers—often is decided by detention officers.[29] An error in either direction has its costs. Failure to obtain care may threaten the inmate's life or health.

On the other hand, emergency care usually comes with a hefty price tag for the county, so jails do not want to use it unnecessarily. Making a decision about whether a situation constitutes an emergency is further complicated when detention officers have reason to believe that an inmate may be exaggerating or even inventing symptoms.

The Scope of Legal Obligations

Jails unquestionably have a legal obligation to provide inmate medical care, but numerous questions about the scope of that duty are unanswered. For example, many inmates spend a very short time in jail.[30] When, if ever, is it permissible for a jail officer to defer medical care for an inmate until the inmate's release? There is no clear legal answer to this question. Probably it is reasonable to defer care in some circumstances but not in others.

For example, suppose that before being incarcerated, an inmate made an appointment to have a dental cavity filled in two weeks. He expects to be out of jail within one week. Deferring care of the cavity until the scheduled appointment seems reasonable unless an emergency—such as an abscess—develops in the meantime. On the other hand, an inmate with symptoms of strep throat who expects to be out of jail within a week should be treated at the next scheduled time for routine health care (again, sooner if the inmate is very ill or an emergency develops).[31]

For another example, suppose a person is a "revolving-door" inmate—one who is in and out of jail regularly—and jail health care providers suspect her of failing to attend to her health needs when she is not in jail. If she then insists on medical care while incarcerated, can the jail refuse to provide it? This question has an easy legal answer, but it sometimes frustrates anyone with an interest in the county's budget. The jail's legal duty to provide adequate medical care to the inmate while she is incarcerated is unaffected by her failure to obtain care when she is on her own, even if the care she needs while in jail is costlier than it would have been if she had taken care of herself while in the community.

Financing of Jail Health Care

The cost of health care in the United States continues to rise at a rate that outpaces inflation.[32] Jails are not immune to this phenomenon. Indeed, jails may suffer more from increasing costs than other settings do, for inmates as a group are poorer, sicker, and more likely to need substance abuse or mental health services than the general population.[33] In addition, in recent years the number of inmates held in local jails increased, and some evidence indicates that jail inmates may be getting older.[34] Both of these facts contribute to increasing health care costs for jails.[35]

In North Carolina, counties bear most of the costs of health care. North Carolina jail administrators and health care providers often perceive—probably correctly—that many (if not most) jail inmates lack private medical insurance.[36] Inmates with public insurance, such as Medicaid, lose their eligibility for it upon incarceration (not conviction).[37] In the absence of third-party payers, the county becomes responsible for routine and emergency medical costs.

North Carolina law permits local jails to charge inmates a fee for routine medical care. The fee may not exceed $10 per incident and must be waived for indigent inmates.[38] The county must pay any remaining costs.

State law also requires the county to pay the cost of emergency medical services unless the inmate has third-party insurance. If the inmate has such insurance and it has not terminated upon incarceration, the law requires the emergency medical services provider to bill the insurer first, and makes the county liable only for any costs that are not reimbursed by the insurer. It also permits the county to attempt to recover those costs from the inmate.[39] The county is required to pay only for emergency medical care that is provided while the inmate is in its custody. Efforts to avoid this responsibility by releasing the inmate are likely to be unavailing.[40]

The state Department of Correction pays jails a portion of the cost of inmate health care if the inmate has extraordinary medical expenses, has been convicted (and thus is not a pretrial detainee), and fits into one of the following categories: is serving a sentence of thirty days or more, has been sentenced to state prison but been held in the local jail for more than five days, or is a parolee or postrelease supervisee awaiting return to state prison and has been held in the jail for more than five days. "Extraordinary medical expenses" are defined as expenses associated with hospitalization, outpatient care expenses that exceed $35 per occurrence or illness, or the cost of replacing broken eyeglasses or dental prosthetic devices, provided that they are broken while the inmate is incarcerated.[41]

The high cost of medical care may tempt jails to engage in what one legal commentator has described as "creative early release programs."[42] Although the temptation may be understandable, it is not legally defensible. In the only reported North Carolina case on this issue, the N.C. Court of Appeals held that a county was not relieved from financial responsibility when it arranged to have an unconscious inmate released from custody after he was hospitalized for meningitis.[43] Federal courts in other jurisdictions have found jails deliberately indifferent to inmates' serious medical needs when they have released inmates rather than provide needed medical care.[44] Release of a medically needy inmate also may run afoul of penological objectives, if an inmate's medical condition becomes a more important consideration than public safety in deciding whether an arrestee should be granted pretrial release.

Conclusion

Some North Carolina jails take on the responsibility and bear the costs of inmate health care because the law says they must. Others may view it as a moral or ethical obligation. A third view posits that inmate health care ultimately is beneficial to society as a whole because the vast majority of inmates will return to the community and it is better if they return free of infectious diseases that could spread to others. Moreover, preventing or treating their chronic conditions while they are incarcerated may be more cost-effective than not treating or undertreating those conditions, with the result of worse medical problems that require costlier care.

Whatever the underlying rationale, the bottom line is clear: Counties that operate jails must provide inmate medical care and are probably going to pay most of the costs of it. Furthermore,

failure to provide adequate care could result not only in adverse health consequences for inmates but in liability for the county. Provision of care occurs in an environment that poses unique challenges for all involved, from derention officers who must decide whether they are witnessing a true medical emergency to the jail health care providers who must constantly strike the balance between protecting their patients' privacy and protecting their own safety. Therefore, everyone with a stake in the county jail would be wise to learn more about local inmates' health care needs and the county's legal duties for jail medical care, and to consider how the county can meet those obligations in a way that is both fiscally responsible and protective of public health and safety.

Notes

1. In 1998, the most recent year for which data are available, about 407,000 inmates were admitted to local jails in North Carolina, and about 395,000 were released. Some were admitted and/or released more than once; therefore they are counted more than once in these totals. The average stay in jail in 1998 was twelve days. MICHAEL BERRY, SCREENING FOR SYPHILIS AND HIV IN NORTH CAROLINA'S JAILS: ASSESSING THE BENEFITS AND BARRIERS (Raleigh: N.C. Div. of Public Health, 2000) (citing data provided by the North Carolina Association of County Commissioners).

2. STEVENS H. CLARKE, INTRODUCTION TO THE COUNTY JAIL 7 (Chapel Hill, N.C.: Inst. of Gov't, Univ. of N.C. at Chapel Hill, 1999). For the sake of brevity, this article uses the term "county" to refer to the unit of local government that is responsible for the jail, for counties operate most North Carolina jails. However, the term should be read to include municipalities that operate jails and multicounty regional jails.

3. BERRY, SCREENING FOR SYPHILIS AND HIV. Data about inmate populations are collected monthly by the North Carolina Division of Facility Services, but they are not routinely compiled. In December 2004, average daily population was computed and was found to be 16,270. Personal communication from Kristi Wall, Office Assistant, Jails & Detention Section, N.C. Div. of Facility Services, to author (Aug. 19, 2005) (on file with author). However, this figure represents only that one month. An annualized average daily population figure might be higher or lower.

4. CLARKE, INTRODUCTION, at 7.

5. 1 NAT'L COMM'N ON CORRECTIONAL HEALTH CARE, THE HEALTH STATUS OF SOON-TO-BE-RELEASED INMATES: A REPORT TO CONGRESS (Chicago: the Commission, 2002).

6. This assertion appears on the commission's website, at www.ncchc.org/supplier/index.html.

7. *See, e.g.*, Luann Laubscher, *No Jail Health Plan a Misdemeanor*, SHELBY (N.C.) STAR, Sept. 9, 2002 (reporting a Cleveland County inmate's death from appendicitis); Jon Ostendorff, *Answers Required in Death of Inmate at Jail in Murphy*, ASHEVILLE (N.C.) CITIZEN-TIMES, Sept. 17, 2002 (reporting a Cherokee County inmate's death from diabetes).

8. Estelle v. Gamble, 429 U.S. 97, 103, 97 S. Ct. 285, 290 (1976) (citations omitted).

9. *Id.* at 106, 97 S. Ct. at 292. Strictly speaking, the Eighth Amendment's prohibition against cruel and unusual punishment does not apply to pretrial detainees and arrestees because they have not been convicted of anything and therefore are not supposed to be punished at all. However, federal courts have held that the Due Process clauses of the Fifth and Fourteenth amendments make the standard of deliberate indifference applicable to these people. *See* Bell v. Wolfish, 441 U.S. 520, 99 S. Ct. 1861 (1979) (holding that conditions of confinement can amount to punishment of unconvicted detainee, in violation of detainee's right to due process of law); Brown v. Harris, 240 F.3d 383 (4th Cir. 2001) (holding that, in area of medical care, standard for determining whether there has been violation of pretrial detainee's due process rights is same standard of deliberate indifference that is applied to determine whether there has been violation of convicted inmate's Eighth Amendment rights); Young v. City of Mount Ranier, 238 F.3d 567 (4th Cir. 2001) (applying standard of deliberate indifference to arrestees). The terms "arrestee" and "pretrial detainee" do not have precise legal definitions, but they are commonly understood to refer to people who are at different stages in the criminal justice process. An arrestee is a person who has been taken into custody by a law enforcement official but has not yet had a first appearance before a judicial official to determine whether the person will be charged with a crime, and if charged, whether the person will be released or detained before trial. A pretrial detainee is a person who has had a first appearance before a judicial official, has been charged, and is being detained pending trial, either because the person is ineligible for release or because the person is unable to post bail.

10. Farmer v. Brennan, 511 U.S. 825, 847, 114 S. Ct. 1970, 1984 (1994).

11. *Estelle*, 429 U.S. at 107, 97 S. Ct. at 292–93.

12. *See, e.g.*, Farrow v. West, 320 F.3d 1235, 1243 (11th Cir. 2003).

13. *See Estelle*, 429 U.S. at 104–05, 97 S. Ct. at 291 (holding that deliberate indifference can be "manifested by prison doctors in their response to the prisoner's needs or by prison guards in intentionally denying or delaying access to medical care or intentionally interfering with the treatment once prescribed") (footnotes omitted).

14. West v. Atkins, 487 U.S. 42, 108 S. Ct. 2250 (1988) ("Contracting out prison medical care does not relieve the State of its constitutional duty to provide adequate medical treatment to those in its custody, and does not deprive the State's prisoners of the means to vindicate their Eighth Amendment rights"); *see also* Medley v. N.C. Dep't of Correction, 330 N.C. 837, 412 S.E.2d 654 (1992) (holding Department of Correction liable for malpractice of part-time contracted physician).

15. Spicer v. Williamson, 191 N.C. 487, 490, 132 S.E. 291, 293 (1926). In *Estelle* the U.S. Supreme Court quoted approvingly from *Spicer* in reaching its conclusion that modern standards of decency require correctional institutions to attend to inmates' serious medical needs. *Estelle*, 429 U.S. at 104, 97 S. Ct. at 291.

16. The court wrote, "Just as a minor child is, relative to his adult parents, less able to care for himself, so is a prison inmate who is prevented from seeking medical care outside the prison less able to care for himself than are his custodians." *Medley*, 330 N.C. at 842, 412 S.E.2d at 657. The principal issue in *Medley* was whether the Department of Correction was liable under the State Tort Claims Act for the malpractice of a physician who was an independent contractor. This required the court to consider whether the department owed a duty to the inmate and, if so, whether that duty was nondelegable. *Id.* at 844, 412 S.E.2d at 659.

17. This is consistent with the U.S. Supreme Court's statement in *Estelle* that a jail official who avoided liability under Section 1983 of Title 42 of the U.S. Code could still be found liable under state negligence law. *See* note 11 and accompanying text.

18. N.C. GEN. STAT. § 153A-225(a) (hereinafter G.S.).

19. After the local health director determines the plan to be adequate, the local governing body (usually a county board of commissioners) must adopt the plan. North Carolina law does not establish clear legal standards for determining whether a plan is adequate. However, the N.C. Jail Health Standards require the plan to include policies and procedures addressing certain issues (see the sidebar on page 18). Thus, at a minimum the plan must include those policies and procedures. Furthermore, G.S. 153A-225(a) identifies three goals that the plan must address: (1) "protect the health and welfare of the prisoners and . . . avoid the spread of contagious disease," (2) "provide for medical supervision of prisoners and emergency medical care for prisoners to the extent

necessary for their health and welfare," and (3) "provide for the detection, examination and treatment of prisoners who are infected with tuberculosis or venereal diseases." A local health director may refuse to approve a plan if he or she thinks that the plan does not adequately address these statutory goals.

20. Within one year of their appointment, detention officers in North Carolina are required to complete general detention officer training (12 NCAC 10B .0602(a)), which includes ten hours of first aid and cardiopulmonary resuscitation (12 NCAC 10B .0601(b)). Some of the state's largest jails have X-ray or other equipment, as well as the necessary staff and supplies to respond fully to some types of emergencies, such as bone fractures.

21. These conclusions present national estimates. Data on inmate health status are not routinely compiled in North Carolina.

22. 1 Nat'l Comm'n, Health Status.

23. A "negative pressure room" is engineered to prevent air from flowing out of the room into adjacent rooms or corridors.

24. State regulations require a jail that is unable to provide for medical isolation when it is needed, to transfer the inmate to another facility. 10A NCAC 14J .1003; *see also* G.S. 162-39(d) (authorizing a superior or district court judge to order an inmate transferred to the Department of Correction "[w]henever a prisoner held in a county jail requires medical or mental health treatment that the county decides can best be provided by the Department of Correction"). An inmate who is transferred to the state prison system because of medical needs is called a "safekeeper."

25. 10A NCAC 14J .1001(b)(7).

26. Nat'l Comm'n on Correctional Health Care, *Standard J-A-09*, in Standards for Health Services in Jails 16–17 (Chicago: the Commission, 2003).

27. G.S. 153A-224(b).

28. 10A NCAC 14J .0101(14).

29. As noted earlier, in North Carolina, detention officers receive ten hours of training in first aid and cardiopulmonary resuscitation. They receive an additional five hours of training on medical care in the jail. 12 NCAC 10B .0601(b).

30. In conducting interviews for a profile of jail inmates in 2002, the Bureau of Justice Statistics found that 23 percent of the inmates interviewed had been in jail for fourteen days or less, and more than half of those, for less than a week. Doris J. James, Profile of Jail Inmates, 2002, Bureau of Justice Statistics Special Report (Washington, D.C.: Bureau of Justice Statistics, U.S. Dep't of Justice, July 2004).

31. For more on the potential liability associated with delaying or deferring health care, see *Jails and Delayed Medical Care: A Calculated (?) Liability Risk*, Correctional Law Reporter, Oct./Nov. 2000, at 38 (cautioning against "creative early release programs," in which inmates are released sooner than they might have been, to avoid medical costs); *see also* Univ. of N.C. v. Hill, 96 N.C. App. 673, 396 S.E.2d 323 (1990) (holding that county may not avoid its obligation to pay for emergency care by releasing unconscious inmate from custody).

32. *See, e.g.*, Bradley C. Strunk et al., Tracking Health Care Costs: Spending Growth Stabilizes at High Rate in 2004 (Washington, D.C.: Center for Studying Health System Change, Data Bulletin No. 29, June 2005), available at www.hschange.org/CONTENT/745/.

33. *See* 1 Nat'l Comm'n, Health Status; *see also* note 22 and accompanying text.

34. About 714,000 people were incarcerated in local jails at mid-year 2004, compared with about 691,000 at mid-year 2003. Paige M. Harrison and Allen J. Beck, Prison and Jail Inmates at Mid-Year 2004 (Washington, D.C.: Bureau of Justice Statistics, U.S. Dep't of Justice, Apr. 2005). In 2002, 38 percent of jail inmates were thirty-five years of age or older, compared with 32 percent in 1996. James, Profile of Jail Inmates.

35. *See* B. Jaye Anno et al., Correctional Health Care: Addressing the Needs of Elderly, Chronically Ill, and Terminally Ill Inmates (Washington, D.C.: Nat'l Inst. of Corrections, Feb. 2004), available at www.nicic.org/Library/018735.

36. Inmates are disproportionately poor and unemployed—two characteristics that are associated with lacking health insurance. *See* Carmen DeNavas-Walt et al., Income, Poverty, and Health Insurance Coverage in the United States: 2003 (Washington, D.C.: Census Bureau, 2004).

37. 42 C.F.R. § 435.1008. The loss of public insurance occurs upon incarceration, not conviction. Pretrial detainees—the bulk of the jail population in North Carolina—are ineligible for Medicaid and Medicare, depriving jails of one potential source of payment for inmate health care.

38. G.S. 153A-225(a).

39. G.S. 153A-224(b).

40. *See* notes 42–44 and accompanying text.

41. G.S. 148-32.1(a). The statute further specifies that the Department of Correction will reimburse the jail for replacing broken eyeglasses or dental prosthetics only if the inmate was using the eyeglasses or the dental devices at the time of his or her commitment and the jail seeks and receives the Department of Correction's written consent before replacing them.

42. *Jails and Delayed Medical Care*, Correctional Law Reporter.

43. Univ. of N.C. v. Hill, 96 N.C. App. 673, 396 S.E.2d 323 (1990).

44. *See, e.g.*, Marsh v. Butler County, Ala., 212 F.3d 1318 (11th Cir. 2000).

School of Government Turns Seventy-Five Next Year

Popular Government will mark the seventy-fifth anniversary of the Institute of Government (since 2001, the School of Government) in each edition across 2006. We welcome your reflections on the School and your thoughts about challenges that the School and North Carolina public officials face in the coming years. Send them to

Editor, Popular Government
CB# 3330
Chapel Hill, NC 27599-3330

or to
stephens@sog.unc.edu

Coming Up . . .

Dean Michael R. Smith considering the School of today and the School of tomorrow

Excerpts from Popular Government *articles across the years*

Highlights of longstanding programs and services

Celebration of the fortieth anniversary of the Master of Public Administration Program

Macon County [N.C.] Sheriff Robert Holland had one simple question. How many of you know someone who does meth? *Just about every student listening to an anti-drug program in Franklin High School's 780-seat auditorium raised a hand.*

It didn't come as a surprise. Moving east from California, the methamphetamine scourge has swept across rural America, settling within the past few years in Western North Carolina, ruining lives and costing taxpayers hundreds of thousands of dollars. —Lindsay Nash, *Asheville Citizen-Times*

The following articles offer four perspectives on the North Carolina dimensions of the methamphetamine problem. J. Steven Cline reports on how methamphetamine is made, how users are affected, and what new regulations are in force for decontamination of methamphetamine laboratories. Laura Elmore examines the strain on local social services of handling children affected by methamphetamine. F. R. Hetzel explains the law enforcement view of this drug abuse epidemic. Finally, Danny Staley describes the scene on public health's front line. —*Editors*

Illegal Methamphetamine Laboratories as a Public Health Hazard

J. Steven Cline

The number of illegal, clandestine methamphetamine laboratories in North Carolina is shocking, and it is growing. In 1999 the State Bureau of Investigation (SBI) busted fewer than 10 laboratories. In 2004 it made more than 300 methamphetamine arrests, and for 2005 it expects arrests to exceed 400.

Although this problem is new to North Carolina, it is not new to the United States. Homegrown methamphetamine laboratories started on the West Coast more than twenty years ago and have been moving east ever since. Law enforcement reports show that methamphetamine busts account for more than 90 percent of all illegal drug seizures in the United States.[1]

This article reviews what methamphetamine is, how it is made, and what its effects are on users. The article also describes the public health problem that methamphetamine laboratories present, including the risks to people coming in contact with the materials and the process of producing illegal methamphetamine. Finally, it describes new requirements for decontaminating these makeshift drug laboratories. Related articles present the problem from the perspectives of social services departments (page 28), law enforcement agencies (page 31), and local health departments (page 35).

The author is chief of the Epidemiology Section in the North Carolina Division of Public Health. Contact him at steve.cline@ncmail.net.

What Is Methamphetamine?

Methamphetamine is a member of a class of drugs with an amphetamine base. The most commonly synthesized controlled substance in the United States, it is a powerful stimulant of the central nervous system that can be snorted, smoked, taken orally, or injected. Street names include meth, crystal meth, crank, chalk, ice, go, pep pills, speed, uppers, zip, and more.

Methamphetamine produces an intense, long-lasting high characterized by increased physical activity, wakefulness, and decreased appetite. The user's rush is described as extremely pleasurable, and it contributes to the highly addictive nature of the drug. Long-term abuse often results in anxiety, confusion, insomnia, and compulsive drug-seeking behavior, even violence.

How Is Methamphetamine Made?

Anyone with access to the Internet (for the recipe), several easily obtainable household chemicals, and a place to "cook" (produce) it can illegally manufacture methampheramine. A recent Internet search for "merhamphetamine recipe" produced 51,000 references in less than one second. With minimal training, usually from another methamphetamine cooker, a person can quickly produce enough methamphetamine to satisfy his or her own need and to sell on the side in order to finance the next batch.

The process involves extracting the amphetamine base from a popular and relatively inexpensive over-the-counter cold medication, pseudoephedrine. The cook can use a number of different solvents, heat, and coffee filters to convert pseudoephedrine to methamphetamine. Some common brand names of over-the-counter cold medications containing pseudoephedrine are Advil Cold and Sinus, Bromfed, Claritin D, and Sudafed.

The two most popular methods of manufacturing methamphetamine at home are the red phosphorus method, also called "Red P" or "Tweaker," and the ammonia method, sometimes called "Nazi" or "Birch." The red phosphorus method, predominant in western North Carolina, requires the use of iodine crystals. Methamphetamine cooks extract red phosphorus from the striker plates on matchbooks or from road flares. They obtain iodine crystals from household items such as hydrogen peroxide, tincture of iodine, and common plumber's acid.

Predominant dangers in this cooking method include phosphine gas, hydrogen chloride gas, and iodine vapors.

Investigators approach an apartment building where officials suspect a methamphetamine laboratory to exist.

ROBERT WILLETT / NEWS & OBSERVER

Phosphine gas is produced during the chemical process used to manufacture methamphetamine. It may reach a concentration of 50 parts per million, or ppm (50 parts of gas to 1,000,000 parts of air) or higher. At 50 ppm it is immediately dangerous to life and health. Its possible effects include pulmonary edema (accumulation of fluid in the lungs), kidney failure, liver damage, and death. Hydrogen chloride gas, produced during the final stage of methamphetamine production, is acidic and causes severe chemical burns to the skin and the mucous membranes of the nose, the mouth, and the throat. Iodine vapors, produced any time that the environmental temperature exceeds 75 degrees Fahrenheit, are immediately dangerous to life and health at only 2 ppm. They irritate the eyes and the skin, cause breathing to become shallow or stop, and damage the central nervous system.

With minimal training, usually from another methamphetamine cooker, a person can quickly produce enough methamphetamine to satisfy his or her own need and to sell on the side in order to finance the next batch.

The ammonia method, found predominantly in eastern North Carolina, calls for anhydrous ammonia and highly reactive lithium or sodium metal. Methamphetamine cooks may acquire the anhydrous ammonia by stealing it from large commercial tanks used by farmers and other industries. Cooks can purchase it legitimately through businesses such as National Welders. Some entrepreneurial criminals do not manufacture methamphetamine but purchase large quantities of anhydrous ammonia and illegally sell it to methamphetamine manufacturers.

Another method of obtaining this type of ammonia is to manufacture clandestinely a similar product, condensed ammonia. The ammonia cook combines sodium hydroxide (for example, Red Devil Lye), ammonium nitrate, and water, and distills the combination, producing the condensed ammonia.

Cooks obtain lithium metal illegitimately by harvesting it from camera batteries.

Predominant dangers in this cooking method include ammonia vapors, hydrogen chloride gas, and lithium metal. Ammonia vapors are immediately dangerous to life and health at 300 ppm. Their possible effects are severe skin damage (including burns, blisters, and frostbite), blindness, and death. As noted earlier, hydrogen chloride gas causes severe chemical burns to the skin and mucous membranes. Lithium metal ignites immediately on contact with moisture, including that found in air. The ignition can be explosive, leading to loss of limbs or death.

Law enforcement busts of illegal methamphetamine laboratories in North Carolina yield large volumes of potentially hazardous waste generated to produce relatively small amounts of the drug itself. The average user-based methamphetamine laboratory produces 11 pounds of methamphetamine per year. (A "user-based" laboratory is one in which the cook makes enough for his or her personal use, plus some to sell in order to buy more supplies and precursor ingredients for another batch.) With this comes about 77 pounds of toxic waste.[2]

What Happens to Methamphetamine Users?

The physical and medical complications of methamphetamine abuse on the user are numerous and well documented. Methamphetamine is both physiologically and psychologically addictive. The addiction is stronger than heroin addiction, with a recovery rate of only 6 percent. The drug can cause life-threatening cardiovascular problems, including heart attacks, strokes, and convulsions, as well as a multitude of psychosocial problems, including anxiety, paranoia,

and violent behavior. Its long-term effects include gross weight loss, tooth decay, skin lesions, and a continuously increasing need for it.

Chronic methamphetamine users, called "tweakers," often behave violently. Their behavior becomes unpredictable from moment to moment. Also, they may start doing something over and over—taking apart televisions, computers, radios, and the like; looking for something for hours at a time; walking around stores at length and buying nothing; or continuously picking at imaginary bugs, called "crank bugs," on or under their skin. They also have visual and auditory hallucinations, such as seeing "shadow people" out of the corners of their eyes and hearing movement or police sirens outside their houses when none exist.

In addition to damaging users' personal health, methamphetamine affects the people around users. Long-term users often lose the ability to manage almost all other aspects of their lives, including family, work, and daily living. The impact of raising children in this type of environment is devastating (see the article on page 28). The process of manufacturing methamphetamine in clandestine laboratories presents serious exposure and safety hazards for the cook, the occupants of the building, and the first responders. Numerous news reports, case reports, and studies have documented potentially life-threatening exposure, fire, and explosion risks that occur during the cooking process.[3]

The process of manufacturing methamphetamine in clandestine laboratories presents serious exposure and safety hazards for the cook, the occupants of the building, and the first responders.

Why Is Methamphetamine a Public Health Problem?

Methamphetamine laboratories are foremost a law enforcement problem because they support illegal manufacturing and use of a controlled substance. Methamphetamine use is certainly detrimental to the health of the user and to the people around him or her. However, it also has an important public health impact. The process of producing methamphetamine in an uncontrolled environment using unsophisticated methods and poor disposal practices results in numerous safety and health hazards. Raw materials, hazardous by-products, and dangerous trash left behind after the laboratory is no longer in use present a significant risk to people who may enter the site. Public health professionals are being asked how to clean these illegal sites and what the risk is to people who reoccupy a residence that once served as a methamphetamine laboratory.

Possible risks to human health include lung damage, chemical burns, fires or explosions, cuts, and even an increased chance of cancer or brain damage from chronic exposure. A partial list of methamphetamine laboratory by-products that may pose a risk to humans includes acetone, ammonia, benzene, ephedrine, ethyl ether, freon, hydrochloric acid, iodine, isopropanol, lithium, methanol, phosphine gas, phosphoric acid, red phosphorus, sodium, sodium hydroxide, and toluene. Any of these chemicals in the right amount for the right length of time could cause significant health problems.

What Is the Exposure Risk for Occupants?

A recently published study conducted by the National Jewish Medical and Research Center offers the most thorough exposure data to date on illegal methamphetamine laboratories.[4] The investigators measured exposures to selected contaminants in active laboratories where the investigators conducted the cooking in controlled environments. They also measured exposures for similar contaminants in inactive clandestine laboratories where cooking had recently occurred. Airborne concentrations of hazardous chemicals measured in active laboratories during the cooking exceeded occupational exposure limits and in some cases exceeded levels that are considered immediately dangerous to life and health. For example, measured concentrations of airborne iodine during the controlled cooking process were as high as .37 ppm. The safe limit for occupational exposure to iodine is .1 ppm.

By contrast, concentrations of iodine and other potentially harmful chemicals in inactive laboratories were either below the detectable limit or not considered hazardous in all samples. These data suggest that risk of exposure to airborne contaminants is greatly reduced, and perhaps eliminated, once a laboratory has been successfully decontaminated.

In the same study, the investigators tested for measurable concentrations of methamphetamine in ninety-seven surface (wipe) samples in the inactive laboratories. No methamphetamine was detectable in fourteen samples, but some level of the drug was detectable in the majority of samples. These data are consistent with reports from states where methamphetamine sampling is required as a part of laboratory decontamination protocols.

The health risk from residual contamination in former methamphetamine laboratories is not known for certain. There have been only rare reports of adverse health effects resulting from methamphetamine exposure in inactive laboratories, such as a child with chronic asthma who experienced an asthma attack in a site in Utah.

Active laboratories (where cooking is in progress) certainly present enormous risks to building occupants and first responders. Also, inactive laboratories certainly may present numerous health hazards, including used hypodermic syringes, undetected containers of chemicals, spilled chemicals, and chemically contaminated cooking surfaces. However, various studies do not document clear risks in inactive laboratories that have been cleaned, nor do they define an agreed-on standard to which contaminants should be cleared.

A New Public Health Law

During its 2004 session, the North Carolina General Assembly passed legislation to strengthen the penalties for illegal activity involving methamphetamine. As a part of this effort, it amended the public health law (Chapter 130A, Article 8,

of the North Carolina General Statutes), to regulate the decontamination of methamphetamine laboratories. The new law clearly gives the property owner the responsibility of decontaminating the property according to rules adopted by the North Carolina Commission for Health Services (NCCHS) before the property can be reoccupied. Further, it gives the NCCHS the authority to adopt rules that establish the decontamination standards. The new law became effective on December 1, 2004. The NCCHS adopted temporary rules effective January 1, 2005, which became permanent on April 1, 2005.[5] Failure to follow the decontamination rules promulgated by the NCCHS can result in criminal or civil penalties.

Under the new rules, law enforcement personnel must immediately notify the local health department when a property used as an illegal methamphetamine laboratory is released from the law enforcement investigation. Law enforcement personnel also must post a notice on the site that the property has been used for the manufacture of methamphetamine.

The local health department then must immediately notify the property owner of record or the responsible party that the property has been used as a methamphetamine laboratory, that it must be vacated, and that it must be cleaned in accordance with public health rules before being reoccupied.

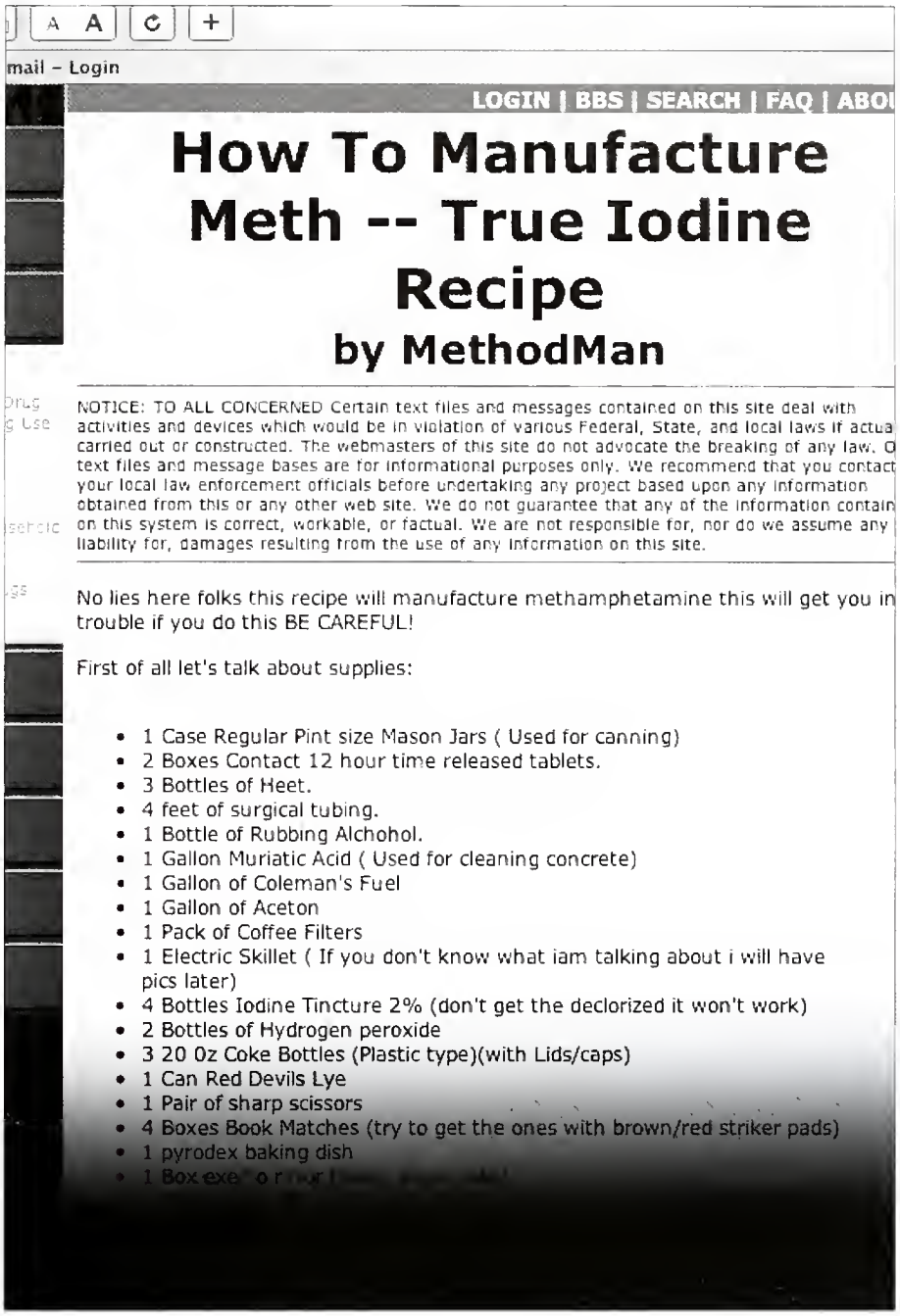
The responsible party must perform an assessment of the extent of contamination before he or she decontaminates the property. Next, decontamination occurs according to the rules and published guidelines. On completion of the decontamination, the responsible party must submit to the local health department documentation of the decontamination assessment and the decontamination activities performed.

The local health department is required to review the documentation for completeness. It may choose to inspect the property at any point during this process, though it is not required to do so by state law.

Public Health Training

Education of local public health personnel to address the growing problem of methamphetamine laboratories is a priority. To date, about 350 public health professionals have been educated through three regional workshops and multiple local training sessions conducted across the state. Local health directors and environmental health specialists have become part of a team that also includes law enforcement officers, firefighters, rescue workers, property owners, and concerned citizens.

A group of thirty state-level public health professionals received specialized training to provide technical assistance to local health departments responding to issues in their county related to decontamination of methamphetamine laboratories. In addition to the public health employees who are directly involved with decontamination, public health and other professionals who work in the community making home visits or tracking patients must be able to recognize signs of an illegal laboratory in operation. Awareness training is important for employee safety.



Conclusion

North Carolina is facing a crisis of escalating illegal manufacture and abuse of methamphetamine. The impact of

illegal drug use is devastating and speaks for itself. Homegrown methamphetamine laboratories compound the problem by creating risks associated with hazardous materials and chemical residues left behind for the next occupant, who may be unaware that a site was ever used for such a purpose. A new North Carolina law has been enacted, and rules have been adopted to require appropriate cleanup of these sites and thereby reduce the risk to future occupants. The public health system in North Carolina has risen to this new challenge in protecting the health of citizens, even though no new resources have been appropriated to support this program.

Notes

1. Office of Nat'l Drug Control Policy, Executive Office of the President, National Synthetic Drugs Action Plan: The Federal Government Response to the Production, Trafficking, and Abuse of Synthetic Drugs and Diverted Pharmaceutical Products (Washington, D.C.: ONDCP, 2004), available at www.whitehousedrugpolicy.gov/publications/national_synth_drugs/.

2. James M. Valle, Summary Results of the Methamphetamine Lab Cookers Survey, June 2001–2002 (Los Angeles: Inland Narcotics Clearinghouse, Jan. 2003).

3. Arizona Coll. of Pub. Health, *Illicit Amphetamine and Methamphetamine Laboratories*, available at www.publichealth.arizona.edu/divisions/envirocom/meth_literature.htm; Centers for Disease Control and Prevention, *Public Health Consequences among First Responders to Emergency Events Associated with Illicit Methamphetamine Laboratories—Selected States, 1996–1999*, 49 Morbidity and Mortality Weekly Report 1021 (Nov. 17, 2000); J. Martyny et al., Chemical Exposures Associated with Clandestine Methamphetamine Laboratories (Denver: Nat'l Jewish Medical and Research Ctr., 2004); Natalie Vandeveld, *Clandestine Methamphetamine Labs in Wisconsin*, 66 Journal of Environmental Health 46 (2004); Lynn J. Willers-Russo, *Three Fatalities Involving Phosphine Gas, Produced as a Result of Methamphetamine Manufacturing*, 44 Journal of Forensic Sciences 647 (1999).

4. J. Martyny et al., Chemical Exposures.

5. The new methamphetamine decontamination law and rules can be viewed at www.epi.state.nc.us/epi/oii/meth/index.html/.

Protection of Children Exposed to Methamphetamine Production

Laura Elmore

A little boy told a social worker that his mother made "red paint." The social worker asked him where the paint was being made. He told the social worker about the "secret wall" in his room behind which his mother made it. This started a chain of events that caused the boy to be removed from his home, left him without his own clothes and toys, and put his parents in jail for manufacturing methamphetamine.

With the rise of the methamphetamine problem, departments of social services must coordinate their child protection efforts with law enforcement's efforts to prepare adequately for a raid, capture offenders swiftly, collect evidence, and deal with the noxious environment of methamphetamine production. Children caught up in the methamphetamine problem are living in chemically toxic surroundings. They are in increased danger from their parents' neglect and abuse. Staff of departments of social services must intervene in a way that protects the children from parental and chemical dangers and protects staff themselves from chemical exposure.

Ingesting the ingredients of methamphetamine—or the drug itself—may result in potentially fatal poisoning and harm neurological and immunological functioning.

This article summarizes the threats to children from methamphetamine laboratories and the role of department of social services staff in identifying such laboratories. Further, it describes the multi-agency teams necessary to deal with methamphetamine laboratories successfully and the change in departments of social services' approach to assessing child neglect and abuse when social workers are dealing with methamphetamine laboratories.

The author is program coordinator, Drug Endangered Children, North Carolina Division of Social Services. Contract her at laura.elmore@ncmail.net.

Threats to Children

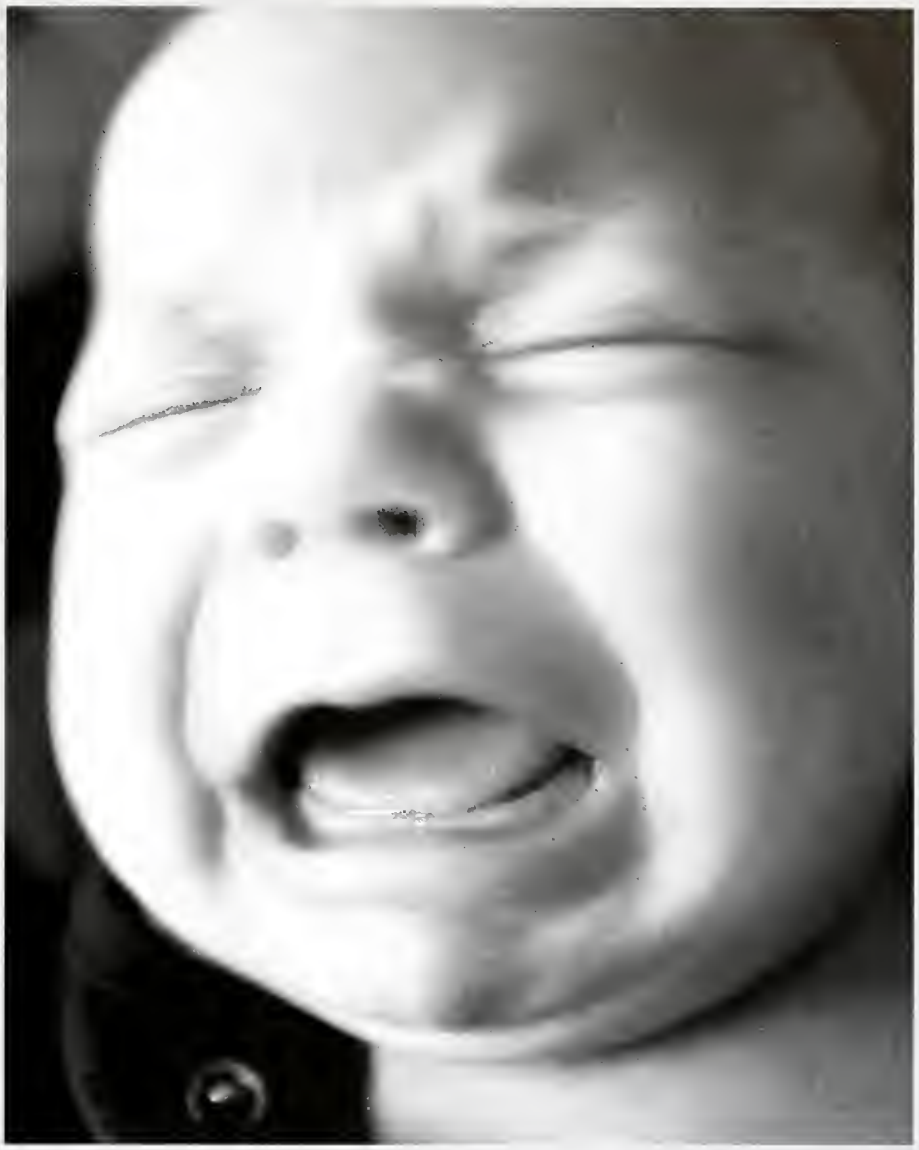
Children have been found in about 25 percent of methamphetamine laboratories in North Carolina.[1] Young children are at high risk of harm in these settings because of their developmental stage: they put things in their mouths, mimic adults, have faster heartbeats and respiration (and therefore absorb toxins at a higher rate), and have more physical contact with the environment. They also are at high risk of harm because of the abuse and neglect that their parents, caretakers, and others who frequent the home inflict on them, and their inability to protect themselves. Children whose parents produce or use methamphetamine typically lack nurturance, predictability, stimulation, immunizations, medical and dental care, and basic necessities such as food, water, and appropriate shelter. When users "crash," the methamphetamine no longer keeps them awake. They feel bad and fall asleep, often for days. Sometimes they cannot be awakened. That makes them incapable of providing care and supervision to any children in the home.

Older children in these homes may be used in, or made to help with, making the methamphetamine. They are asked to pop the pills out of the blister packs and to stand guard when the parents are cooking; they are even made to sell the drug. These older children also imitate their parents' behavior. Such imitation may lead to substance use and abuse and involvement in other criminal activities that they may witness.

The abuse and neglect of children comes from the effects of methamphetamine on the adult users. Long-term use causes a person to be irritable, violent, paranoid, and sexually aroused. This increases the chances that children will witness or become the victims of physical violence or sexual abuse.

When a person first tries methamphetamine, he or she is usually given the drug by a friend or an acquaintance. The person uses a small amount, uses it only occasionally, and is able to sleep at night. By the third or fourth month, although the person may still use methamphetamine infrequently, a pattern of drug abuse begins to develop. By the fifth month the person begins using the drug daily, with several days of crashing in between. At this point the person may begin to make methamphetamine both to use and to sell for money to buy more products for the next batch.

Simply being exposed to the toxic chemicals used to produce the drug poses a variety of health risks to children, including intoxication, dizziness, nausea, disorientation, lack of coordination, pulmonary edema (accumulation of fluid in the lungs), serious respiratory problems, severe chemical burns, and damage to internal organs. Young children present at laboratory sites are at particular risk of ingesting chemicals used to produce methamphetamine. Ingesting toxic chemicals—or methamphetamine itself—may result in potentially fatal poisoning, internal chemical burns, damage to organ function, and harm to neurological and immunological functioning.



The Role of Departments of Social Services in Identifying Laboratories

The majority of methamphetamine laboratories in North Carolina have been discovered because of explosions or because they were "stumbled on." In 2004, Rutherford County had one of the largest numbers of methamphetamine laboratories discovered in the state, at forty-three.[2] In numerous situations in Rutherford County, a social worker visiting a home because of a report of neglect that also involved head lice and lack of school attendance has detected signs of a methamphetamine laboratory. A smell—whether sweet or bitter, of ammonia or of solvents—often is the first clue for some social workers. For other social workers, clues emerge from talking with children, as in the "red paint" example described earlier. This mother was using the red phosphorus method of making methamphetamine. The allegations that the social worker was investigating did not mention methamphetamine or a methamphetamine laboratory.

Social workers are becoming skilled at recognizing the signs of a methamphetamine laboratory and the "tweaking" phase that methamphetamine addicts go through. For example, in one home a social worker observed a room full of computers, televisions, and other electronic devices that had been taken apart. At another home a social worker smelled methamphetamine. The father was in a back bedroom with an assault rifle, but the social worker was not aware of this at the time. Law enforcement personnel later discovered that methamphetamine had been made in the home in the previous forty-eight hours.

A Multi-Agency Response

Responding to suspicions of a methamphetamine laboratory where children are involved requires a coordinated approach involving a multidisciplinary team and a multidisciplinary protocol to ensure everyone's safety. The purpose of the protocol is to provide local professionals with specific procedures to follow in situations where children are endangered as a result of secret methamphetamine laboratories or other drug production, trafficking, and abuse.

In early 2004, representatives from several county and state agencies created a work group to address the issues of methamphetamine laboratories and safety for the children and the professionals who investigate suspicions about these sites. Members of the work group included staff from county depart-

ments of social services; the State Division of Social Services; the Attorney General's Office; the State Bureau of Investigation; the State Division of Public Health; the University of North Carolina at Chapel Hill; the North Carolina Association of County Directors of Social Services; the State Department of Justice; and the State Division of Mental Health. The State Division of Social Services took the lead in writing a Drug Endangered Children policy for local departments of social services with the help of this work group. The policy became effective on January 1, 2005.

The policy requires that memoranda of agreement among the local multidisciplinary teams that respond to the laboratory sites include personnel from at least departments of social services, law enforcement, local management entities (formerly area mental health agencies), emergency management services, hospitals, county health departments, and hazardous material agencies. These agreements should be developed to formalize roles and relationships at the local level. A protocol for drug-endangered children that has been developed in accordance with local community requirements ensures that children who may be at risk for exposure to methamphetamine and methamphetamine laboratories receive protection, advocacy, and support.

A protocol for drug-endangered children that has been developed in accordance with local community requirements ensures that children who may be at risk for exposure to methamphetamine and methamphetamine laboratories receive protection, advocacy, and support.

Changes in the Standard Approach

In methamphetamine cases, departments of social services balance their standard approach to child welfare with the unique requirements of law enforcement and threats of violence. First, state law requires that an assessment by the child protective services unit be initiated within twenty-four hours for allegations of abuse, or seventy-two hours for allegations of neglect. "Initiation" is defined as face-to-face contact with the alleged victim within the prescribed time. Some situations require immediate initiation. For example:

- When a child under the age of six or a child limited by a disability is unsupervised
- When a sexual abuse report has been received and the alleged perpetrator has access to the child

The Drug Endangered Children policy states that social workers shall not visit a suspected or confirmed methamphetamine laboratory site without a law enforcement officer present, preferably an officer certified by the Drug Enforcement Administration. Because of the necessary coordination with law enforcement, the initiation standards of twenty-four and seventy-two hours may not always be possible. If the coordination with law enforcement causes the assessment by child protective services to be delayed, department of social services staff must record this fact.

Second, instead of interviewing children at school and then making a home visit to interview the parents or calling them to arrange a visit with the family, the social worker attends a briefing with law enforcement officers before the raid on the laboratory. The social worker then goes to the home with law enforcement officers but does not enter the laboratory site. In all assessments by child protective services involving methamphetamine laboratories, law enforcement officers take the lead.

Third, direct contact by departments of social services with the children begins after law enforcement officers have physically removed them from the site, assessed them for contamination, and decontaminated them, if necessary. If there is no need for on-site decontamination and the children do not require emergency medical treatment, the social worker is responsible for seeing that they receive a medical evaluation (which must include a urine sample to test for methamphetamine or other chemical exposure) and for locating safe housing for the children, which may be with suitable relatives or in foster care. The children are not allowed to remain in the home, even if the department of social services does not take custody, because of state law.[3] If the laboratory is located in the children's home, they may not leave the home with any of their clothes, toys, stuffed animals, shoes, and other personal belongings. Departments of social services are responsible for having a change of clothes for the children at the scene. If the children are placed in foster care, departments of social services also are responsible for replacing their clothes and other belongings. If the children are placed with relatives, departments of social services should assist in any way possible to provide the relatives with clothing for the children.

Conclusion

Children's involvement in the methamphetamine problem shows the necessity of prompt action to protect children, the complexity of interagency cooperation, and the social worker's role in identifying suspicious signs that can lead to a methamphetamine laboratory investigation. North Carolina recognizes the dangers that children face from exposure to methamphetamine use and laboratories, and the state is making efforts to address these dangers as quickly as possible.

Notes

1. E-mail from Van Shaw, Assistant Special Agent in Charge, Clandestine Laboratory Response Program, N.C. State Bureau of Investigation, to author (July 13, 2005).

2. *Id.*

3. Section 130A-284 of the North Carolina General Statutes states, "[F]or the protection of the public health, the [North Carolina Commission for Health Services] shall adopt rules establishing decontamination standards to ensure that certain property is reasonably safe for habitation . . . The contaminated property shall not be occupied prior to decontamination of the property in accordance with these rules."

Law Enforcement's Response to the Spread of Methamphetamine Use

F. R. Hetzel

Methamphetamine production is growing at an astounding rate in North Carolina. In 1999 the State Bureau of Investigation (SBI) identified and closed down only 9 "clandestine laboratories" (sites where methamphetamine is illegally manufactured, or "cooked") in widely scattered parts of the state. By 2004 the number of clandestine laboratories busted per year had reached 322. They were concentrated in western North Carolina but had spread to many more parts of the state. Through October 26, 2005, the SBI had taken 280 actions against laboratories (see Figure 1). The number is running about 25 percent higher than for the same period in 2004 (see Table 1).

Nationally there were almost 16,000 busts in 2004. That compares with 912 in 1995, according to the U.S. Drug Enforcement Administration.[1]

This article characterizes North Carolina's methamphetamine problem from a law enforcement perspective. It also describes the steps that law enforcement agencies have taken to address the problem.

The author is a special agent with the North Carolina State Bureau of Investigation. Contact him at rhetzel@ncdoj.com.

The Nature of the Problem

Most methamphetamine producers have been found in rural areas. "The drug is often manufactured in rural areas to hide its pungent smell, increasing its threat in Western N[orth] C[arolina], a region that has dealt with the bulk of the meth lab busts in the state," writes reporter Lindsay Nash of the *Asheville (N.C.) Citizen-Times*.[2] This fact helps explain the large number of raids in the more mountainous areas of the state—for example, 56 in McDowell County and 35 in Rutherford County so far in 2005.

However, the methamphetamine scourge is spreading from west to east. To date in 2005, Sampson County has seen eleven busts, and labs have been found in Brunswick, Carteret, Craven, Duplin, Johnston, Pitt, and Wayne counties.

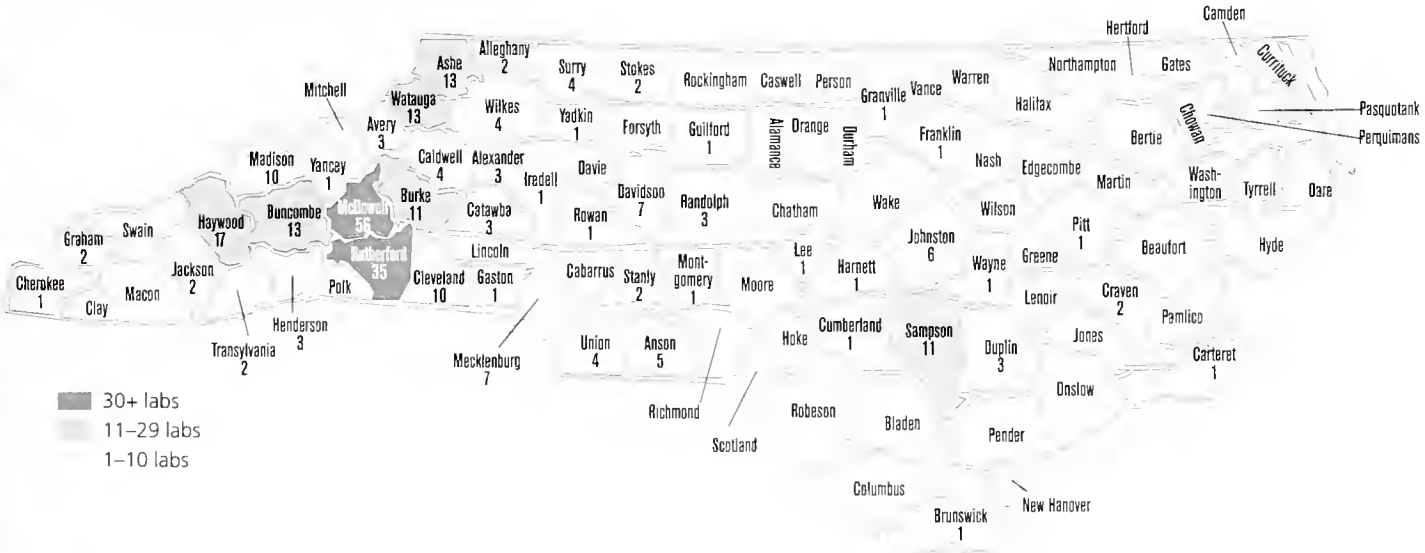
Methamphetamine production is not limited to rural areas, though. Attorney General Roy Cooper notes that labs have been discovered in Raleigh and Greensboro. "'We have found them in hotel rooms, cars and apartment complexes,'" he says.[3]

Unlike large-scale operations in states like California and Georgia, "[i]n Western N[orth] C[arolina], the meth manufacturers operate on a small scale," writes reporter Nash. "They're making the drug for themselves, and then selling whatever is left to other users to foot their bill."[4] This makes methamphetamine manufacturing unique in law enforcement investigation and arrest: a single methamphetamine cook is actually the kingpin of an operation, rather than just one of many operators in a drug ring. Methamphetamine cooks and their criminal associates frequently have close-knit relationships forged through lifetimes of living in the same rural area and through family ties. The cooks themselves teach others how to manufacture methamphetamine. Unlike the case with any other drug, with methamphetamine it is beneficial to a cook to have other cooks in the area. The cooks share chemical ingredients and at times assist one another in manufacturing the drug. Because of this clannishness, undercover operations are extremely difficult.

Another challenge is the relatively cheap production of methamphetamine from common ingredients. "[Its cheapness] makes it sometimes called 'the poor man's cocaine,'" says Nash.[5]

The most important ingredient is a cold medicine that contains pseudoephedrine, without which the methamphetamine cannot be manufactured. All the other materials to make methamphetamine have ready substitutes. For example, solvents allow the chemical

Figure 1. **Clandestine Lab Responses, 2005**



Source: Clandestine Laboratory Response Unit, N.C. State Bureau of Investigation.

reaction to take place. One methamphetamine cook may use Coleman fuel, and another may use acetone, ether, methanol, or toluene. All the solvents can be found in hardware stores or large retail stores.

At the very beginning of a user's addiction to methamphetamine, he or she still will appear normal and be able to function normally in society. However, once a person is caught in the cycle of manufacture and use, all things, including his or her own children, become secondary at best. Law enforcement officials often find proof of this at clandestine laboratories, where the hazardous chemicals used are within arms' reach of small children. When dismantling the laboratories, law enforcement officers frequently discover that the cook has a gas mask and protective gloves, but they never find any protective gear for the children. (For more information about the effects of methamphetamine production on children, see the article on page 28.)

White blue-collar males traditionally have used the drug. However, it increasingly is becoming a choice for diverse groups, including people in occupations that demand long hours, mental alertness, and physical endurance.[6]

"We know that anyone in any demographic group can get hooked on this drug because it is the most highly addictive drug out there," says Attorney General Cooper.[7] However, in the United States, the most affected group now appears to be white females between the ages of nineteen and thirty-five, followed by white males in the same age range. These statistics hold true for North Carolina.[8]

Methamphetamine users experience many physical and psychosocial debilitations (see the article on page 24). Among the long-term health effects is exposure to various communicable diseases, most commonly HIV/AIDS, herpes, hepatitis, and tuberculosis. Many sexually transmitted diseases are associated with methamphetamine addiction because of the promiscuous and often rampant sexual activity accompanying its use. During searches of methamphetamine laboratories and users' dwellings, I routinely find massive amounts of pornography. Like the chemicals, the pornography almost always is within arms' reach of children.

Table 1. **Methamphetamine Laboratories Discovered in North Carolina, by Month, 2002–2005**

	2002	2003	2004	2005
January	NA	13	20	26
February	NA	11	28	38
March	NA	12	33	42
April	NA	18	33	46
May	NA	14	22	34
June	NA	12	30	18
July	NA	17	31	24
August	NA	16	20	27
September	NA	20	21	12
October*	NA	20	34	13
November	NA	17	23	
December	NA	7	27	
Total	**98**	**177**	**322**	**280**

Source: Clandestine Laboratory Response Unit, N.C. State Bureau of Investigation.

Note: NA = not available.

*Figure for 2005 is as of October 26.

Law Enforcement's Response

Working with sheriffs, police chiefs, U.S. attorneys, local district attorneys, the U.S. Drug Enforcement Administration, and the federal Bureau of Alcohol, Tobacco, Firearms, and Explosives, the SBI has had an impact on the methamphetamine problem in North Carolina. Their efforts have several aspects: training and certification, investigations, prosecution and sentencing, special responses, and cost.

Training and Certification

The SBI has conducted two levels of training and certification: awareness and decontamination. At the awareness level of certification, it has trained about 10,000 local law enforcement officers, firefighters, and emergency medical service workers to detect the presence of a clandestine laboratory. Before the training, many of these personnel were dangerously unaware when they were in or near a clandestine laboratory. Now they can recognize one and call for a proper law enforcement response using the SBI. The training is somewhat responsible for the increases in methamphetamine laboratories discovered and enforcement actions taken against them.

At the decontamination level of training and certification, the SBI has been instrumental in ensuring that local law enforcement personnel in some of the most hard-hit counties become fully certified in Hazardous Waste Operations and Emergency Response (HAZWOPER). HAZWOPER is the only certification that authorizes law enforcement officers to work inside methamphetamine laboratories. To obtain the certification, law enforcement officers must attend a forty-hour course. They can take it through the U.S. Drug Enforcement Administration, the California Bureau of Narcotics Enforcement, or a private company such as Network Environmental Services. The course covers recognition and evaluation of hazards (chemical and physical), including toxicology, guidelines for exposure, field monitoring, and assessment and control. It includes some practical exercises in wearing and using personal protective equipment. The course is similar to and as intense as the Hazardous Materials Technician course used by fire departments across the country. Follow-up training is available, which includes a Confined Space Operator/Technician course.

The HAZWOPER certification enables officials of local departments to conduct preliminary investigations safely when the possibility of a laboratory exists at a location. It also enables

them to assist SBI forensic chemists in sampling substances and fully dismantling laboratories. In North Carolina, approximately 200 officers are certified, about half of whom are SBI agents.

Additionally the SBI is responsible for and conducts at its own expense a yearly recertification that includes about twenty hours of training. This class is required to maintain HAZWOPER certification.

Investigations

Investigations of sites commence on the basis of several kinds of suspicions. Sometimes the suspicion is as simple as a person's complaint about strange and strong chemical odors coming from a neighbor's residence or outbuilding. Other times, allegations of child abuse or neglect have led child protective services personnel to suspect methamphetamine use or production and report their suspicions (see the article on page 28). Occasionally, patrol officers answer a domestic disturbance call and, once in the residence, realize that they are in a methamphetamine laboratory. These situations are particularly dangerous to a patrol officer who has not had any awareness training. Trained patrol officers, experienced in dealing with methamphetamine users, often notice behaviors associated with the drug's use. Such behaviors include increased energy, overactive talking, tremors, and fidgeting. Dangerous aggressiveness, nervousness, irritability, and paranoia are additional behaviors attributed to the use of methamphetamine. Physiological symptoms can be seen in the user, including dilated pupils, excessive weight loss, tooth loss, sweating, chemical-type body odors, and open lesions on the skin.

"We know that anyone in any demographic group can get hooked on this drug because it is the most highly addictive drug out there," says Attorney General Cooper.

Investigations most often begin with a vehicle stop. Sometimes officers pull over a vehicle in the course of normal duties and discover that it contains items ranging from recently purchased precursor chemicals to a full-blown mobile methamphetamine laboratory. Other times officers stop a vehicle on the basis of an informant's tip that the occupants are transporting precursor chemicals to a cooking location.

Law enforcement personnel use information obtained from the occupants of such a vehicle, as well as information about the vehicle's owner, to discover the location of the stationary cooking operation. The occupants of the vehicles often have finished products on their persons as they obtain precursor chemicals for the next batch.

Prosecution and Sentencing

In northwestern North Carolina, local law enforcement officers in Ashe, Watauga, and Wilkes counties have joined with the SBI and the federal Bureau of Alcohol, Tobacco, Firearms, and Explosives to form a methamphetamine investigative task force. This combination of agencies, along with the U.S. attorney's office, has been an effective tool in the investigation and prosecution of methamphetamine cooks in that area.

Firearms have been a major factor in the prosecution and sentencing of the methamphetamine cooks and their criminal associates. A large majority of cooks are armed for a variety of reasons, including protection of their laboratories, protection during the sale of methamphetamine, and increased paranoia associated with the use of the drug. Their being armed has allowed for much stronger sentencing in the federal system.

As of December 1, 2004, stricter sentencing guidelines were established in North Carolina for the manufacture of methamphetamine. The offense has been raised to a Class C felony, with a sentencing range of 58–97 months. Additional time can be added to sentences if children are present in the laboratories or if a law enforcement officer is injured. An "active sentence" (time that must be served in a confined facility—for example, a prison) can range from 44 to 120 months depending on mitigating and aggravating circumstances involved in the case.

As stated earlier, the U.S. attorney's office in North Carolina, along with federal law enforcement agencies, is taking an active role in assisting with the prosecution of methamphetamine offenders. As the problem has grown, so has the state's combined response. The State Department of Social Services and the State Department of Health and Human Services have become involved in helping provide solutions.

Special Responses

Search and seizure operations are complex because of the chemical hazards that are encountered. Once an investigation has uncovered a methamphetamine laboratory, if a search warrant is to be executed, an SBI Special Response Team must execute it. The team members are all highly trained SWAT (Special Weapons and Tactics) operators as well as hazardous material technicians. Each member responds from a different area of the state to execute search warrants. Each member then returns to his or her assigned duty station and resumes normal responsibilities as a special agent.

One or two forensic chemists from the SBI must be deployed to the crime scene, usually from Raleigh. These chemists remove all hazardous and clandestine-laboratory-related items from the crime scene and take samples of evidence for analysis to prove chemically that precursor materials or finished methamphetamine is present. District SBI agents and certified local officers assist the chemists and conduct regular crime-scene-related duties at the laboratory. They also are responsible for interviewing suspects and conducting follow-up investigations.

SBI also deploys a site safety officer to the crime scene, to ensure that all activities are conducted safely.

Emergency workers must wear protective suits and masks. The consequences of not doing so can be serious. For example, as reporter Nash writes, "Watauga County volunteer firefighter Darien South nearly died while containing a fire in a meth lab in 2003. He lost half of his lung capacity from being exposed to the drug's fumes and now takes 10 to 12 medications a day to keep his oxygen levels up."[9]

North Carolina State Bureau of Investigation

Cost

The site safety officer keeps local fire and emergency medical personnel at the crime scene during all activities. This ties them up for 3–24 hours. The SBI provides all certified agents and officers with personal protective equipment at each scene. Doing so is very costly, the price of one disposable protective suit being about $12.50. The suits must be destroyed as hazardous waste after one use. The SBI purchases and maintains all air monitoring equipment, self-contained breathing apparatus, and vehicles specially equipped to respond to clandestine laboratories. The price of one vehicle is about $135,000. To keep up with the methamphetamine problem, North Carolina has had to purchase five such vehicles. Federal grants have assisted in some of these purchases.

Finally, a federally contracted hazardous waste disposal company is deployed to the crime scene. This company takes away the hazardous waste created from production of methamphetamine. The final cleanup can cost anywhere from $3,000 to $25,000, sometimes more, depending on the size of the laboratory.

The cost associated with the production of methamphetamine does not start or end with the final clean-up cost. Local law enforcement officers use a significant amount of overtime securing the laboratory crime scene until it can be properly processed. The SBI sends agents from the Special Response Team, forensic chemists, and district agents, all of whom will most likely use overtime while processing a crime scene. Local fire, emergency medical service, and rescue units all put time and equipment into the effort.

There never are large assets seized from the clandestine laboratories. Rarely do the methamphetamine cooks have any monetary assets, and all property assets are contaminated and considered unusable.

More Tools for Prevention and Enforcement

Methamphetamine use has spread so rapidly that tools for prevention and enforcement have lagged. Policy makers have taken some steps to help law enforcement agencies, but they need to take more.

As noted earlier, in 2004, penalties for producing methamphetamine and for endangering children by producing methamphetamine were increased (see page 33).

This year North Carolina state legislators restricted access to pseudoephedrine. According to an article in *USA Today*, as of April of this year, 11 states had placed limits on access to common over-the-counter medicines containing pseudoephedrine, and 20 states (North Carolina among them) were considering legislation to that effect. In May 2005, Lonnie Wright, director of the Oklahoma Narcotics Bureau, testified before the North Carolina Senate Judiciary Committee about the success of an Oklahoma law that places all pseudoephedrine and pseudoephedrine-combination products behind the pharmacy counter. The law also makes pseudoephedrine a substance that can be distributed only by a pharmacist, and it requires the purchaser to sign a log at the time of purchase. According to Wright, since 2004, when the state passed these restrictions, there has been an 80 percent decrease in laboratory seizures. Oregon saw a 50 percent drop after adopting similar restrictions in October 2004.

On August 31, 2005, the North Carolina General Assembly passed the Methamphetamine Lab Prevention Act of 2005.[13] Effective January 15, 2006, cold medicines in tablet or caplet form containing pseudophedrine may be sold only from behind a pharmacy counter. Unless otherwise ordered by the Commission for Mental Health, Developmental Disabilities, and Substance Abuse Services, any pseudophedrine product that is in the form of a liquid, a liquid capsule, a gel capsule, or a pediatric product is exempt from this restriction and may continue to be directly accessible to consumers.

The law requires retailers to record information about each purchaser of pseudoephedrine on a form developed by the state. The form must be compatible with electronic data entry. Sales records must be maintained for two

years from the date of sale, and information about the sale and the purchaser must be accessible to law enforcement officers within forty-eight hours of the time of the transaction.

Finally, the law establishes a Legislative Commission on Methamphetamine Abuse, which will examine a variety of issues related to methamphetamine precursors, abuse, and production. Its first report was due to the General Assembly by November 1, 2005.

A few retailers already have restricted access. Target, the nation's second-largest discount retailer, has pulled many cold medicines from regular shelves and now sells them only behind pharmacy counters. About 60 percent of Wal-Mart stores have placed the most abused medications behind the counter. Wal-Mart plans to move all products in which pseudoephedrine is the single active ingredient behind pharmacy counters. Walgreen and Kmart already limit sales to two packages per customer per transaction.[14]

Notes

1. Lindsay Nash, *Meth: The Rural Plague*, ASHEVILLE (N.C.) CITIZEN-TIMES, Apr. 24, 2005.
2. Lindsay Nash, *Meth: "A Drug That Ruins Lives,"* ASHEVILLE (N.C.) CITIZEN-TIMES, Apr. 25, 2005, at A4.
3. Lindsay Nash, *Attorney General Takes Aim at State's Meth Problem*, ASHEVILLE (N.C.) CITIZEN-TIMES. Apr. 24, 2005, at A7.
4. Nash, *Meth: "A Drug That Ruins Lives,"* at A4.
5. Nash, *Meth: The Rural Plague*, at A7.
6. Nash, *Meth: The Rural Plague.*
7. *Id.* at A7.
8. JAMES M. VALLE, SUMMARY RESULTS OF THE METHAMPHETAMINE LAB COOKERS SURVEY, JUNE 2001–2002 (Los Angeles: Inland Narcotics Clearinghouse, Jan. 2003).
9. Lindsay Nash, *Who's in Danger?* ASHEVILLE (N.C.) CITIZEN-TIMES, Apr. 24, 2005, at A1.
10. Lonnie Wright, Director, Oklahoma Narcotics Bureau, Testimony Before the North Carolina Senate Judiciary Committee (May 2005).
11. Larry Copeland, *States Limiting Sale of Cold Remedies*, USA TODAY, Apr. 26, 2005.
12. *Id.*
13. Methamphetamine Lab Prevention Act of 2005, SL 2005-434.
14. Larry Copeland, *States Hope Laws Will Curtail Meth Labs*, USA TODAY, Apr. 26, 2005.

Public Health's Front Line on the Methamphetamine Problem

Danny Staley

Consistent with the nationwide trend of methamphetamine laboratories moving gradually from the West to the East, western counties in North Carolina were the first to encounter the problem. In Watauga County we discovered our first methamphetamine laboratory in 2002. In 2004, law enforcement officials identified 34 laboratories in Watauga County and 15 more in the other two counties (Allegheny and Ashe) served by our district health department.[1]

When the public health department was called in to help, it had no state laws, regulations, guidelines, or recommendations. No one else in the state had experience with the kinds of complex issues that we were facing. Among other challenges we had to develop new expertise in the environmental impact of methamphetamine, learn how best to help the children affected by methamphetamine laboratories, and evaluate and respond to the potential risks to our own lives and health. This article discusses our experience with these three challenges.

In the near future, we want a close scientific review of the regulations' implementation, to ensure that they go far enough in addressing the department's and the public's concerns about the safety of the property.

Environmental Impact

After a methamphetamine laboratory has been discovered in a house, a hotel, or another building, community members have asked, "When is it safe to enter the building again?" They have turned to us for answers. We initially had little to guide us. We consulted with professionals who cleaned up hazardous waste sites and crime scenes. We consulted with officials in states west of North Carolina to learn how they were dealing with cleanup. Ultimately we collaborated with the State Division of Public Health to develop some initial cleanup recommendations.

The regulations discussed in J. Steven Cline's article followed a few years later (see page 24). They provide each local health department with some flexibility regarding its level of oversight in cleanup. We still are trying to determine the impact of these new regulations at the local level. In the near future, we want a close scientific review of their implementation, to ensure that they go far enough in addressing the department's and the public's concerns about the safety of the property.

One of our greatest challenges was to respond to community concerns and the demand for information. Our environmental health staff was bombarded with questions. To keep the public informed about potential contamination, we instituted a system of posting a placard on contaminated property. Once we post a property, we add it to a roster of such properties. This roster serves several important purposes: it allows us to track the cleanup of each property; it provides valuable data as we try to evaluate trends and conduct epidemiological studies; and it allows us to keep the community informed about the habitability of properties within our jurisdiction. Although the system is resource-intensive, it has helped us meet some of the community's expectations and apply the science and art of public health to an emerging problem.

Help for Children

Perhaps the most innocent victims in the methamphetamine epidemic are children.

The author is the local health director for the Appalachian District Health Department, which represents Allegheny, Ashe, and Watauga counties. Contact him at danny.staley@apphealth.com.

As discussed elsewhere in this issue (see page 28), children must be removed from homes with laboratories, and they may not take anything with them, not even a favorite doll or blanket. The public health community is part of the team that follows up with these children once they have been removed from their homes.

Within twenty-four hours of removal, every child is taken to the emergency department of a local hospital for a complete medical history and physical examination. As part of the examination, the child undergoes a developmental assessment (to determine whether he or she has reached certain milestones), a neurological screening (to ascertain the status of the child's brain and nervous system functioning), an evaluation of various systems (circulatory, respiratory, digestive, etc.), and an assessment for abuse and neglect. Proper follow-up and referral are expected to occur within thirty days.

Many of the children need medical attention or other assistance from the public health system. For example, quite a few have asthma and other physical conditions. Others need to be connected with public health professionals to receive comprehensive developmental assessments as well as services to help them get back on track developmentally. Often we make the connections through the Child Service Coordination program, which provides education, guidance, and links to community resources to assist caregivers in addressing delays in development.

In addition to the services and the support that these children receive from local governments, they have gotten a significant amount of help from the community as a whole. Many community members have donated clothes and toys to the department of social services for children removed from homes where methamphetamine was produced. Numerous churches and community groups have picked up on the "shoebox gifts" concept and put together "meth boxes" for children in need. Every donation helps.

Safety

As a department head, I have been concerned about the safety of my department's staff as they enter properties once used as methamphetamine laboratories. At the beginning of this epidemic, little information was available regarding the risks to the health of our front-line staff. We took precautions, but we realized that we needed to educate ourselves as much as possible, not only to help the community but to protect ourselves.

After learning the basics, we developed comprehensive policies governing staff visits to private homes. We have learned more over time, but my staff, staff of the local social services agencies, and others still have significant concerns about their exposure to the ingredients and by-products of methamphetamine production.

Conclusion

The three challenges that I have discussed highlight some of the impacts that the methamphetamine epidemic is having on the local public health community. To respond appropriately, we must seek new funding, redirect the efforts of some of our staff, and develop expertise in this complex and evolving area. We recognize that the methamphetamine epidemic is a critical problem in our state and that public health plays an important role. We will continue to work with our partners in law enforcement and social services to serve our communities as well as we can.

Our state has recognized the seriousness of this issue by stepping up enforcement, increasing criminal penalties for manufacturers, and adopting regulations governing cleanup. In the near future, I hope that we will have even more tools available to crack down on this emerging problem. If local communities can work with the state to get this epidemic under control, we will be able to direct our attention to the many other pressing concerns facing our citizens.

Note

1. *See* N.C. State Bureau of Investigation, 2004 Clandestine Lab Responses (as of December 31, 2004), available at http://sswnt7.sowo.unc.edu/fcrp/Cspn/vol10_n2/SBI_maps_2001-2004.pdf.

Government Financing for On-Site Wastewater Treatment Facilities in North Carolina

Jeff Hughes and Adrienne Simonson

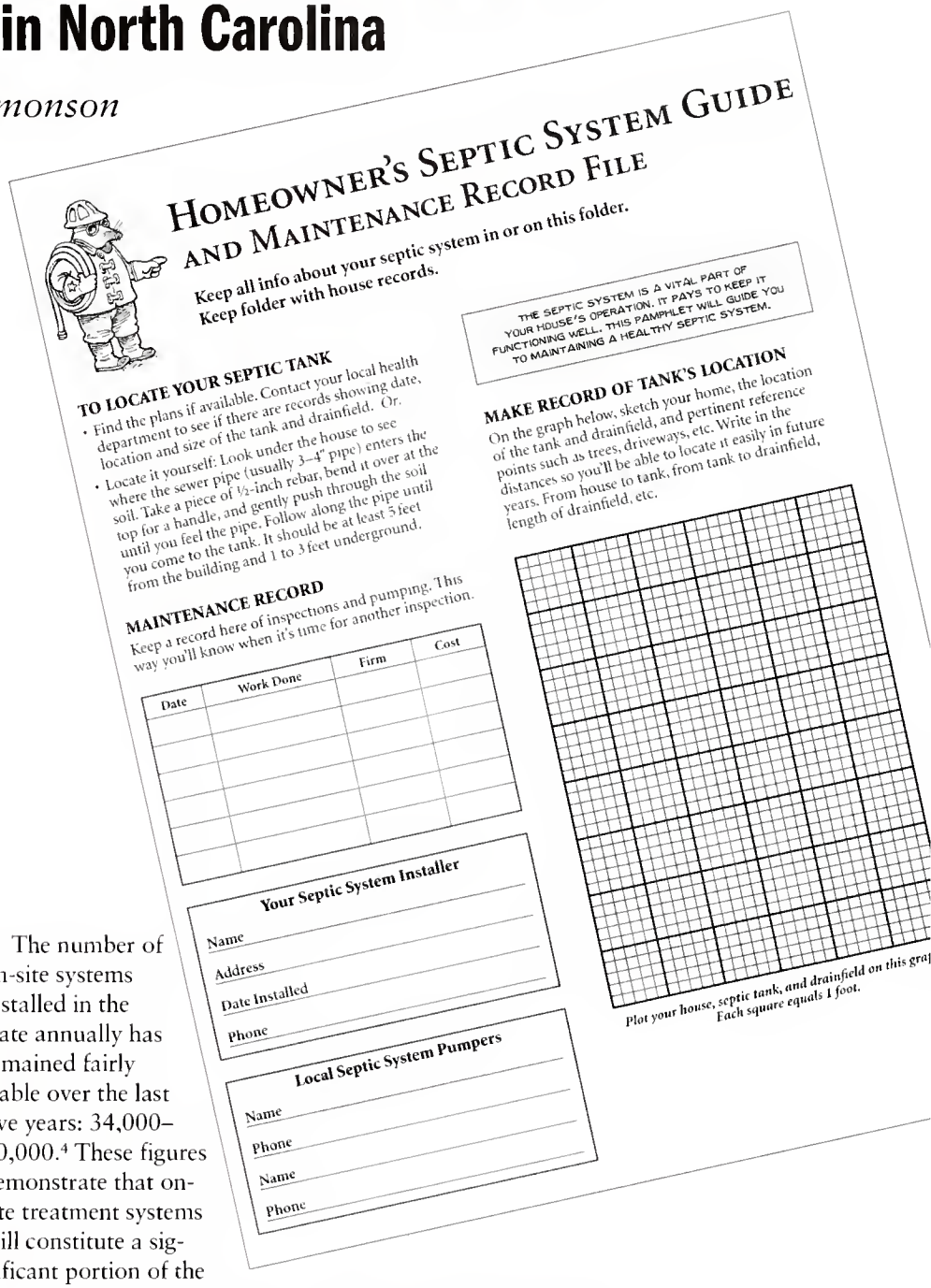
In the kitchen, the laundry, and the bathroom, people use clean water, and it becomes wastewater. In urban areas, sewer systems carry the wastewater to centralized treatment facilities, but for millions of North Carolinians, treatment occurs in their own backyards. The private citizens who operate a majority of these backyard facilities often lack the knowledge and the experience to maintain them properly. When the facilities fail, they pose unique challenges to human and environmental health, not only on that property but also to the wider community.

This article presents data on the extent of "on-site" (decentralized) wastewater treatment facilities in North Carolina.[1] It outlines some of the challenges inherent in operating, managing, and funding on-site systems, and it examines several local and regional initiatives to expand funding options and implement management programs.

On-Site Systems in North Carolina

Calculating the number of existing on-site systems in North Carolina is a challenge. Current knowledge relies mostly on data from the 1990 Census that were self-reported. Those data indicate that about one-half of the North Carolina population uses on-site systems to treat wastewater, compared with an estimated one-fourth of the nation's population.[2] Nationally, one-third of new housing uses on-site systems.[3]

Hughes is director of the Environmental Finance Center, the University of North Carolina at Chapel Hill. Simonson is a budget analyst for the U.S. Department of the Interior. Contact them at jhughes@iogmail.iog.unc.edu and adrienne_simonson@ios.doi.gov.



HOMEOWNER'S SEPTIC SYSTEM GUIDE AND MAINTENANCE RECORD FILE

Keep all info about your septic system in or on this folder.
Keep folder with house records.

THE SEPTIC SYSTEM IS A VITAL PART OF YOUR HOUSE'S OPERATION. IT PAYS TO KEEP IT FUNCTIONING WELL. THIS PAMPHLET WILL GUIDE YOU TO MAINTAINING A HEALTHY SEPTIC SYSTEM.

TO LOCATE YOUR SEPTIC TANK

- Find the plans if available. Contact your local health department to see if there are records showing date, location and size of the tank and drainfield. Or,
- Locate it yourself: Look under the house to see where the sewer pipe (usually 3–4" pipe) enters the soil. Take a piece of ½-inch rebar, bend it over at the top for a handle, and gently push through the soil until you feel the pipe. Follow along the pipe until you come to the tank. It should be at least 5 feet from the building and 1 to 3 feet underground.

MAKE RECORD OF TANK'S LOCATION

On the graph below, sketch your home, the location of the tank and drainfield, and pertinent reference points such as trees, driveways, etc. Write in the distances so you'll be able to locate it easily in future years. From house to tank, from tank to drainfield, length of drainfield, etc.

MAINTENANCE RECORD

Keep a record here of inspections and pumping. This way you'll know when it's time for another inspection.

Date	Work Done	Firm	Cost

Your Septic System Installer

Name
Address
Date Installed
Phone

Local Septic System Pumpers

Name
Phone
Name
Phone

Plot your house, septic tank, and drainfield on this gra
Each square equals 1 foot.

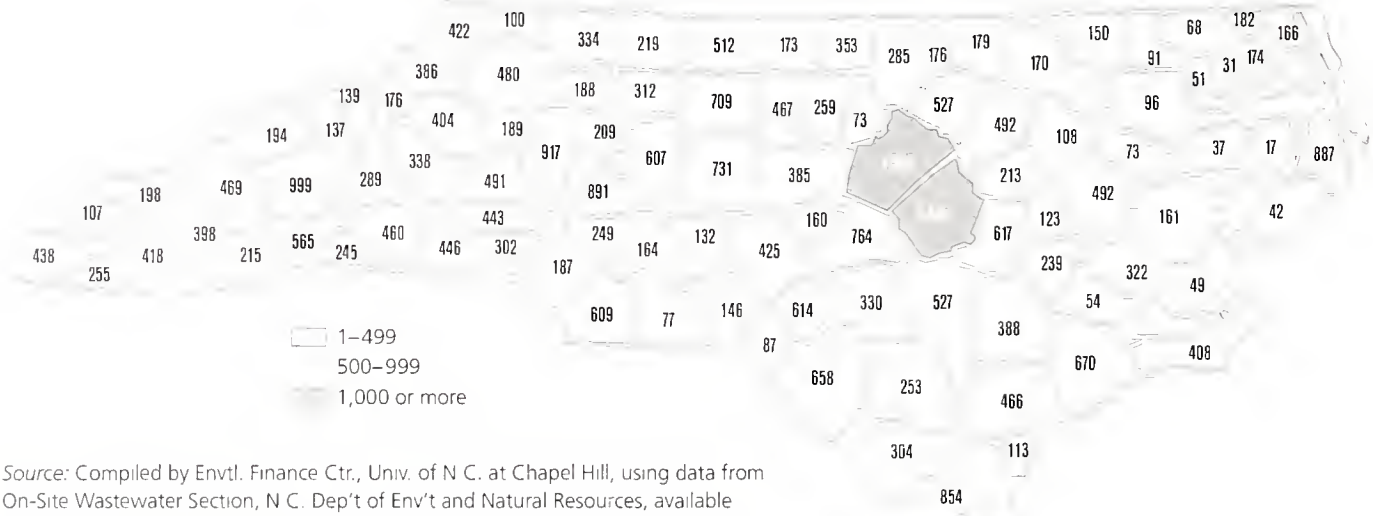
The number of on-site systems installed in the state annually has remained fairly stable over the last five years: 34,000–40,000.[4] These figures demonstrate that on-site treatment systems will constitute a significant portion of the state's wastewater infrastructure for the foreseeable future.

On-site systems are not limited to rural counties. For example, in 2003, Wake County, one of the state's most urban counties, issued the second-highest number of permits for new systems (1,308), Johnston County issuing the highest number (1,335) (see Figure 1).[5]

Challenges of On-Site Systems

Although the design and the scale are very different, many of the sophisticated biological processes that occur in large centralized wastewater treatment facilities also occur in on-site systems.[6] However, the procedures for operating,

Figure 1. **New Operating Permits Issued for On-Site Wastewater Systems in North Carolina, by County, 2003**



Source: Compiled by Envtl. Finance Ctr., Univ. of N C. at Chapel Hill, using data from On-Site Wastewater Section, N C. Dep't of Env't and Natural Resources, available at www.deh.enr.state.nc.us/oww/.

inspecting, and funding centralized and on-site systems have notable differences. Centralized treatment facilities in North Carolina are maintained by certified professional wastewater operators, who must meet strict education and experience requirements.[7] In stark contrast, most of North Carolina's on-site systems are the responsibility of doctors, schoolteachers, accountants, factory workers, or whoever else happens to own or live on the properties where the systems are located.

On-site systems are under scrutiny more than ever with regard to their contributions to public health problems and environmental degradation. Their out-of-sight, out-of-mind nature results in an estimated 10–30 percent of them failing annually. They "can release pathogens and nutrients into the environment that may . . . reach surface waters either through groundwater flow or overland if there is a surface failure."[8] Nationwide, a majority of them are more than thirty years old, and their failure is the second most frequently cited source of groundwater contamination.[9] "The *National Water Quality Inventory 1996 Report to Congress* states that 'improperly constructed and poorly maintained septic systems are believed to cause substantial and widespread nutrient and microbial contamination to ground water.'"[10]

Most on-site systems "are designed to operate indefinitely if properly maintained. However, because most household systems are not well maintained, the functioning life of septic systems is rypically 20 years or less."[11] In North Carolina, failure of on-site systems is most frequently attributable to age; poor soil conditions; tree roots; overloading; lack of maintenance; poor siting, design, or installation of the system; high water tables; seasonal soil wetness; and abuse, such as driving over the lines or using toxic household cleaners excessively.[12] These problems relate directly to lack of consumer information or interest regarding the maintenance needs and the life expectancies of systems.

Often, developers install the systems, and homeowners, who do not see them, never give them a thought until they fail. Homes may change hands before that happens, and the new homeowners may have even less information than the previous ones about age and capacity because on-site systems are rarely inspected at real estate closings. In North Carolina, as in most states, there is no law requiring inspection of on-site systems before property changes hands. Only three states have a statewide "inspection requirement that result[s] in the eventual inspection of all onsite systems through a 'time of transfer' mandatory inspection requirement."[13]

There is a strong symbiotic relationship between programs for regulating on-site systems and programs for repairing or replacing them. North Carolina places the responsibility of regular maintenance on any person who owns or controls an on-site system.[14] Violations carry administrative, civil, and criminal penalties.[15] Once an environmental health specialist has written a notice of violation because a system is failing, the homeowner has thirty days to repair or replace it (unless notified otherwise). If the system is not repairable, it may not be used, and it may be placed out of service to protect the health and the safety of the public.[16] The homeowner may appeal both the interpretation and the enforcement of the rules.[17] But if the homeowner does not appeal, or appeals and loses, local regulators may face the difficult choice of evicting the homeowner or allowing the public health problem to continue, unless a repair or replacement program is available.

Local governments throughout the state play a major role in organizing and coordinating funding for centralized sewer systems. Homeowners served by these systems pay for maintenance and repairs through their service rates and rely on the local government or utility to coordinate funding and repair. Thus, communities served by centralized systems pool the resources of residents and spread the costs more or less evenly among them over time. Also, improvements to centralized systems have long been considered to be a governmental responsibility and often are funded with long-term loans, which allow their costs to be spread over 20–30 years.

In contrast, homeowners served by on-site systems individually determine how to fund and coordinate management and repairs. Unfortunately, many cannot pay for needed repairs. They are unable to obtain a loan, or they have limited resources.

Basic State and County Health Department Responsibilities

Under the current state regulatory framework, the environmental health division of a county's health department makes most of the essential decisions about on-site wastewater systems. Specialists from the local health department must inspect a site before installation or repair of a system.[18] By law they must evaluate the soils and issue a permit before house construction can begin or a system can be installed. Also, they must approve the installation before electric service can be permanently connected to the house and the on-site system can be put into use.[19]

Most on-site systems "are designed to operate indefinitely if properly maintained. However, because most household systems are not well maintained, the functioning life of septic systems is typically 20 years or less."

Environmental health programs have substantial responsibilities beyond wastewater regulation, including inspection of restaurants. According to many environmental health directors, their divisions are notoriously underfunded and have difficulty carrying out essential responsibilities, let alone initiating proactive programs. Monitoring and documentation of on-site wastewater systems, especially in excess of the state's minimum requirements, are limited.

Most counties continue to rely on a mixture of fees and general fund revenue, such as property and sales tax revenue, to support regulation of on-site systems. Many have made concerted efforts to ensure that the fees they charge for on-site inspections and permits cover as much of their costs as possible.

Some communities increase their monitoring services by shifting funding burdens from general local tax revenue to dedicated revenue sources. For example, Chatham County's Environmental Health Program initiated a fee-based, self-supporting program that issues permits and monitors several types of on-site systems, at a cost of $100,000 a year.[20]

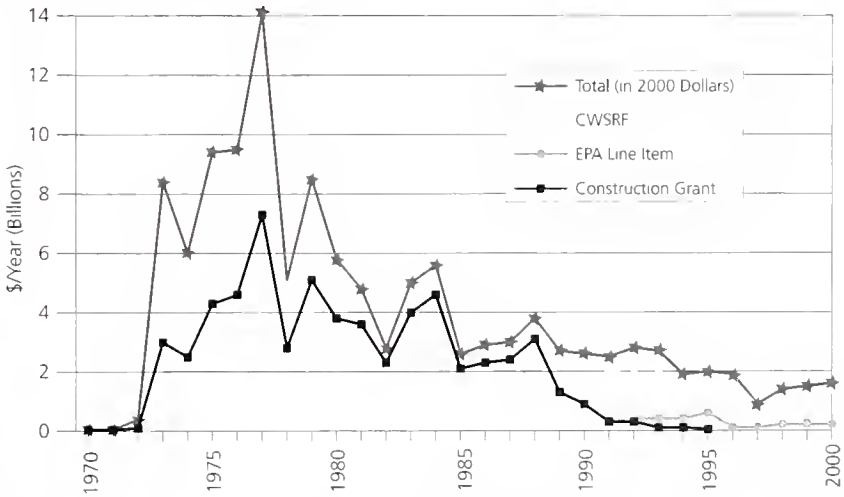
Government Management of On-Site Systems

On-site specialists have argued for years that local governments should expand their management role beyond the issuance of permits, given the potential environmental and public health impact of improperly maintained on-site systems. Relatively little disagreement exists about the types of activities that are needed to reduce the possibility of on-site system failure. The Environmental Protection Agency and the National Small Flows Clearing House, an organization that provides wastewater assistance to small communities, have long promoted new management models.[21] The Environmental Protection Agency encourages local government management of on-site systems and has proposed voluntary national guidelines.[22] The elements of centralized management that are currently missing in most areas include an inventory of all systems in the area, a record-keeping system, periodic inspections, monitoring of water quality, and issuance and periodic review and renewal of operating permits.

For at least thirty years, communities in North Carolina have been considering options for expanding the role of governments in managing and funding on-site systems. For example, Orange County has long recognized the inherent limitations of a completely decentralized management and funding framework for its on-site systems.[23] A 1981 survey indicated that about one-tenth of the systems in the county were failing and two-thirds of the septic tanks had never been pumped. These findings led to a detailed proposal for a countywide management system.[24] Yet almost twenty-five years later, the county still is considering options.

In many respects, Orange County's situation mirrors that of communities across the country. The number of guidebooks, proposals, and manuals describing models for centralized management of on-site systems most likely far exceeds the number of models actually in place. Many of the models appear sound on paper but never seem to overcome the hurdles of local implementation.

Figure 2. **Environmental Protection Agency Funding for Wastewater Facilities, 1970–2000**



Source: Data from Office of Water, Envtl. Prot. Agency, Report to Congress: Impacts and Control of CSOs and SSOs, Table M.2 (Washington, D.C.: EPA, 2004), available at http://cfpub.epa.gov/npdes/cso/cpolicy_report2004.cfm (follow "Appendix M. Financial Information" hyperlink).

Funding of Repairs and Replacements

Funding of wastewater services in the United States changed dramatically from the 1970s to the 2000s. A sizable federal grant program that accompanied the passage of the 1972 Clean Water Act (see Figure 2) evolved into a more complex system delivering a smaller amount of money through grants and loans administered by a wide variety of federal and state agencies. Almost all the funding from 1970 to 1990 went to communities to construct or maintain centralized treatment systems. Such a focus was logical at the time, given the nation's concern about "point sources" of pollution (distinct sources discharging waste into rivers and streams) and their devastating ecological impacts.

The federal Construction Grant Program was phased out in the 1980s. Replacing it was the Clean Water State Revolving Fund (CWSRF), a loan program that can be used for large centralized facilities as well as for programs that reduce "non-point-sources" of pollution (diffuse sources, associated with failing on-site systems). Every year the Environmental Protection Agency allocates monies to a CWSRF in each state. The states use the monies as capital for a "revolving loan program" that makes low-interest loans available to communities and uses the loan payments to finance new loans. North Carolina's CWSRF has focused on assisting communities in constructing and maintaining centralized facilities. Under the right circumstances, the CWSRF may be used to support repair and replacement of on-site systems, but to date it has not been used this way in North Carolina.[25]

Other federal programs, such as the Water and Waste Disposal Loans and Grants Program of the U.S. Department of Agriculture, and Community Development Block Grants, support small-scale funding initiatives that have resulted in federal and state money flowing to on-site systems through local governments.[26] The Appalachian Regional Commission, which funds water and wastewater projects in the western area of the state, has collaborated with other federal and state programs and local nonprofits to establish programs to address failing on-site systems and eliminate "straight piping" (the practice of piping wastewater directly into the environment without any treatment) for a single county and for multiple counties. However, the commission has not been an ongoing source of funding for repair and replacement programs.[27]

As its name suggests, the Unsewered Community Grant Program of the North Carolina Rural Economic Development Center provides state grant funding to communities for the purpose of providing sewers to households that have relied on on-site systems. Between 2000 and 2004, the program distributed about $75 million to about thirty communities.[28]

The North Carolina Clean Water Management Trust Fund (CWMTF) supports programs to protect water resources. It has funded a number of initiatives to repair on-site systems (see examples below).

The On-Site Wastewater Section of the North Carolina Department of Environment and Natural Resources is responsible for regulating and overseeing the state's on-site wastewater systems. Historically its primary role has been regulatory. However, in 1996 the General Assembly created the Wastewater Discharge Elimination (WaDE) program under the On-Site Wastewater Section to identify and eliminate straight piping and failing on-site systems statewide.[29] To date, limited funding has restricted most of WaDE's efforts to western North Carolina. WaDE conducts door-to-door surveys in targeted watersheds in the western part of the state, identifies failing systems, and funds local health departments to issue repair permits and conduct final repair inspections.

Local and Regional Funding Program Examples

Programs that provide funding assistance to address failing on-site systems or other serious public health threats through repair and replacement have been surprisingly diverse in terms of the participating agencies, their roles and responsibilities, their funding streams, and their eligibility requirements. The diversity of models highlights their experimental nature. Figuring out an efficient and transparent process of moving money from federal, state, and local funding sources to individual homeowners is a challenge. Staff time is required to meet with homeowners and assist them through the application process, confirm credit histories and income levels, cut checks and receive and track payments, write grant proposals and prepare reports, and deal with delinquencies. Administering loan and grant programs requires expertise and experience not normally found in many county environmental health programs.

In many ways, improving both the quality and the performance of on-site wastewater system management remains a chicken-or-egg puzzle.

Two efforts show the progress and the challenges of funding programs to repair and replace straight piping and failing on-site systems: one in Madison County and another encompassing four counties in the western Piedmont. These programs exemplify concerns about administering grants and loans.

Madison County's Straight Pipe Elimination Revolving Loan and Grant Relief Program

In 1996 the newly created WaDE program reported that many homes on the Ivy River relied on outhouses and incomplete indoor facilities.[30] In 1997 the Madison County Straight Pipe Elimination Revolving Loan and Grant Relief Program evolved from a statewide initiative to eliminate straight piping and from the community's own need to terminate the practice. The project, led by the Land-of-Sky Regional Council (the region's council of governments) and the Madison County Health Department, involved a collaboration of community, regional, state, and federal partners. It included a door-to-door survey assessing wastewater conditions and household needs; community education; and the identification of installation and repair resources for households with straight piping or failing on-site systems.

The survey results indicated that 205 households had straight piping of "black water" (human waste from toilets); 243 households, straight piping of "gray water" (nontoilet waste, such as bath water and laundry water); and 104, failing on-site systems. Also, 60 percent of the households relied on incomes of less than $26,000 per year.

The project started with a $750,000 grant from CWMTF. Additional funding from CWMTF provided $51,000 per year for three years to cover administrative costs. A nonprofit banking institution, the Center for Community Self-Help, administered the funds and serviced the loans. Homeowners had to pay a $100 application fee for access to the program. Loans required a $100 origination fee as well as a monthly service fee.

The program initially met strong local resistance, for homeowners were extremely wary of local regulatory officials offering funding. Thus, not much was accomplished in the first five years and eight months. As the grant neared completion, $550,000 had yet to be spent. Health Director Buck Wilson and the Madison County Board of Health, unwilling to lose funds for area homeowners and the local economy, met with and explained the program to county commissioners and community representatives, who in turn encouraged their friends, families, and neighbors to make use of it. This extensive public outreach made the difference. In the remaining four months, the balance was spent, and 446 systems were installed or repaired.

The CWMTF funding was depleted as of June 30, 2003. Since then, Madison County itself has provided a few loans directly to county homeowners. However, an estimated 300–400 homeowners still are in need, including 75 who now have enough faith in the program that they have actually put their names on a waiting list for future funding.

Unifour Failing Septic Repair Program

The Unifour Failing Septic Repair Program began as the result of a particularly high rate of failing on-site systems in the densely populated, unincorporated areas of Alexander, Burke, Caldwell, and Catawaba counties, as well as concerns about bacteria in some of the region's streams.[31] The Western Piedmont Council of Governments submitted grant proposals to CWMTF for sewer system extensions in the region. Officials of CWMTF voiced concerns about the secondary impacts of extensions and instead recommended a program for repair of failing on-site systems. In 1998, CWMTF granted $450,000 for the project but did not provide funds for administration of it. The downtown Hickory branch of the Bank of America agreed to provide a free checking account for the Unifour Septic Tank Repair Program but no administrative oversight.

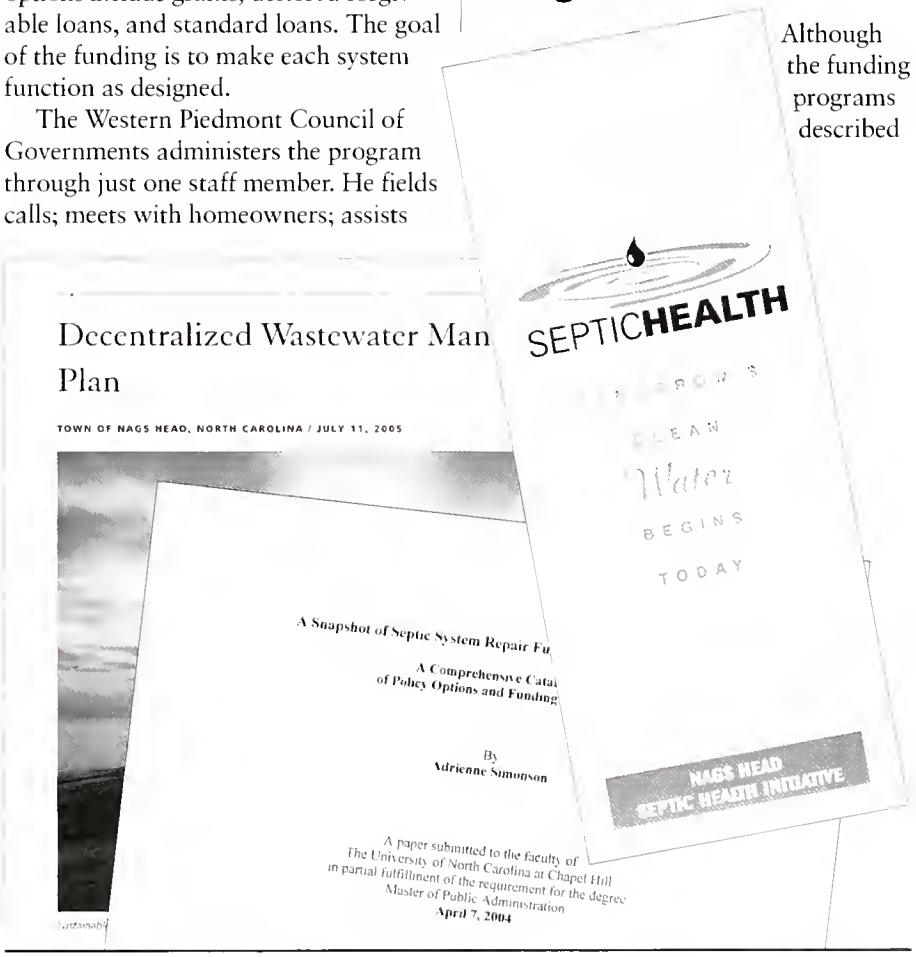
The program targets "moderate-income" homeowners as defined by guidelines of the U.S. Department of Housing and Urban Development. Participants must own their own homes and reside in state-designated watershed regions, although exceptions are made for homeowners currently relying on gray- or black-water straight piping. Financing options include grants, deferred forgivable loans, and standard loans. The goal of the funding is to make each system function as designed.

The Western Piedmont Council of Governments administers the program through just one staff member. He fields calls; meets with homeowners; assists them in filling out forms; determines homeowner eligibility and the level of assistance needed; and verifies household income. In addition, he communicates with contractors, tracks results, pays the invoices submitted for completed repairs, furnishes grant reports, and serves as the program contact for CWMTF and other partners.

As of March 2004, 101 homeowners had participated, and $260,000 had been spent. Of the systems repaired, 25–30 percent involved straight piping, and of those, 95 percent were gray water. Generally, four or five homeowners are at some stage of the process at any given time, and two to four new applications come in weekly. Homeowner loan payments are deposited into the account for reuse. However, half of the applicants use some form of grant, so the revolving loan feature will eventually run out.

Creation of Sustainable, Innovative Local Government Programs for On-Site Management

Although the funding programs described



in the previous section have helped individual households, questions remain about the long-term viability of repair programs that are founded almost entirely on outside grant assistance. During a special work session in October 2004, local government practitioners and funding agency representatives analyzed the programs offering grants for repair and replacement of on-site systems.[32] At least one funding agency representative voiced frustration about the lack of consistency among the different local government funding models and the complicated flow of funds among funding agencies, local governments, other intermediaries, and households. Funding agency representatives complained that many of the repair and replacement programs lacked sustainability and that once the infusion of external capital was depleted, programs often came to a sudden end.

Not all local funding programs rely primarily on external grants. In fact, a program in Nags Head, North Carolina, that is funded primarily from local utility fees currently provides the widest range of on-site services. Another program that relies primarily on local revenue, the Albemarle Septic Management Entity, was created primarily to provide one-time approval services and recurring inspections. Each of these programs has had a steady source of revenue and relatively stable budgets. Yet these types of ongoing funding programs are extremely rare in North Carolina.

Nags Head's Septic Health Initiative

Nags Head, a tourist-centered town on a narrow barrier island, was experiencing a decrease in water quality as a result of faulty on-site systems. Many of the town's 4,400 homes are rental properties owned by absentee landlords, and visiting tourists often were unfamiliar with the peculiar requirements of on-site systems. Nags Head residents did not want to convert to a centralized wastewater system, however, because they feared that the town's character would change as a result of the intense development that often follows introduction of such a system.

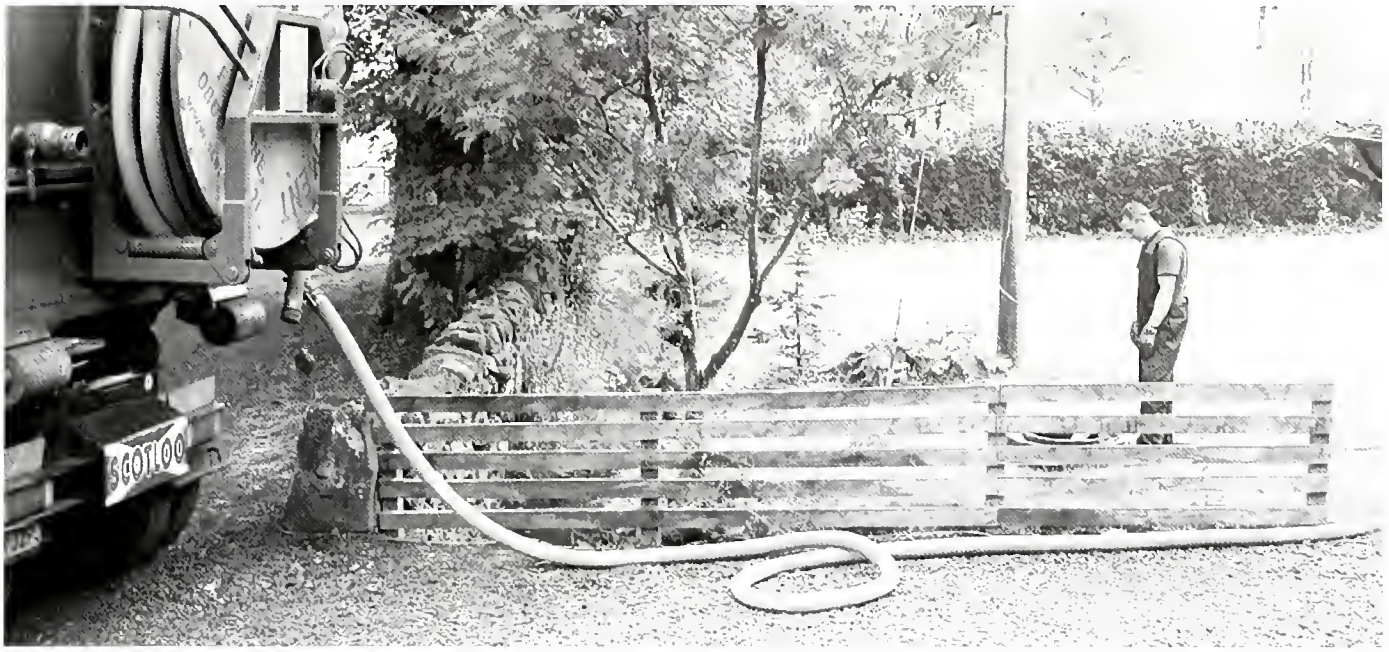
So a group of local citizens formed the Septic Health Committee and spent three years discussing a series of town-wide programs designed to improve the performance of on-site systems "while maintaining acceptable surface and ground water quality—as well as controlling the density of developed land by promoting the use of [on-site] systems."[33] The committee formed the Septic Health Initiative, a voluntary program to protect the town's water quality. It offers a set of complementary services aimed at educating citizens, improving documentation and maintenance of on-site systems, and repairing failing systems. The program also includes an extensive component to test water quality.

The Septic Health Initiative is funded as part of the town's water enterprise fund. According to Kim Kenny, Nags Head's finance director, the town views the program primarily as a component of the water utility, intended to protect the water resources, and funds the $300,000 or so in annual operating costs out of water rate revenues.[34]

Property owners may voluntarily request inspections to assess the condition of their systems. A town-approved independent contractor determines the level

Figure 3. **Nags Head's Septic Health Initiative**

Source: From Town of Nags Head, Water Quality Monitoring Program (last visited Nov 13), available at http://nagshead.govoffice.com/index.asp?Type=B_BASIC&SEC=%7bC50FD321-F32E-44A0-96C3-C981BF915C86%7d (follow "North Map" hyperlink).



of solids in the septic tank, the condition of the tank, and the condition and the effectiveness of the drainage field. Property owners pay a negotiated rate of $65 for the inspection. However, on receipt of the inspection report, the town issues a full reimbursement to them.

The inspection reports then are entered into a comprehensive on-site system database. As part of the program, the town also conducts routine water-quality testing at several strategic locations, in part to identify septic system failures as soon as possible. (For the sites of inspections and water-quality testing, see Figure 3.)

The town also has negotiated rates with local contractors for pumping out septic tanks. Property owners who hire an approved contractor pay the negotiated rate—$200 for a tank of 1,000 gallons or less—and receive a voucher worth $30 toward their next water bill, resulting in a net pumping cost of $170.

For property owners facing costly repairs, the town offers a three-year, low-interest revolving-loan program.[35] Homeowners are eligible for loans as long as their property tax payments are current. The program can cut off water to a home for nonpayment of a loan but has never had to do so.

Nags Head takes education about septic system health seriously. The coordinator of the Septic Health Initiative, Todd Kraft, visits each fifth-grade class in the town's schools to discuss the do's and don'ts of septic system health. Homeowners receive septic system owner's manuals, and realtors get education packets for use in rental cottages. These packets include door hangers, decals, and brochures explaining what not to flush. The program also is extensively publicized through the town newsletter, the government access channel, civic function signage, and mass mailings twice a year. In a survey of town residents, Nags Head officials discovered that 66 percent of program participants had gained an understanding of the basic functions of their septic systems, and 94 percent would sign up for program services again.[36]

Albemarle Septic Management Entity

The Albemarle Septic Management Entity covers eleven counties in northeastern North Carolina: Bertie, Camden, Chowan, Currituck, Gates, Hertford, Martin, Pasquotank, Perquimans, Tyrrell, and Washington. It offers some services similar to those of the Nags Head program, but its objectives and history are quite different. It is managed as a component of the Environmental Health Program of Albemarle Regional Health Services to facilitate the approval and monitoring of alternative wastewater systems. According to Environmental Health Director Ralph Hollowell, in many parts of the region, soils with extremely high clay content and a high water table make traditional septic tank and gravity drainage fields unfeasible.[37]

By including "management entity" in the name, Albemarle Regional Health Services reinforced its interest in having the utility fulfill the roles and the responsibilities assigned to such an entity in the state rules governing on-site systems.[38] The program operates as a joint management agency relying on Section 153A-274 of the North Carolina General Statutes for its public enterprise fee-setting authority.[39]

The entity currently serves 3,500 property owners with innovative or alternative systems. Property owners wanting to install an innovative or alternative system pay $300 in fees to cover the initial application and the operating permit.[40] Subsequently they pay $50 a year for annual inspections. Special door hangers informing homeowners that the annual inspections have been completed, a recent program addition, remind residents of the services that they receive for their payments. If staff identify problems during inspections, they notify property owners and work with them to ensure appropriate follow-up. Program fees also support documentation and database efforts.

Environmental Health Director Hollowell reports that the percentage of failed systems at any given time has dropped significantly since the program was established.[41] According to Hollowell, the program's success has turned largely on staff members' ability to work with county officials in the service area.

The Next Twenty-Five Years

Policy makers have long searched for the silver bullet that would open the way to more sustainable programs to manage on-site systems in North Carolina. Before 1979, North Carolina's public enterprise statutes provided no explicit authorization for funding and management of on-site systems as a local government public enterprise service. Many people believed that the lack of authorization was one of the main obstacles to the establishment of on-site wastewater utilities and management programs in the state. This perceived obstacle eventually led to legislation by the 1979 General Assembly that added on-site wastewater disposal to the list of services that may be managed as public enterprises.[42]

Proponents of the legislation believed that it would open the door to a range of innovative options for public management of on-site systems. Existing water and sewer utilities could incorporate responsibility for management of such systems into their service areas. Counties could create new utilities, either at the county level or at the subcounty level, through the use of special districts. By managing on-site systems as utilities, local governments could pool funding resources and provide higher levels of inspection, maintenance, and repair in some cases.

Twenty-five years later, few counties go much farther than basic state requirements, and it would be difficult to declare that any have shown great flexibility in generating significant financial resources to support management activities. Meanwhile, almost one million additional on-site systems have been constructed in North Carolina, and the responsibility for inspecting, maintaining, and repairing them continues to rest almost exclusively with untrained individuals.

Even though the federal and state funding levels for centralized wastewater systems have fallen in recent years, they still far exceed the amount of federal and state funds devoted to on-site systems. As a result, many on-site specialists call for increased federal and state funding as a way of improving on-site systems. But federal and state funds that have gone into the country's centralized wastewater infrastructure have been matched and leveraged with many more millions in locally generated revenues from user fees. In 2004 alone, local government water and sewer utilities in North Carolina collected more than $1.4 billion in revenues from their customers.

Without revenues from on-site users, local governments are unlikely to be able to leverage external funds or expand their own role in improving on-site sanitation, as they have done for centralized wastewater systems. As noted earlier, representatives of several of the state funding agencies that have supported repair programs have expressed frustration that the programs ended once their funding stopped.[43]

The success of the Nags Head and Albemarle programs shows the level of services that can be offered with a dedicated source of revenue or a well-designed fee structure.

New fee programs are typically unpopular, especially when they address an issue that for so long has literally been out of sight and out of mind to most North Carolina citizens and public officials. On the other hand, the financial challenges facing some North Carolina counties largely preclude their redirecting existing revenues to new programs.

In many ways, improving both the quality and the performance of on-site wastewater system management remains a chicken-or-egg puzzle. It is not a coincidence that many of the large federal programs to fund centralized systems came at a time when the country was increasing its regulation of public treatment facilities. Did the increased regulation lead to increased funding, or did increased funding give regulators the confidence to demand more? Many now pose a similar question regarding the regulation and the funding of on-site systems. The western North Carolina repair programs clearly demonstrate that once funding options are available, regulators can address straight piping more aggressively. Likewise, without regulatory pressure for improving facilities, the demand for better management programs will remain relatively academic, given the other priorities facing the state's communities.

Notes

1. On-site systems using septic tanks, often referred to as "septic systems," are by far the most common type of decentralized system in North Carolina.

2. N.C. Div. of Water Quality, Non Point Source Management Program: Onsite Wastewater Systems (last modified Feb. 10, 2002), available at http://h2o.enr.state.nc.us/nps/What_is_NPS/OWS.htm. As of 2002, that is about 1.85 million North Carolina homes. Census Bureau, State and County QuickFacts, available at http://quickfacts.census.gov/qfd/states/37000.html. "In large communities (those with more than 10,000 people) almost 93 percent of the housing units are connected to a public sewer . . . In contrast, about 61 percent of housing units in small communities use a septic tank or cesspool for wastewater disposal . . . [California has the highest number of housing units using outhouses or privies (67,865).] Other states with large numbers of small community housing units using outhouses or privies are Kentucky (55,764), Pennsylvania (47,902), Missouri (46,223), and North Carolina (45,461)." Envtl. Prot. Agency, Small Communities: U.S. Census Data on Small Community Housing and Wastewater Disposal and Plumbing Practices (last modified June 28, 2002), available at www.epa.gov/OWM/mab/smcomm/factsheets/census/index.htm.

3. Office of Water, Envtl. Prot. Agency, *Executive Summary*, Voluntary National Guidelines for Management of Onsite and Clustered (Decentralized) Wastewater Treatment Systems (Washington, D.C.: Office of Water, EPA, Mar. 2003), available at www.epa.gov/owm/septic/pubs/septic_guidelines.pdf.

4. Data from On-Site Wastewater Section, N.C. Dep't of Env't and Natural Resources, available at www.deh.enr.state.nc.us/oww (follow "Program Improvement Team" hyperlink).

5. *Id.*

6. The most common design for on-site systems is a septic tank connected to a subsurface absorption or drainage field, serving an individual homeowner or business. However, in many areas of the state, soil and space limitations are unsuitable for this model. In such situations a variety of systems are used, employing features such as pressured pipes, pumps, disinfection processes, specially designed drainage basins, and spray irrigation fields (wastewater sprayed onto a surface rather than absorbed beneath the surface).

7. A small percentage of alternative and innovative on-site systems also require certified operators. New on-site systems tracked by the On-Site Wastewater Section of North Carolina's Department of Environment and Natural Resources fit into one of five classes, I–V. Class I, II, and III systems (accounting for 33,478 of the 34,176 on-site

systems receiving permits in 2003) do not require certified operators; Class IV and V systems do.

8. N.C. Div. of Water Quality, Non Point Source Management Program: Onsite Wastewater Systems (last modified Feb. 10, 2002), available at http://h2o.enr.state.nc.us/nps/What_is_NPS/OWS.htm.

9. Office of Water, Voluntary National Guidelines.

10. *Id.* at 4.

11. Office of Water, Envtl. Prot. Agency, Decentralized Systems Technology Fact Sheet: Septic Tank–Soil Absorption Systems (Washington, D.C.: Office of Water, EPA, Sept. 1999), available at www.epa.gov/owmitnet/mtb/septicfc.pdf. Facts about septic systems are available at www.soil.ncsu.edu/publications/Soilfacts/AG-439-13/ and www.bae.ncsu.edu/programs/extension/publicat/wqwm/wm1.html.

12. National Onsite Wastewater Treatment, Summary of Onsite Systems in the United States (Morgantown, W.Va.: Nat'l Small Flows Clearinghouse, 1993).

13. Lorene Lindsay and Michael Aiton, *NODP Update: Inspection of Onsite Systems*, Small Flows Quarterly, Fall 2002, available at www.nesc.wvu.edu/nsfc/sfq_fall02/pg12.html. However, "[l]ending institutions in a real estate transaction will often require an inspection of the onsite system. In areas where onsite systems are frequently used *and failure of these systems has become public knowledge*, the local lending institutions, the real estate community, or the buyer will often require an inspection" (emphasis added). *Id.*

14. Maintenance of Sewage Systems, 15A NCAC 18A .1961 (2002), available at www.deh.enr.state.nc.us/oww/Rulelaw/2002_Rules.htm (follow "Links to Individual Rules" hyperlink; then follow "15A NCAC 18A .1961" hyperlink).

15. Penalties, 15A NCAC 18A .1968 (2002), available at www.deh.enr.state.nc.us/oww/Rulelaw/2002_Rules.htm (follow "Links to Individual Rules" hyperlink; then follow "15A NCAC 18A .1968" hyperlink).

16. Maintenance of Sewage Systems, 15A NCAC 18A .1961(l) (2002), available at www.deh.enr.state.nc.us/oww/Rulelaw/2002_Rules.htm (follow "Links to Individual Rules" hyperlink; then follow "15A NCAC 18A .1961" hyperlink).

17. Appeals Procedure, 15A NCAC 18A.1965 (2002), available at www.deh.enr.state.nc.us/oww/Rulelaw/2002_Rules.htm (follow "Links to Individual Rules" hyperlink; then follow "15A NCAC 18A .1965" hyperlink).

18. N.C. Gen. Stat. §§ 130A-333 through -345 (hereinafter G.S.).

19. G.S. 130A-336; *see also* Michael T. Hoover, Soil Facts: Septic Systems and Their Maintenance (Raleigh: N.C. Cooperative Extension Serv., Feb. 1994; updated online Dec. 1997), available at www.soil.ncsu.edu/publications/Soilfacts/AG-439-13/.

20. Chatham County, N.C., 2004–05 FY Approved Annual Budget Document (Pittsboro: 2004).

21. For relevant publications, *see* the general websites of the Environmental Protection Agency and the National Small Flows Clearing House, at www.epa.gov and www.nesc.wvu.edu/nsfc/nsfc_index.htm, respectively.

22. Office of Water, Voluntary National Guidelines.

23. Memorandum from Adrienne Simonson to Ron Holdway, Director, Envtl. Health Div., Orange County Health Dep't (May 17, 2004).

24. A Proposal to Establish an Operation and Maintenance Program for Sewerage Treatment and Disposal in Orange County, Submitted to Orange County Bd. of Health by Dan Reimer, Envtl. Health Director, Orange County Health Dep't (Hillsborough, N.C.: 1989).

25. *See* Clean Water State Revolving Fund, Environmental Protection Agency, Activity Update: Funding Decentralized Wastewater Systems Using the Clean Water State Revolving Fund (Washington, D.C.: CWSRF, EPA, Jan. 2003), available at www.epa.gov/OWOWM.html/cwfinance/cwsrf/septic.pdf.

26. In North Carolina the Division of Community Assistance, in the Department of Commerce, administers federal CDBG funds. The proposed federal budget for fiscal year 2005–06 makes major changes in how these programs will be administered.

27. Telephone interview with Sara Stuckey, N.C. State Coordinator, Appalachian Regional Council (Apr. 7, 2004).

28. Analysis conducted by authors using data from N.C. Rural Econ. Dev. Ctr. (no longer available on website).

29. Nikki Stiles, *Flushing Out the Straight Pipes*, Small Flows Quarterly, Fall 2002, available at www.nesc.wvu.edu/nsfc/sfq_fall02/pg18.html.

30. The description that follows draws on a telephone interview with Buck Wilson, director, Madison County Health Department, in April 2004. More information about the project is contained in a local government case study prepared by the University of North Carolina Environmental Finance Center, available at www.efc.unc.edu/onsite/index.htm (follow "Madison County" hyperlink).

31. The description that follows draws on a telephone interview with Mike Struve, water quality administrator, Western Piedmont Council of Governments, in March 2004. More information about the project is contained in a local government case study prepared by the University of North Carolina Environmental Finance Center, available at www.efc.unc.edu/onsite/index.htm (follow "Western Piedmont" hyperlink). Section 303(d) of the Clean Water Act requires states to develop a list of waters that do not meet water quality standards or are impaired for certain uses (e.g., fishing or recreation). They must prioritize listed waters and develop a management strategy or a total maximum daily load (TMDL) for all listed waters. N.C. Div. of Water Quality, Modeling and TMDL Unit: The 303b and 303d Report, available at http://h2o.enr.state.nc.us/tmdl/General_303d.htm. A TMDL is "a calculation of the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards, and an allocation of that amount to the pollutant's sources." *See* The Total Maximum Daily Loads Program (last modified July 19, 2005), available at www.tmdls.net/basics/general.htm.

32. "Finance Strategies for Decentralized Wastewater Systems," Workshop Sponsored by UNC Envtl. Finance Ctr., in Cullowhee, N.C. (Oct. 26, 2004).

33. Town of Nags Head, Septic Health Initiative (last visited July 20, 2005), available at http://nagshead.govoffice.com/index.asp?Type=NONE&SEC={F43EBE1E-2B2D-4F36-8182-0544F0BEEAD1}.

34. The information in this section was obtained from the Nags Head website, at http://nagshead.govoffice.com, and from personal correspondence with Kim Kenny, Finance Director, Town of Nags Head (Mar. 31, 2005).

35. *Id.*

36. Todd Kraft, Septic Health Coordinator, Nags Head Septic Health Initiative, Presentation at the 2003 Onsite Conference, N.C. State Univ. (Oct. 21–23, 2003).

37. Telephone Interview with Ralph Hollowell, Environmental Health Director, Albemarle Regional Health Services (Apr. 1, 2005).

38. 15A NCAC 18A .1901 through .1968 (2002).

39. Telephone Interview with Hollowell.

40. Maintenance of Sewage Systems, 15A NCAC 18A .1961 (2002), available at www.deh.enr.state.nc.us/oww/Rulelaw/2002_Rules.htm (follow "Links to Individual Rules" hyperlink; then follow "15A NCAC 18A .1961" hyperlink).

41. Nat'l Onsite Demonstration Program, Nat'l Envtl. Serv. Ctr., Insights into Community Onsite Management Systems: A National Overview (Morgantown, W.Va.: the Center, 2002), available at www.nesc.wvu.edu/nsfc/NewReleases/nsfc_NR_5_19_03.htm.

42. 1979 N.C. Sess. Laws ch. 619, as cited in Warren J. Wicker, *Public Management of On-Site Wastewater Systems*, Popular Government, Fall 1980, at 20.

43. Finding from "Finance Strategies for Decentralized Wastewater Systems," Workshop Sponsored by UNC Envtl. Finance Ctr., in Cullowhee, N.C. (Oct. 26, 2004).

Putting Research and Best Practices into Action to Prevent and Control Tobacco Use in North Carolina

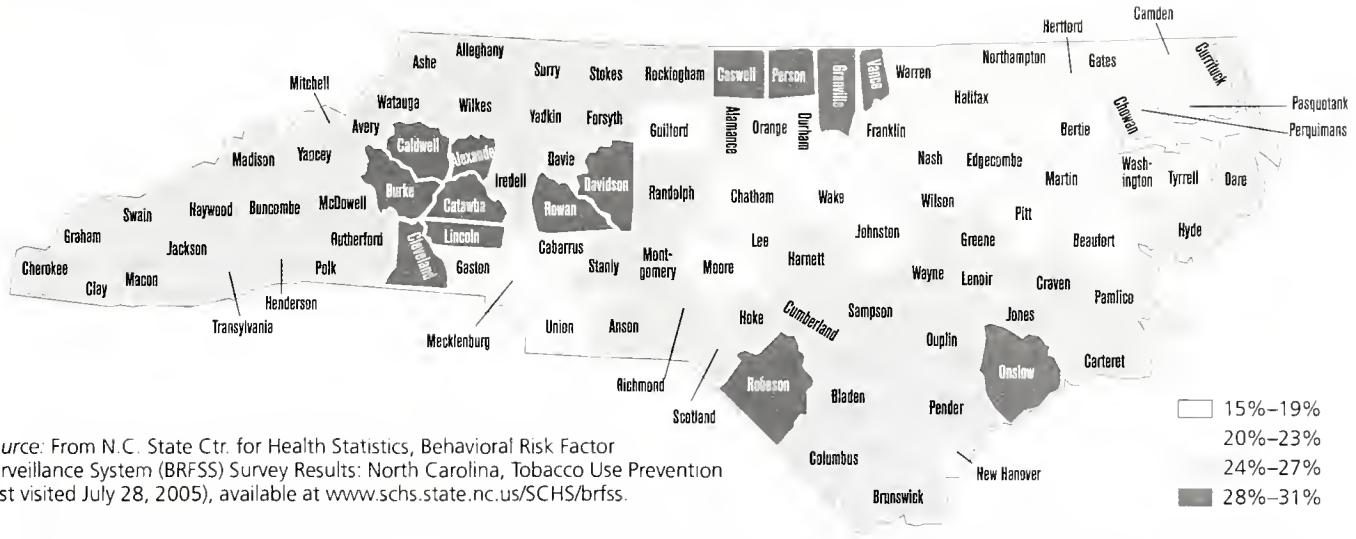
Sally Herndon Malek and Jana Johnson

Tobacco use is the leading preventable cause of death in North Carolina and the nation. It accounts for more deaths than alcohol, drug abuse, car crashes, homicide, suicide, and HIV/AIDS combined. As a matter of public health, tobacco use and its associated diseases have huge costs, and policy changes offer perhaps the greatest opportunities to improve the health and well-being of thousands of North Carolinians. This article describes recent gains in prevention and control of tobacco use in North Carolina. Also, it provides a constructive framework for decision makers to use in improving the health of North Carolinians and reducing their health care costs.

Most people who become users begin using tobacco in early adolescence, and almost all people who become users begin before age twenty-four. The average age of initiation is between twelve and fourteen. Of those who smoke and do not quit, more than half will die prematurely from cigarette-related diseases, losing an average fourteen years of life.[1]

Malek is head of the Tobacco Prevention and Control Branch, North Carolina Division of Public Health. Johnson is a pulmonologist and medical director of the Tobacco Prevention and Control Branch. Contact them at sally.malek@ncmail.net or jana.johnson@ncmail.net.

Figure 1. **Prevalence of Adult Smoking in North Carolina, 2004**



Source: From N.C. State Ctr. for Health Statistics, Behavioral Risk Factor Surveillance System (BRFSS) Survey Results: North Carolina, Tobacco Use Prevention (last visited July 28, 2005), available at www.schs.state.nc.us/SCHS/brfss.

In addition to the health risks that smokers face, evidence mounts on the serious health consequences of exposure to secondhand smoke. It has been shown to cause lung cancer and heart disease in nonsmoking adults, and respiratory infections, chronic ear infections, and asthma in children and adolescents. There is no known safe level of exposure to secondhand smoke. A recent study by the Centers for Disease Control and Prevention (CDC) concludes that even limited exposure can precipitate a heart attack in someone with coronary heart disease.[2]

Not only does tobacco use cost lives, but it costs the state billions of dollars a year in medical costs and lost productivity. In North Carolina in 1998, the last year for which medical costs attributable to tobacco use were isolated from other costs of tobacco use, the medical costs were $1.9 billion (see Table 1). In 2002, tobacco use cost North Carolina an estimated $5.4 billion in medical and productivity costs. Further, for that same year, North Carolina's Medicaid costs attributable to smoking were estimated to be more than $940 million, or $113.23 per capita (see Table 1).

North Carolina's Changing Policy Environment for Tobacco Use

Tobacco use in North Carolina is beginning to decline but still is prevalent: 22 percent of the adult population currently smokes. Rates of smoking vary by age group: The highest rate, 28 percent, is among young adults aged 18–24. From there the rates decline gradually across age groups until adults aged 65 and older, whose rate is less than 13 percent. Rates of tobacco use, including cigarettes and other tobacco products,

Table 1. **Tobacco-Related Monetary Costs in North Carolina**

In 1998 Dollars	
Annual health care expenditures directly caused by tobacco use	$1.92 billion
Total Medicaid program payments caused by tobacco use	$600 million
Citizens' state and federal taxes to cover smoking-caused government expenditures	$1.59 billion ($488 per household)
Smoking-caused productivity losses	$2.82 billion
Smoking-caused health costs and productivity losses per pack sold	$6.59
In 2002 Dollars (Estimated)	
Smoking-caused health costs and productivity losses	$5.4 billion
Total Medicaid costs attributable to smoking	$940 million ($113.23 per capita)

Source: Base numbers are from Office on Smoking, Centers for Disease Control and Prevention, Sustaining State Programs for Tobacco Control: Data Highlights 2004 (Atlanta: CDC, n.d.), available at www.cdc.gov/tobacco/datahighlights/page6.htm. Expenditure forecasts are based on an N.C. population of 8,307,748.

Note: Other nonhealth costs caused by tobacco use, in 1998 dollars, include direct residential and commercial property losses from smoking-caused fires (more than $500 million nationwide); the costs of extra cleaning and maintenance made necessary by tobacco smoke and tobacco-related litter (more than $4 billion per year for commercial establishments alone); and additional work-productivity losses from smoking-caused work absences, on-the-job performance declines, and disability during otherwise productive work lives (in tens of billions of dollars nationwide). The productivity loss amount above is solely from work lives shortened by smoking-caused deaths.

have leveled off among high school students and declined slightly among middle school students, to 33.7 percent and 14.3 percent, respectively.[3] Smoking rates also vary geographically, from 15 percent to 31 percent (see Figure 1).

The decline in use is occurring because centuries-old social, economic, and political traditions are slowly giving way to the knowledge gained in recent decades about the health effects of tobacco use and secondhand smoke, and to policies and programs that have been proven to be effective. The 2004–05 session of the North Carolina General Assembly was more active with tobacco- and health-related legislation than any session in the state's history. Among the matters under consideration were a substantial increase in the tobacco tax and restrictions on smoking in restaurants and other public places.

The decline in use is occurring because centuries-old social, economic, and political traditions are slowly giving way to the knowledge gained in recent decades about the health effects of tobacco use and secondhand smoke, and to policies and programs that have been proven to be effective.

One factor in this change is the first-time allocation of significant amounts of state funds. The funds are channeled to geographically and ethnically diverse community and school groups that educate people about tobacco use as a public health problem and build support for effective policy solutions. Only a modest amount of federal funds was in place in North Carolina from the early 1990s until 2002. A more recent investment of state dollars in preventing and reducing teenage tobacco use in schools and communities has allowed for greater education about prevention of such use across North Carolina. In 2002, under the Tobacco Master Settlement Agreement, seven tobacco companies being sued by states' attorneys general agreed to change how tobacco products are marketed and to pay the states an estimated $246 billion over twenty-five years. That agreement allowed North Carolina to create the Health and Wellness Trust Fund (HWTF) with about one-quarter of the funds the state received, and to invest a small proportion of them in programs to prevent and control tobacco use by teenagers. The HWTF's Teen Tobacco Prevention and Cessation Program is the recipient of the first dedicated state funding for tobacco prevention and control in North Carolina. Community programs are actively promoting evidence-based interventions to reduce tobacco use by teenagers.

Another major reason for change is that North Carolina is shifting from a tobacco-farming and -manufacturing economy to one based on technology and information. The 2004 tobacco quota buyout, which ended a federal program regulating tobacco production, will compensate tobacco growers and quota holders with $9.6 billion over the next ten years. The largest share will go to growers and quota holders in North Carolina.[4] There now are fewer farm and manufacturing jobs, and there is a decreased perception of "tobacco as king."

Tobacco-farming and -manufacturing interests were the primary source of media coverage of tobacco in North Carolina until the late 1980s and early 1990s, when the National Cancer Institute began to fund programs for prevention and control of tobacco use. From 1993 to 1997, pro-health articles, editorials, and letters to the editor about tobacco in daily newspapers increased from 20 percent to 70 percent, and pro-tobacco news coverage decreased from 22 percent to 5 percent.[5]

In North Carolina, policy decisions have long been based predominately on preserving the economic interests of tobacco farmers, quota holders, and companies rather than on protecting health interests and reducing the costs of health care. For example, a state law passed in 1993, Smoking in Public Places, was part of a national strategy of the tobacco industry to prevent local decision making on prohibition of smoking in workplaces, restaurants, and other public places.[6] Internal tobacco industry documents confirm the power of laws like this. In a draft of a 1994 presentation, Tina Walls of Philip Morris USA wrote, "By introducing pre-emptive statewide legislation we can shift the battle away from the community level back to the state legislatures where we are on stronger ground."[7]

Increased Funding for Prevention and Control Efforts in North Carolina

In 1964 the first Surgeon General's Report warned about the serious health consequences of tobacco, yet North Carolina did not begin to address tobacco use seriously as a preventable public health problem until the late 1980s. From 1986 to 1995, Guilford and Wake counties participated in COMMIT (Community Intervention Trial for Smoking Cessation), a program funded by the National Cancer Institute to demonstrate how community-level interventions could enhance cessation of tobacco use.[8] From 1991 to 1999, the state's Division of Public Health partnered with the American Cancer Society of North Carolina to carry out Project ASSIST (American Stop Smoking Intervention Study), also underwritten by the National Cancer Institute. Nationally, Project ASSIST was funded at about $21.5 million to demonstrate the effectiveness of statewide policy, media, and program interventions in seventeen states. The ASSIST states were compared with thirty-two other states that were funded at about $12 million by CDC, and with California, which had a tobacco control program funded by a state tobacco tax. In North Carolina, Project ASSIST was funded at $8.5 million for seven years. It organized a statewide effort involving ten community-based coalitions covering twenty-three counties and all six media markets. The project used the mass media to promote policy change and thereby to increase the demand for program services. Formal evaluation of Project ASSIST continues, but the comprehensive model created by the National Cancer Institute was deemed a success, and in 1999 the CDC picked up the funding for programs in the health departments of all fifty states.[9]

As noted earlier, the General Assembly created the HWTF in 2002 as an

entity in which to invest some of North Carolina's portion of the Tobacco Master Settlement Agreement. By the terms of the relevant legislation, the HWTF will receive one-fourth of the state's tobacco settlement funds in annual installments over twenty-five years.[10] Under the leadership of Lieutenant Governor Beverly Perdue, the HWTF became the first state funding ever dedicated to addressing tobacco use among youth from a public health perspective. The HWTF's initiative, the Teen Tobacco Prevention and Cessation Program, has been well received by geographically diverse community organizations, school systems, and statewide organizations representing diverse population groups—for example, El Pueblo (representing Hispanics-Latinos), the General Baptist State Convention and the Old North State Medical Society (representing African Americans), and the North Carolina Commission on Indian Affairs. The demand for the program has resulted in the HWTF expanding its funding from $6.2 million in 2003–04 to $15 million in 2005–06.

Comprehensive Policy Initiatives

More is known about how to prevent and reduce tobacco use than is known about perhaps any other modern public health problem. The research is sufficient. What is sometimes lacking is the political will to apply it.

Most people who become users begin using tobacco in early adolescence, and almost all people who become users begin before age twenty-four. The average age of initiation is between twelve and fourteen.

Research shows that comprehensive multifaceted programs, funded in an amount adequate for the size and the diversity of a state's population, are effective in reducing the prevalence of tobacco use; disease, disability, and death caused by tobacco use; and health care costs attributable to tobacco use. Comprehensive programs promote evidence-based interventions that pursue the CDC's four goals:[11]

- *Preventing the initiation of tobacco use among young people*
- *Eliminating nonsmokers' exposure to environmental tobacco smoke . . .*
- *Promoting quitting among young people and adults*
- *Identifying and eliminating the disparities related to tobacco use and its effects among different population groups*

These four goals provide the framework for North Carolina's programs.

Strong research evidence supports specific community-based interventions and policy development in this area. In 2000, Dr. David Satcher, then the assistant secretary for health and the surgeon general of the United States, convened the Task Force for Community Preventive Services. This team of scientists reviewed the research and published the *Guide to Community Preventive Services: Tobacco Use Prevention and Control*.[12] The *Guide* provides state and local decision makers with information and evidence-based recommendations on interventions appropriate for communities and health care systems to reduce tobacco use (for the recommendations, see Table 2).

The task force found that comprehensive programs to control tobacco use provide multiple opportunities to deliver a variety of consistent anti-tobacco messages to different populations through communities, health care systems, and public and private workplaces and other settings (such as schools). No single agency program can address this complex problem alone. The leadership role

for such initiatives varies from state to state but generally takes the form of high-level public policy and public health program stewardship, with active and engaged private partners and community-based coalitions. The delivery of anti-tobacco messages from a variety of sources (for example, the media, physicians, and workplace policies) contributes to individual changes in behavior (such as quitting). Two decades of evidence from state-based prevention programs indicate that the most successful approach for reducing tobacco use is fully funded comprehensive programs that combine or coordinate a variety of interventions.[13] The *Guide* tells what is effective; the challenge to state and local stakeholders is to build community support for putting effective interventions into place.

Effective Strategies and North Carolina's Applications of Them

The surgeon general's task force grouped its recommendations into three types of strategies: strategies to reduce initiation of tobacco use by children, adolescents, and young adults; strategies to reduce exposure to environmental tobacco smoke; and strategies to increase cessation of tobacco use.

Table 2. ***Guide to Community Preventive Services:*** **Interventions for Communities**

Goal	Recommended Interventions
Increase cessation	Increase in price (tax)
	Mass media campaigns*
	Telephone quitlines
	Smoking bans
Reduce initiation	Increase in price (tax)
	Mass media campaigns*
Reduce exposure to secondhand smoke	Smoking bans

Source: Adapted from Centers for Disease Control and Prevention, *Strategies for Reducing Exposure to Environmental Tobacco Smoke, Increasing Tobacco-Use Cessation, and Reducing Initiation in Communities and Health-Care Systems: A Report on Recommendations of the Task Force on Community Preventive Services*, 49 MORBIDITY AND MORTALITY WEEKLY REPORT (No. RR-12, tab. 2, Nov. 2000, at 6–10).

*When combined with other interventions.

Strategies to Reduce Initiation of Tobacco Use

The task force strongly recommends two strategies for reducing tobacco use by children, adolescents, and young adults: an increase in the unit price for tobacco products and mass media campaigns when combined with other (local) interventions. North Carolina has added a third strategy, a campaign to make all of its 115 school districts 100 percent tobacco free.

An Increase in the Unit Price

Despite all that is known about the effectiveness of substantial price increases in reducing the burden of tobacco use on the health of North Carolinians, the

Table 3. **Projected Revenues and Benefits from Various Increases in N.C. Cigarette Tax**

Tax Increase per Pack	$0.25	$.35	$.45	$.50	$.75	$1.00
Additional New State Cig. Tax Revenue (millions/yr.)	$134.7	185.3	232.0	253.9	348.9	419.6
Fewer State Packs Sold/Yr. (millions)	221.6	241.0	260.4	270.1	318.6	367.1
Youth Smoker Decline	5.2%	7.3%	9.4%	10.4%	15.7%	20.9%
Fewer Future Youth Smokers	33,800	47,400	60,900	67,700	101,600	135,400
Related Lifetime Health Savings (millions)	$540.8	$758.4	$974.4	$1,083.2	$1,625.6	$2,166.4
Adult Smoker Decline	1.2%	1.7%	2.2%	2.4%	3.6%	4.8%
Fewer Adult Smokers	18,800	26,400	33,900	37,700	56,600	75,500
Related Lifetime Health Savings (millions)	$159.4	$223.9	$287.5	$319.7	$480.0	$640.2
Youth Future Smoking-Caused Deaths Avoided	10,800	15,100	19,400	21,600	32,500	43,300
Adult Smoking-Caused Deaths Avoided	4,900	6,900	8,900	9,900	14,900	20,000
5-Year Smoking-Harmed Births Avoided	4,380	6,140	7,890	8,770	13,150	17,540
5-Year Heart & Stroke Savings (millions)	$ 8.8	$12.3	$15.8	$17.5	$26.3	$35.0
5-Year Smoking-Births Savings (millions)	$ 6.3	$8.8	$11.3	$12.5	$18.8	$25.0
Overall Long-Term Health Savings (millions)	$700.2	$982.3	$1,261.9	$1,402.9	$2,105.6	$2,806.6

Source: Compiled by Eric Lindblom (Mar. 30, 2005), Campaign for Tobacco-Free Kids, www.tobaccofreekids.org. *See, e.g.*, Frank J. Chaloupka, *Macro-Social Influences: The Effects of Prices and Tobacco Control Policies on the Demand for Tobacco Products*, 1 NICOTINE AND TOBACCO RESEARCH (Supp. 1, 1999, at 71), and other price studies available at http://tigger.uic.edu/~fjc and www.uic.edu/orgs/impacteen.

Note: All projected savings are in 2002 dollars and were calculated using the same methodology that the Centers for Disease Control and Prevention have used to update their data on state smoking-related costs. The revenue projections are fiscally conservative because they include a generous adjustment for lost state pack sales (and tax revenues) from new tax-avoidance efforts (tax evasion) by continuing instate smokers after the tax increase. They also adjust generously for resulting fewer sales to smokers from other states, and fewer sales to supply informal smugglers, criminal smuggling organizations, or multistate Internet sellers.

state's cigarette tax, which has been 5 cents per pack since 1993, has ranked fifty-first in the nation. Nationally the average tax per pack is 91.2 cents.[14]

As part of its consideration of the 2005–06 budget, the North Carolina General Assembly wrestled with increasing the state tax on cigarettes and other tobacco products. Governor Michael Easley's budget proposed an increase of 45 cents per pack, with 35 cents to be added in fiscal year 2005–06 and 10 cents in fiscal year 2006–07. The Senate proposed a 35-cent increase for 2005–06, and the House, a 25-cent increase. In August 2005 the General Assembly approved a budget that provides for the following:

- A 25-cent increase in the tax on cigarettes (from 5 cents per pack to 30 cents), effective September 1, 2005
- An additional 5-cent increase (to 35 cents), effective July 1, 2006
- An increase in the tax on other tobacco products from 2 percent of cost to 3 percent of cost

The Task Force on Community Preventive Services found that increasing the price of tobacco products is effective in both (1) reducing the prevalence of tobacco use among adolescents and young adults and (2) increasing cessation of tobacco use. In fact, numerous studies indicate that a 10 percent increase in a product's price results in an overall 3–5 percent decrease in cigarette consumption and a 7 percent decrease in youth smoking.[15]

Regarding the optimum amount for a tobacco tax, the research is clear that from a public health perspective, the greater the increase as a percentage of the price, the greater the public health benefit. The projected health benefits from decreased initiation and increased cessation of tobacco use, and the revenues that would be generated from various increases in North Carolina's low cigarette tax, are considerable (see Table 3). The projections are based on research findings that a 10 percent increase in the price of a pack of cigarettes reduces youth smoking rates by 6.5 percent or more, adult rates by 2 percent, and total consumption by 4 percent.[16]

The North Carolina Alliance for Health is a nonprofit coalition of health advocates that has argued strongly for a 75-cent increase. As of March 2005, it had the endorsement of most major daily newspapers in North Carolina and about 125 organizations.[17] A 2004 survey conducted by the State Center for Health Statistics revealed that 21.5 percent of North Carolina adults favor a cigarette tax increase of $.50–$1.00 and 34.6 percent favor a cigarette tax increase of more than $1.00.[18]

A 100 percent tobacco-free school policy prohibits tobacco use by anyone, anywhere, anytime, on school property or at school events. Such a policy helps prevent tobacco use by teenagers by providing positive role models in schools, and it helps tobacco users quit.

Mass Media Campaigns When Combined with Other Interventions

The task force found that mass media campaigns were effective in reducing tobacco use by children, adolescents, and young adults when they were combined with other tobacco-control measures. As noted earlier, the HWTF provided the first state funding for mass media campaigns in North Carolina. It allocates funds for tobacco control interventions to seventy geographically and culturally diverse organizations, including communities, schools, and groups representing priority populations (Hispanics-Latinos, Native Americans, and African Americans). They must spend the money on policies and programs that affect children and teenagers.

In 2005 the HWTF allocated some of its assets for use with college-age populations, and North Carolina colleges and community colleges submitted strong applications. The highest rates of tobacco use in North Carolina occur in these settings.

The HWTF's paid media campaign, Tobacco. Reality. Unfiltered, commonly known as TRU, is the first North Carolina campaign aimed at prevention of tobacco use that is paid for by the state government.[19] It follows research that indicates the effectiveness of showing real people telling true stories about the devastating human consequences of tobacco use. Dr. Adam Goldstein of Family Medicine at the University of North Carolina (UNC) at Chapel Hill, an independent evaluator of the HWTF's Teen Tobacco Prevention and Cessation Program, studied the campaign and commented,

> *Virtually all the experimentation in smoking that occurred in non-susceptible, non-smoking youth at baseline [of the evaluation study] occurred among those unaware of the campaign . . . This translates into approximately 9,000 fewer youths experimenting with tobacco than might have occurred without their having seen the campaign. Ultimately, this would translate into almost $4 million of cost savings in preventing future tobacco-related diseases among North Carolina citizens.*[20]

Tobacco-Free Schools Campaign

One of the successes of the HWTF's Teen Tobacco Prevention and Cessation Program has been accelerated progress in making all North Carolina schools 100 percent tobacco free. A 100 percent tobacco-free school policy prohibits tobacco use by anyone, anywhere, anytime, on school property or at school events. Such a policy helps prevent tobacco use by teenagers by providing positive role models in schools, and it helps tobacco users quit. It has been well received by local school leaders.

Some Frequently Asked Questions about Local Governments' Authority to Regulate Smoking in Public Places

What May Local Governments Do within Their Jurisdictions to Regulate Smoking in Public Places?
In 1993 the North Carolina General Assembly enacted a law that limits local governments' authority to regulate smoking in public places.[1] Dividing buildings and facilities into five categories may help readers understand how this state law and its various exceptions fit together (see Table 1). In short, the law allows local governments to regulate smoking in certain facilities, including buildings owned by local governments (category 1), but not in restaurants, bars, and most other private establishments (category 5). If a local government regulates smoking in certain buildings, it must designate at least 20 percent of the interior space for smoking unless doing so is "physically impracticable." The smoking areas must be of equal quality to the nonsmoking areas.

For example, a county builds a new courthouse, and it does not have a local ordinance or rule controlling smoking. The county must try to reserve 20 percent of the interior space of the courthouse for smoking unless it determines that doing so is physically impracticable. In that case the county must reserve a smoking area that is as near as possible to 20 percent.

There are several exceptions to the 20 percent requirement, such as schools (category 4) and buildings housing local departments of health and social services (category 2). Also, if a local government had a valid ordinance or board of health rule in place before 1993 that is more restrictive than the state law, the local law may remain in place. The restrictions just described apply only to ordinances and rules adopted after October 1993.

What Does "Physically Impracticable" Mean?
As explained earlier, facilities in category 1 must reserve 20 percent of their interior space for smoking unless doing so is physically impracticable. The state law does not define "physically impracticable," and North Carolina's courts have not yet defined the term in the context of smoking areas in local government buildings. However, in a different context, the North Carolina Court of Appeals has compared the meanings of "impracticable" and "impossible."[2] The court stated that the *Oxford English Dictionary* defines "impossible" as "not possible," whereas it defines "impracticable" as "impossible in practice" or impossible to do effectively.[3]

The law allows local governments to regulate smoking in certain facilities, including buildings owned by local governments, but not in restaurants, bars, and most other private establishments.

Because courts have yet to interpret the meaning of "physically impracticable" in the context of regulating smoking, a local government must consider the definition given by the North Carolina Court of Appeals and use its best judgment in deciding if and when designating less than 20 percent of the interior space of any given building for smoking is physically impracticable. Some local governments have concluded, for example, that designating *any* interior space of a facility for smoking is physically impracticable because the facility's ventilation system recirculates the smoke-filled air and puts all employees at risk. Using this rationale, they have prohibited smoking entirely inside certain buildings. Until such local laws are challenged, it is not clear whether courts will support this interpretation of "physically impracticable."

Are Local Boards of Health Subject to Any Additional Restrictions on Their Authority to Adopt Rules Regulating Smoking?
Yes. In addition to the general statutory limitations placed on the authority of local governments to regulate smoking, local boards of health are subject to limitations on the scope of their authority because they are appointed bodies rather than elected legislative bodies.

In *City of Roanoke Rapids v. Peedin*, the North Carolina Court of Appeals explained the limitations on the boards' rule-making authority in the context of a smoking regulation case.[4] In Halifax County on October 12, 1993, the board of health enacted Halifax County Smoking Control Rules. The rules included restrictions on various types of facilities, such as restaurants and bars. These rules were subsequently challenged, and the North Carolina Court of Appeals overturned them in 1996.[5] The court created a five-part test to which North Carolina boards of health must adhere in making new rules:[6]

1. The rules must be related to the promotion or protection of health.
2. They must be reasonable in light of the health risk addressed.
3. They must not violate any law or constitutional provision.
4. They must be nondiscriminatory.
5. They must not make distinctions based on policy concerns traditionally reserved for legislative bodies.

The court relied primarily on the fourth and fifth criteria to invalidate the board's smoking control rules. The board had established different rules for restaurants based on how large they were and whether or not they had a bar. The court

For example, Robert Logan, superintendent of Asheville City Schools, says,

> *Our tobacco-free schools policy not only has helped to prevent and intervene in youth tobacco use, but also has helped employees to stop tobacco use. The success of the policy in our district has served as a catalyst to address other childhood health issues such as childhood obesity and juvenile diabetes.*[21]

Although many school systems adopted a tobacco-free policy early in the campaign, some school boards were not convinced that they had the clear authority to do so. They feared lawsuits based on the 1993 law.

concluded that the rules discriminated inappropriately because they protected the health of employees in some restaurants but not in others, and they made policy distinctions reserved for legislative bodies when they allowed smoking in some restaurants (that is, small restaurants and restaurants with bars) but not in others.

With respect to the second conclusion, the court inferred that the board drew these policy distinctions on the basis of reasons unrelated to public health, such as potential economic hardship and difficulty of enforcement. The court explained that the board of health must consider only health as a factor in its rule-making process unless a legislative body (such as the General Assembly or a board of county commissioners) specifically directs it to consider other factors (such as economic ones).

Additional information about the authority of local governments to regulate smoking in public places is available at www.ncphlaw.unc.edu.

—Aimee Wall and Anna Wood

Wall is a School of Government faculty member who specializes in public health law. Wood is a third-year law student at North Carolina Central University.

Table 1. **North Carolina Local Government Authority to Regulate Smoking, by Category of Building or Facility**

Category	Buildings or Facilities	Local Government Authority (Local Ordinances or Board of Health Rules)
1	Buildings owned, leased, or occupied by local government Public meetings	May establish nonsmoking areas. Twenty percent of interior space of equal quality must be smoking area unless physically impracticable. If 20% is physically impracticable, smoking area must be as near as possible to 20%.
2	Child care centers Hospitals, nursing and rest homes, and mental health facilities Nonprofits that focus on tobacco use prevention Enclosed elevators Tobacco manufacturing, processing, and administrative facilities Libraries and museums open to public Public transportation owned or leased by local government Buildings housing local health departments and departments of social services, including grounds surrounding buildings (up to 50 ft.) Indoor arenas with seating capacity greater than 23,000	May regulate/prohibit smoking. Regulation is not subject to 20% requirement.
3	Indoor spaces of auditoriums, arenas, and coliseums or appurtenant buildings (except arenas with seating capacity greater than 23,000)	May regulate/prohibit smoking. Must designate space for smoking in lobby area. Regulation is not subject to 20% requirement.
4	Schools and school buses	Smoking is prohibited in school buildings during school hours. Local boards of education have broad authority to regulate smoking on all other school property (it is not subject to 20% requirement).
5	Other public places, including restaurants and bars	No authority

Notes

1. N.C. GEN. STAT. §§ 143-595 through -601 (hereinafter G.S.).
2. Morris v. E. A. Morris Charitable Foundation, 589 S.E.2d 414, 416 (N.C. Ct. App. 2003) (holding that testator's intention regarding piece of property was impossible or impracticable to fulfill because function and purpose of property had changed).
3. *Id.* The court used the terms together, and it offered the example that a gift to a charity that never existed is impossible, whereas a gift to a charity that is so vaguely described that it cannot be identified is impracticable.
4. City of Roanoke Rapids v. Peedin, 478 S.E.2d 528 (N.C. Ct. App. 1996).
5. *Id.*
6. *Id.*

The 2003–04 North Carolina General Assembly removed this barrier by giving clear authority to local school boards to set stricter policy standards than the federal guidelines, which prohibit smoking in school buildings. At this writing, considerably more than half of the state's 115 school districts have passed 100 percent tobacco-free policies (see Figure 2), thirty-nine of them with help from the state's Tobacco Prevention and Control Branch and the HWTF's Teen Tobacco Prevention and Cessation Program.[22] Lieutenant Governor Perdue, the HWTF, and the State School Board, led by Chair Howard Lee, have championed this effort.

Evidence-Based Policies and Strategies to Reduce Secondhand Smoke

The second policy goal of the state is to eliminate exposure to secondhand smoke, which has been estimated to be the third leading preventable cause of death. Even short-term exposure may increase a person's risk of experiencing a heart attack. For example, an observational study in Helena, Montana, published in 2004, demonstrated a 40 percent reduction in hospital admissions for acute myocardial infarctions during a six-month ban on smoking in public places and in workplaces. After the ban was suspended because of a legal challenge, hospital admissions rebounded to previous levels.[23]

The Task Force on Community Preventive Services found that increasing the price of tobacco products is effective in both (1) reducing the prevalence of tobacco use among adolescents and young adults and (2) increasing cessation of tobacco use.

Smoking Bans and Restrictions

The primary recommendation of the surgeon general's task force regarding exposure to secondhand smoke is to implement restrictions and bans on smoking. The task force found that no-smoking policies reduced exposure to secondhand smoke by about 74 percent. Moreover, studies of worksites with no-smoking policies have shown that employees in these settings experience increased success in quitting tobacco use.[24]

Other studies show similar results. For example, a 1999 national survey conducted by the Research Triangle Institute reported that having a 100 percent smoke-free workplace reduced smoking prevalence by 6 percentage points and reduced average daily consumption among those who continued to smoke by 14 percent, compared with workers subject to minimal or no restrictions. The survey also showed that allowing smoking in some common areas lessened the impact of work-area bans, and that smoke-free policies reduced smoking for all demographic groups and in nearly all industries. The authors of this study concluded, "Requiring all workplaces to be smoke-free would reduce smoking prevalence by 10 percent. Workplace bans have their greatest impact on groups with the highest rates of smoking."[25]

Across the nation, some states restrict the authority of local governments to regulate smoking. The American Medical Association has stated that such preemption laws are "the tobacco industry's top legislative goal, because [they] concentrate[] authority at the state level where the industry is stronger and can more readily protect its interest."[26] As noted earlier, North Carolina passed its preemption law in 1993. Called the "dirty air law" by some, it requires state-controlled buildings to have some smoking areas and limits the ability of local governments to restrict smoking in public places, like restaurants and government-owned buildings (for more information about the law, see the sidebar on page 52).

Since the adoption of the preemption law in 1993, the state has taken a few small steps either to limit secondhand smoke in public places or to permit state or local government agencies to restrict smoking in certain public places. In 2003–04 the North Carolina General Assembly created rules to make both the House and the Senate floor smoke free while legislatures are in session. It also exempted many state university buildings, including most dormitories, from the state's preemption law. This action allowed the campuses of the UNC system to enact smoke-free policies in many buildings. Dormitories at Elizabeth City State College, North Carolina Central University, UNC at Chapel Hill, UNC–Greensboro, and UNC–Wilmington have since become smoke free.

In 2005 the North Carolina Association of Local Health Directors requested legislation (H.R. 239) to exempt any building that houses a local health department, including 50 feet of grounds surrounding the building, from the state's preemption law. Not only did H.R. 239 become law, but it prompted H.R. 1482, a bill to allow local social services departments to declare their buildings and 50 feet of surrounding grounds smoke free. H.R. 1482 also became law.[27]

Two other smoking-related bills passed in 2005. The first, S. 482, allows regulation of smoking in indoor arenas with a seating capacity of more than 23,000.[28] It would likely apply only to regulation of smoking in the Greensboro Coliseum. The second, S. 1130, prohibits the use of tobacco products inside state prisons.[29] The smoking ban will be phased in over time. In addition, the Department of Correction will be conducting at least one pilot program to test a smoking cessation program for staff and inmates.

Preemption of local authority to regulate smoking is not likely to be overcome until local elected officials actively seek control over this issue. In January 2005, to reassert local control, the Mecklenburg County commissioners endorsed the proposal of a citizens group called Smoke-Free Charlotte that the delegation representing the county in the General Assembly be asked to request exemption from the state's preemption law. Smoke-Free Charlotte's website states,

> *The NC General Assembly passed a law in 1993 (GS 143-595-601) prohibiting any local government from banning smoking in public places. Smoke-Free Charlotte is asking for an exemption from this law for Mecklenburg County. If granted, this exemption will allow the county to pass its own ordinance, if it chooses to do so, which will*

protect its citizens, workers and visitors from the health hazards of secondhand smoke.[30]

Although Smoke-Free Charlotte has strong grassroots backing and the endorsement of the county commissioners, it needs to increase its support among the ten-member Charlotte-Mecklenburg delegation to the House of Representatives. Smoke-Free Charlotte plans to continue promoting nonsmoking policies to protect the health of citizens and to encourage businesses, particularly those in the restaurant and service industry, to put forth a healthy, nonsmoking image.

Despite the legal and policy barriers, significant voluntary progress has been made in recent years, particularly with private smoke-free policies in white-collar worksites. More than 73 percent of the North Carolina indoor workforce now is covered by a nonsmoking policy for public and work areas at their worksites, compared with less than 33 percent in 1992. Although the state has made consistent progress in protecting workers from job-related secondhand smoke, some workers are less protected than others. For example, blue-collar and service workers are considerably less protected than white-collar workers are.[31]

Strategies to Increase Cessation of Tobacco Use

In the *Guide to Community Preventive Services,* the surgeon general's task force outlines a number of evidence-based strategies to increase the cessation of tobacco use. Recommendations for the community setting include increasing the price of tobacco (via a tax), introducing smoking bans, conducting mass media campaigns, and providing proactive telephone quitlines. (A "quitline" is a telephone service that tobacco users may call to receive comprehensive assistance with quitting from trained cessation counselors. On a "proactive" telephone quitline, counselors may call users back.) Recommendations for health care systems include decreasing out-of-pocket costs for cessation services for patients, establishing systems in the practice setting to remind providers to deliver cessation counseling, and providing proactive telephone quitlines. Mass media campaigns, telephone quitlines, and provider reminder systems are most effective when combined with any of the other interventions (smoking bans, etc.).

Earlier sections discuss the tobacco tax, smoking bans, and mass media campaigns. This section addresses provider reminder systems, reduction of out-of-pocket costs, and telephone quitlines.

Provider Reminder Systems

In North Carolina, tobacco control advocates and public health officials have made great strides in educating health care professionals about effective cessation counseling and about implementing such an intervention in their practices, primarily because of the establishment of a statewide infrastructure to promote cessation, known as Quit Now NC! This initiative, launched in 2003, promotes the evidence-based cessation counseling methods published in 2000 by the Public Health Service and trains health care providers in how to provide this counseling.[32] It also fosters partnerships, influences policies, sponsors conferences, and develops resources for a healthier North Carolina. Quit Now NC! continues to work to help providers establish cessation reminder systems and other components of cessation counseling in their practice settings.

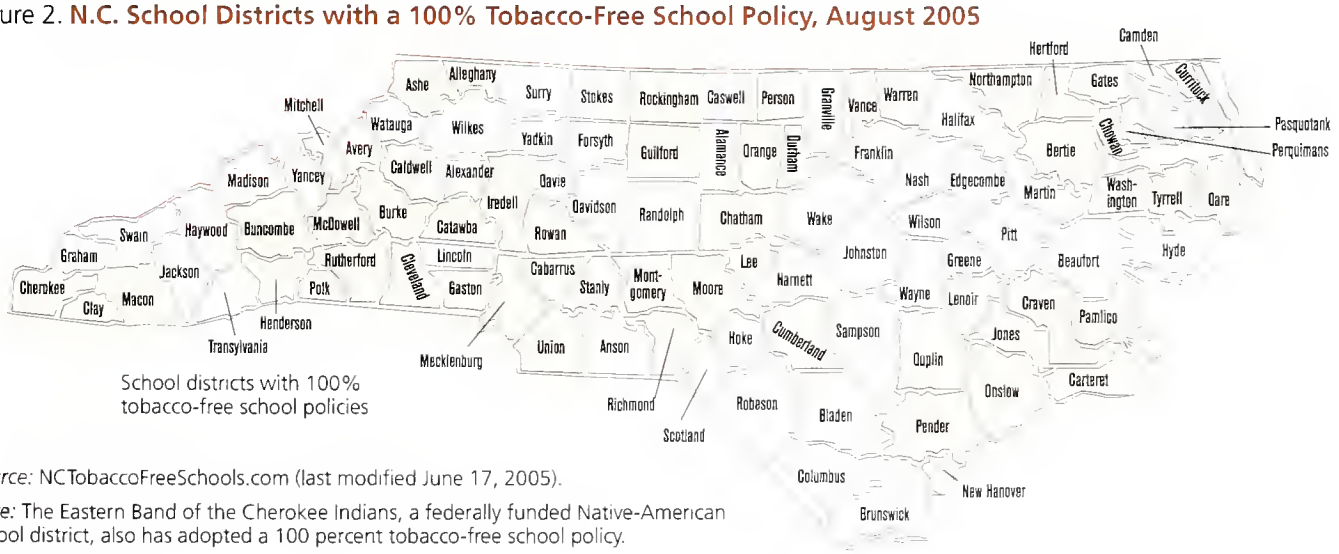
Reduction of Out-of-Pocket Costs

Because of efforts by North Carolina Prevention Partners, a nonprofit organization dedicated to improving the health of North Carolinians through prevention, health care insurers in North Carolina are increasingly covering treatment for tobacco use as a basic benefit. On its website, North Carolina Prevention Partners tracks what benefits are covered.[33]

North Carolina Medicaid also has made progress. Currently it covers prescription drugs that are approved by the Food and Drug Administration for cessation of tobacco use and over-the-counter nicotine-replacement medications. However, it still does not cover cessation counseling.

The State Health Plan, which provides health care coverage for all state employees, is piloting a cessation benefit, with the goal of incorporating it into the plan depending on findings from the pilot study. Results are due in late 2005.

Figure 2. N.C. School Districts with a 100% Tobacco-Free School Policy, August 2005



Source: NCTobaccoFreeSchools.com (last modified June 17, 2005).

Note: The Eastern Band of the Cherokee Indians, a federally funded Native-American school district, also has adopted a 100 percent tobacco-free school policy.

Quitlines

With funding from the CDC and the HWTF, North Carolina now has a statewide proactive quitline for youth and adults. This free, evidence-based, comprehensive service, available at 1-800-QUIT-NOW, provides effective cessation support for all North Carolinians who want to quit using tobacco. Participants may choose to have cessation specialists call them back at agreed-on times to answer questions and check on quitting progress. Special protocols are available for pregnant women and for users of spit tobacco. The quitline operates from 8 A.M. to midnight seven days a week, in multiple languages, including Spanish.

Treatment for dependence on tobacco is not only clinically effective but also cost-effective. Smoking cessation treatments compare favorably with routine medical treatments such as those for hypertension and high cholesterol. In fact, they have been referred to as the "gold standard of preventive interventions."[34] Quitlines have been found to be just as effective as more traditional interpersonal or group counseling and may be more efficient in terms of cost.[35]

Funding for Programs to Address Tobacco Use

The research not only recommends evidence-based interventions to address tobacco use but also speaks to funding levels adequate to support such interventions. In 1999 the CDC published *Best Practices for Comprehensive Tobacco Control Programs*.[36] This resource estimates that North Carolina should invest a minimum of $42.6 million annually in evidence-based interventions at the state and community levels. Current federal funding, plus the state investment of HWTF dollars, amounts to 35 percent of that minimum expenditure and ranks North Carolina twenty-first in the nation in spending on prevention and control of tobacco use (see Table 4).

Future Policy Directions for North Carolina

North Carolina leaders are to be congratulated for increasing the cigarette tax to 35 cents. Increasing the tobacco tax toward the national average (91.7 cents) will provide additional health benefits and cost savings for North Carolinians. Challenges to continued tobacco-control funding and effective evidence-based policy remain, however. If North Carolina is to make further progress, its leaders must take more steps to implement what is known to be effective:

- Rescind North Carolina's preemptive "dirty air law," which does not reflect what researchers and practitioners now clearly know about the serious and immediate risks of secondhand smoke. If this barrier were eliminated, the state could set a minimum standard that all workplaces and surrounding grounds be smoke free (or at least all workplaces covered by the State Health Plan) and, what is more important, allow local governments to enact and enforce stricter standards.
- Commit themselves to increasing funding over the next 4–6 years to at least the minimum recommended by the CDC in *Best Practices*.
- Maintain a commitment to that funding level until tobacco use by teenagers and young adults drops below 10 percent.
- Fund programs to meet the needs of all populations struggling with addiction to tobacco, regardless of age, including adults, pregnant women, and disparate populations in which the prevalence of tobacco use or of health problems attributable to tobacco use is higher than average. Also, adequately fund the North Carolina quitline and market the services to disparate populations.
- Provide comprehensive coverage of evidence-based treatment for cessation of tobacco use to people eligible for Medicaid and to state employees. Further, encourage private employers to cover such treatment. Coverage should include all drug therapy and tobacco use counseling approved by the Food and Drug Administration and provided through the North Carolina quitline.

Treatment for dependence on tobacco is not only clinically effective but also cost-effective. Smoking cessation treatments compare favorably with routine medical treatments such as those for hypertension and high cholesterol.

Although currently falling short of the CDC's recommendation, funding of tobacco control efforts in North Carolina has increased in the last two years. Also, momentum is growing for implementation of effective policy interventions.

North Carolina is making tremendous strides in preventing and reducing tobacco's toll on health and the health care economy. Solid scientific evidence indicates what is effective. Diverse geographic populations support change. Strong state and local advocates are working to advance evidence-based efforts. North Carolina now needs to implement all that research and best practice have shown to be effective.

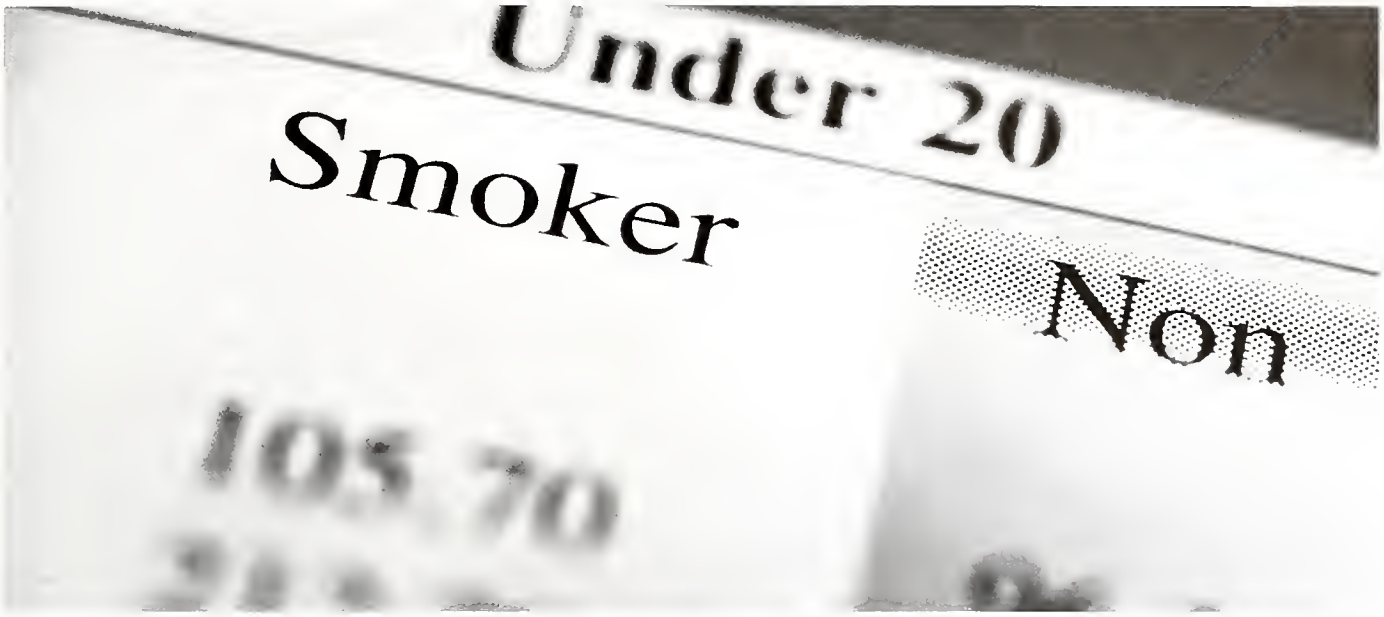
Table 4. State Spending on Tobacco Prevention

	Fiscal Year 2004	Fiscal Year 2005
Spending on tobacco prevention	$10.9 million	$15.0 million
Percent of CDC–recommended minimum ($42.59 million)	25.59%	35.22%
Rank among states (1–51)	30	21

Source: Adapted from Campaign for Tobacco-Free Kids, Special Reports: State Tobacco Settlement (last modified Dec 2, 2004), available at www.tobaccofreekids.org/reports/settlements/state.php?StateID=NC

Notes

1. National Cancer Institute, *Scientific Priorities for Cancer Research: NCI's Extraordinary Opportunities* (last updated Apr. 16, 2000), available at http://2001.cancer.gov/tobacco.htm.



2. Richard P. Sargent et al., *Reduced Incidence of Admissions for Myocardial Infarction Associated with Public Smoking Ban: Before and After Study*, 328 British Medical Journal 977 (2004).

3. Chronic Disease and Injury Section, N.C. Div. of Public Health, 2003 North Carolina Youth Tobacco Survey Results (last updated May 4, 2005), available atwww.communityhealth.dhhs.state.nc.us/tobacco/Survey03/YouthSurveyResults03.htm.

4. A. Blake Brown, *A Summary of the Tobacco Buyout,* available at the Tobacco Buyout Information Website (last visited July 16, 2005), www.cals.ncsu.edu:8050/advancement/tobaccobuyout/buyoutbkgd.htm.

5. Sally Herndon Malek et al., Coverage of Tobacco in North Carolina Newspapers, Presentation at the American Public Health Association Roundtable (1997) (on file with the Tobacco Prevention and Control Branch, N.C. Div. of Pub. Health).

6. N.C. Gen. Stat. §§ 143-595 through -601.

7. Tina Walls, Draft CAC Presentation (July 8, 1994), from Philip Morris USA Transcript, Document No. 2041183751-3790, Philip Morris USA Document Site (last visited Aug. 23, 2005), available at www.pmdocs.com/getallimg.asp?DOCID=2041183751/3790. This is an internal document of Philip Morris USA that was made public in the discovery phase of litigation.

8. Nat'l Cancer Inst., *Community and State Intervention Research*, in Tobacco Research/Implementation Plan: Priorities for Tobacco Research beyond the Year 2000 chap. 6 (Washington, D.C.: NCI, Nov. 1998), available at http://dccps.nci.nih.gov/TCRB/TRIP/index.html.

9. Marc Manley et al., *The American Stop Smoking Intervention Study for Cancer Prevention: An Overview*, 6 Tobacco Control (Supp. 2 1997).

10. Brief Overview of the Tobacco Settlement (last visited July 27, 2005), available at www.hwtfc.org/pdffiles/hwOverviewTobaccoSettlement.pdf.

11. Nat'l Ctr. for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention, Best Practices for Comprehensive Tobacco Control Programs, August 1999, Executive Summary (last updated Jan. 31, 2005), available at www.cdc.gov/tobacco/research_data/stat_nat_data/bestprac-execsummay.htm.

12. Thomas D. Hopkins and Johnathan E. Fielding, *The Guide to Community Preventive Services: Tobacco Use Prevention and Control*, 20 American Journal of Preventive Medicine supp. 2 (Feb. 2001), available at www.cdc.gov/tobacco/comguide.htm.

13. U.S. Dep't of Health and Human Serv., Reducing Tobacco Use: A Report of the Surgeon General (Atlanta: Office on Smoking and Health, Centers for Disease Control and Prevention, 2000).

14. Campaign for Tobacco-Free Kids, State Cigarette Excise Tax Rates & Rankings (last modified July 20, 2005), available at http://tobaccofreekids.org/research/factsheets/pdf/0097.pdf.

15. Frank J. Chaloupka, *Macro-Social Influences: The Effects of Prices and Tobacco Control Policies on the Demand for Tobacco Products*, 1 Nicotine and Tobacco Research (Supp. 1 1999, at 71), and other price studies available at http://tigger.nic.edu/~fjc; Frank J. Chaloupka & Rosalie L. Pacula, An Examination of Gender and Race Differences in Youth Smoking Responsiveness to Price and Tobacco Control Policies (Chicago: Nat'l Bureau of Economic Research, Working Paper No. 6541, Apr. 1998), available at http://tigger.nic.edu/~fjc (follow "Working Papers" hyperlink); Sherry Emery et al., *Does Cigarette Price Influence Adolescent Experimentation?* 20 Journal of Health Economics 261 (2001); W. Douglas Evans & L. X. Huang, Cigarette Taxes and Teen Smoking: New Evidence from Panels of Repeated Cross-Sections (College Park: Dep't of Economics, Univ. of Md., Working Paper, 1998); Jeffrey E. Harris & Sandra W. Chan, *The Continuum of Addiction: Cigarette Smoking in Relation to Price among Americans Aged 15–29*, Health Economics Letters, Sept. 1998, at 3, available at www.mit.edu/people/jeffrey; John A. Tauras et al., Effects of Price and Access Laws on Teenage Smoking Initiation: A National Longitudinal Analysis (Chicago: Univ. of Chicago, ImpacTeen—Yes! Research Paper Series No. 2, 2001), and other price studies available at www. impacteen.org.

16. *See, e.g.*, Chaloupka, *Macro-Social Influences*; Matthew C. Farrelly et al., State Cigarette Excise Taxes: Implications for Revenue and Tax Evasion (Research Triangle Park, N.C.: RTI International, May 2003), available at www.rti.org/pubs/8742_Excise_Taxes_FR_5-03.pdf.

17. N.C. Alliance for Health, Organizations Supporting a Significant Increase in North Carolina's Cigarette Excise Tax (as of March 2005) (last visited Aug. 24, 2005), available at www.ncallianceforhealth.org/takeaction.htm (follow "Endorsers of Cigarette Tax Increase as of Mar. 2005" hyperlink).

18. N.C. State Ctr. for Health Statistics, 2004 BRFSS [Behavioral Risk Factor Surveillance System] Survey Results: North Carolina, Tobacco Use Prevention (last visited July 28, 2005), available at www.schs.state.nc.us/SCHS/brfss/2004/nc/all/tax.html.

19. Tobacco. Reality. Unfiltered (last visited July 15, 2005), at www.realityunfiltered.com.

20. Press Release, David Williamson for UNC News Services, Study: Statewide Teen

Tobacco Prevention Media Campaign Shows Early Successes (May 2, 2005) (last visited Aug. 2, 2005), available at www.unc.edu/news/archives/apr05/goldstein050205.html.

21. Testimonial Summary (Training Material), NC School Leaders Speak Out about 100% Tobacco Free Schools 1 (Sept. 3, 2004). Available on request from Tobacco Prevention and Control Branch, N.C. Div. of Public Health.

22. NCTobaccoFreeSchools.com (last visited Aug. 15, 2005), at www.nctobaccofreeschools.com.

23. Sargent et al., *Reduced Incidence.*

24. Nat'l Ctr. for Chronic Disease Prevention, Best Practices.

25. Matthew C. Farrelly et al., *The Impact of Workplace Smoking Bans: Results from a National Survey*, 8 TOBACCO CONTROL 272, 272 (Autumn 1999).

26. AM. MEDICAL ASS'N, PREEMPTION: TAKING THE LOCAL OUT OF TOBACCO CONTROL 2 (Chicago: the Association, 2002).

27. Act of Apr. 28, 2005, SL 2005-19, and Act of July 7, 2005, SL 2005-168 (allowing regulation of smoking in buildings housing health departments and departments of social services, respectively, and on the grounds surrounding those buildings).

28. Act of July 29, 2005, SL 2005-239 (exempting large indoor arenas with seating capacity greater than 23,000 from smoking regulations provided for in G.S. 143, art. 64; amending G.S. 143-599).

29. Act of Aug. 25, 2005, SL 2005-372 (establishing a new G.S. 148-23.1, which prohibits smoking in state correctional institutions, and requiring the state to establish pilot programs testing the smoking ban and smoking cessation programs).

30. Smoke-Free Charlotte, Petition and Information (last visited July 15, 2005), available at www.smokefreecharlotte.org.

31. Marcus G. Plescia et al., *Protecting Workers from Secondhand Smoke in North Carolina*, NORTH CAROLINA MEDICAL JOURNAL, July 2005, at 186.

32. U.S. PUBLIC HEALTH SERV., TREATING TOBACCO USE AND DEPENDENCE (Washington, D.C.: U.S. Gov't Printing Office, 2000). The details of comprehensive, evidence-based tobacco cessation counseling are beyond the scope of this article. More information is available at www.surgeongeneral.gov/tobacco/default.htm.

33. N.C. Prevention Partners, Preventive Benefits (last visited July 15, 2005), available at www.ncpreventionpartners.org/index.html?ssfocus=383.

34. David M. Eddy, *David Eddy Ranks the Tests*, HARVARD HEALTH LETTER, (Special Supp., July 1992, at 10).

35. S. H. Zhu et al., *Evidence of Real World Effectiveness of a Telephone Quitline for Smokers*, 347 NEW ENGLAND JOURNAL OF MEDICINE 1087 (2002).

36. Nat'l Ctr. for Chronic Disease Prevention, Best Practices.

at the School

Scholarship Fund to Honor Aycock

In August 2005, C. Ronald Aycock retired as executive director of the North Carolina Association of County Commissioners (NCACC), a position that he held for twenty-eight years. He spent his entire working career in North Carolina and more than half his life working for and representing counties and local governments in North Carolina. No single honor can adequately reflect his legacy, but an idea conceived by former NCACC Deputy Director Ed Regan will ensure that Aycock's contributions to North Carolina local governments will not be forgotten.

The NCACC and the School of Government have established the C. Ronald Aycock Public Administration Scholarship Fund. An annual scholarship will benefit a student in The University of North Carolina at Chapel Hill's Master of Public Administration Program who has shown an interest in working for local governments in the Tar Heel State.

So far, more than $67,000 has been raised for the scholarship fund at the School of Government, including donations by more than thirty county governments. It is not too late to contribute. Contributions are accepted via mail or, if you are using a credit card, by fax. Please make your checks payable to the SOG Foundation—Aycock #0527, and send them to School of Government Foundation, CB# 3330 Knapp-Sanders Building, UNC at Chapel Hill, Chapel Hill, NC 27599-3330.

Credit card payments and pledges also may be faxed to Ann Simpson at (919) 843-2528. You may download a pledge form at the NCACC's website, at www.ncacc.org/documents/aycockscholarship.pdf.

The School of Government sincerely thanks the NCACC and all who have contributed to this important scholarship.

Lewis Estate Makes Major Endowment Gift to School and Museum

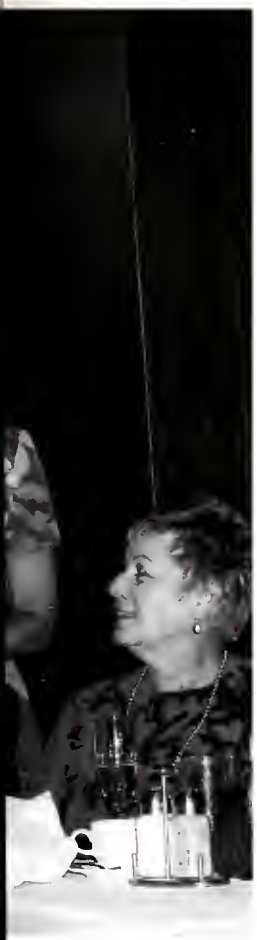
Henry Wilkins Lewis devoted more than three decades of his career to the Institute of Government (now the School of Government) and was steadfast in helping shape UNC at Chapel Hill's Ackland Art Museum. A gift of close to $700,000 from his estate ensures that he will keep on giving to the two campus entities he valued most.

Lewis joined the Institute in 1946 and was director from 1973 until his retirement in 1978. He was appointed Kenan Professor of Public Law and Government in 1975 and also was acting vice-president of the University of North Carolina system from 1968 to 1969. Further, Lewis spent twenty-one years as a member of the advisory board of the Ackland Art Museum and twelve years as a member of its visiting committee.

The income from the endowed funds created by his gift is to be used at the discretion of the leaders of the School of Government and the Ackland Art Museum. "His gift was given in a way that was perfectly representative of his personality and style," said Michael R. Smith, dean of the School of Government. "He was a very prudent person, so he insisted that it be an endowment, . . . a gift that would endure. And because he was a former Institute director, he left it to the current dean to decide how to spend it."

The school has not yet decided on uses for its portion of the gift, which is $486,000, but the funds will aid faculty in a variety of ways, Smith said. "I think he would particularly value the fact that we're using it to support faculty, whom he supported and respected and admired so much."

A memoriam to Lewis appeared in the Winter 2005 issue of *Popular Government* and is accessible online at www.sog.unc.edu/popgov/.



Michael R. Smith (at podium), dean of the School of Government, and Breeden Blackwell (seated), president of the NCACC, announce the new scholarship to Aycock (standing, with his wife, Susan), at an NCACC banquet on August 27, 2005.

Berner, Szypszak, Wagner Join Faculty

In July 2005 the School of Government welcomed three new faculty members to serve state and local officials in North Carolina in program evaluation, real property law, and tax and fiscal policy.

Maureen Berner rejoins the School of Government as an associate professor of public administration and government after two years at the University of Northern Iowa. She was a member of the School's faculty from 1998 to 2003, specializing in statistics, research methods, policy analysis, budgeting, and program evaluation. During that time she received the Gladys and Albert Coates Award for Outstanding Junior Faculty Achievement. Berner will teach two courses in the Master of Public Administration (MPA) Program: policy evaluation methods and program evaluation.

Berner holds a Ph.D. in public policy from the University of Texas at Austin, an M.A. in public policy from Georgetown University (Washington, D.C.), and a B.A. from the University of Iowa. The December 2004 issue of the *Nonprofit and Voluntary Sector Quarterly* included an article by Berner and MPA Program alumna Kelley O'Brien entitled "The Shifting Patterns of Food Security Support: Food Stamp and Food Bank Usage in North Carolina." Berner can be contacted at (919) 843-8980 or berner@iogmail.iog.unc.edu.

Maureen Berner

Charles Szypszak

Gary A. Wagner

Charles Szypszak joins the School of Government faculty as an associate professor of public law and government. His specialty is real property law. Szypszak will work closely with registers of deeds,

property mappers, and county attorneys. From 1987 to 2005, he practiced law with Orr and Reno, P.A., in Concord, New Hampshire. Also, he was an adjunct professor at the Franklin Pierce Law Center (also in Concord) and the New Hampshire Technical Institute.

Szypszak holds a J.D. from the University of Virginia, an M.A. in history from San Diego State University, and a B.A. in history, magna cum laude, from the University of Southern California. Szypszak has written for numerous legal and real estate journals. Recently he published a treatise book on real estate in the New Hampshire Practice series. In addition to his academic accomplishments, he served as an intelligence officer in the U.S. Marine Corps, attaining the rank of captain. Szypszak can be contacted at (919) 843-8932 or szypszak@iogmail.iog.unc.edu.

Gary A. Wagner joins the School of Government as associate professor of public finance and government. He will specialize in state and local tax and fiscal policy. Before his appointment to the School, Wagner was on the economics faculty at Duquesne University (Pittsburgh) and the University of Arkansas, and was a visiting scholar at the Federal Reserve Bank of St. Louis. While teaching at Duquesne University, he received several awards, including the Presidential Scholarship Award and the A. J. Palumbo School of Business Distinguished Research Award.

Wagner holds a Ph.D. and an M.A. in economics from West Virginia University. He received his B.A. in economics and political science from Youngstown State University (Ohio). Wagner's most recent publication, "The Role of Budget Stabilization Funds in Smoothing Government Expenditures over the Business Cycle," appeared in the July 2005 issue of *Public Finance Review*. He can be contacted at (919) 843-8930 or wagner@iogmail.iog.unc.edu.

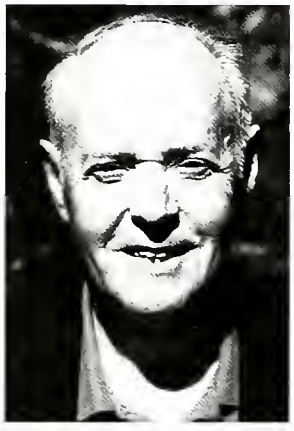
Heath Elected to Conservation Hall of Fame

Milton S. Heath Jr., professor of public law and government at the School of Government, was elected to the the Hall of Fame of the National Association of Conservation Districts Southeast Regional Conservation Partnership at the organization's annual meeting on July 16, 2005, in Louisville, Kentucky. Nominated by the North Carolina Association of Soil and Water Conservation Districts, he was one of nine inductees for 2005.

The Hall of Fame, begun in 2002, annually recognizes one or more people from each state in the southeast region who have made significant contributions toward conservation in their state. The region includes North Carolina and eight other states.

Heath has served on the faculty of the School of Government since 1957, specializing in conservation and environmental law.

In its nominating statement, the North Carolina Association of Soil and Water Conservation Districts said, "Almost every legal issue and new authority for four decades has had the advice and guidance of Milton Heath." From 1959 to 1984, he was the sole or principal drafter of most of North Carolina's environmental and natural resources legislation.



Milton S. Heath Jr.

Heath has consulted in Australia, England, Kenya, New Zealand, Scotland, and other countries, and written papers on air pollution control in Germany and Canada and water pollution control in Guatemala. His most recent publication is the *Guidebook on the Law and Practice of Soil and Water Conservation in North Carolina*.

2005–06 Wicker Scholar Selected

The School of Government congratulates Justin Peglow of Southport, North Carolina, on his selection as the 2005–06 Jake Wicker Scholar. Justin comes to UNC at Chapel Hill from South Brunswick High School, where he was a member of the National Honor Society and listed in *Who's Who among American High School Students*. In addition to lettering in soccer and track, Justin volunteered as a peer mentor at a local elementary school. His mother, Renee M. Peglow, has worked as a computer programmer for New Hanover County since 1988.

The Wicker Scholarship at UNC at Chapel Hill was established in honor of Warren Jake Wicker, a School of Government faculty member for forty-eight years. To be eligible for the $1,000 scholarship, candidates must be first-year students and have a parent who has been employed full-time by a North Carolina city or county government for the five years preceding the application deadline. The deadline for the 2006–07 scholarship is April 1, 2006.

For additional eligibility information, contact Virginia S. Malek at (919) 962-9490 or Gini_Malek@unc.edu. To apply, e-mail a letter of application to Malek, or mail a letter of application to Wicker Scholarship, UNC at Chapel Hill Office of Scholarships, P.O. Box 1080, Chapel Hill, NC 27514.

Justin Peglow

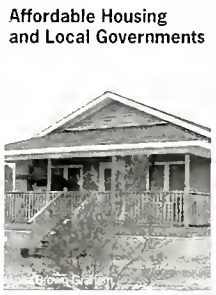
Law Firm Supports Training and Publications

The School of Government Foundation extends sincere thanks to the law firm of Poyner & Spruill for its generous gift of $10,000 to help support the work of faculty in rural economic development. The firm's gift will fund new training and publications. Poyner & Spruill has offices in Raleigh, Charlotte, Rocky Mount, and Southern Pines.

Off the Press

Affordable Housing and Local Governments

Fall 2005 • Please visit our website for the price.
Anita R. Brown-Graham



Discusses the state's most important grants of authority over affordable housing to local governments and points out legal issues associated with local governments engaging in housing activities. Will help local governments determine which activities they have statutory authority to perform when responding to the affordable housing crisis growing in many parts of North Carolina. Each chapter presents a case that applies principles to a specific housing problem as addressed by the U.S. Supreme Court or by a programmatic measure.

Rule Making in North Carolina

Forthcoming Winter 2005–06
Please visit our website for the price.
Richard B. Whisnant

Sets out the form and the method for publishing a notice of rule-making proceedings and a notice of text in the North Carolina Register, and for filing a rule in the North Carolina Administrative Code. Gives practical advice and a description of current rule-making processes. Provides a factual understanding of the rule-making process and its historical evolution, offering scholars, critics, reformers, and those who participate directly in rule making a basis for constructing their own theories of ways to improve government action.

Pregnancy and Parenting: A Legal Guide for Adolescents

Fall 2005 • Available online
Anne M. Dellinger

Final book in a series of four legal guides about minors' pregnancy and parenting in North Carolina. Will assist young women under eighteen who are pregnant or a parent, and also will inform their families. Topics covered include minors' and adults' legal responsibilities; pregnancy options; abortion, adoption, and childbirth; raising a child; education rights; employment; marriage; emancipation; housing; social services; health care; and safety issues such as abuse, neglect, assault, homelessness, and domestic violence. A separate section explains the law affecting immigrants and people who are not proficient in English. The guide will be published in English and Spanish. The School will distribute copies paid for by grant funding to social services departments, health departments, and other local and state agencies that counsel pregnant and parenting adolescents. The guide also will be available online through the Adolescent Pregnancy Project website, located at www.adolescentpregnancy.unc.edu.

Recent Publications

Punishments for North Carolina Crimes and Motor Vehicle Offenses
2005 Edition • $18.00*
Ben F. Loeb Jr., John Rubin, and James C. Drennan

Crawford v. Washington: Confrontation One Year Later
April 2005 • $16.00*
Jessica Smith

Final Report on City Services for Fiscal Year 2003–2004: Performance and Cost Data
2005 • $15.00*
Prepared by William C. Rivenbark for the North Carolina Benchmarking Project

ORDERING INFORMATION

Subscribe to *Popular Government* and receive the next three issues for $20.00*

Write to the Publications Sales Office, School of Government, CB# 3330, UNC at Chapel Hill, Chapel Hill, NC 27599-3330

Website shopping cart www.sog.unc.edu

E-mail sales@sog.unc.edu

Telephone (919) 966-4119

Fax (919) 962-2707

Free catalogs are available on request. Selected articles are available online at the School's website.

To receive an automatic e-mail announcement when new titles are published, join the New Publications Bulletin Board Listserv by visiting www.sog.unc.edu/listservs.htm.

*** N.C. residents add 7% sales tax.**
Prices include shipping and handling.

UNC
SCHOOL OF GOVERNMENT

Popular Government
(ISSN 0032-4515)
School of Government
CB# 3330 Knapp-Sanders Building
The University of North Carolina at Chapel Hill
Chapel Hill, North Carolina 27599-3330

http://www.sog.unc.edu

Nonprofit Org.
US Postage
PAID
Permit #2399
Richmond, VA

Invest in the SCHOOL OF GOVERNMENT— and Your Future

Every day, state and local officials face complex issues and make decisions that affect people across North Carolina. The School of Government is here to help with

- Professional training
- Practical research
- Expert advice
- Best practices that save time and money

SUPPORT GOOD GOVERNMENT • GIVE TODAY • GIVE GENEROUSLY

Make your tax-deductible gift at www.sog.unc.edu or by mail to the School of Government Foundation, CB# 3330 Knapp-Sanders Bldg., Chapel Hill, NC 27599-3330.

THE SCHOOL OF GOVERNMENT FOUNDATION, INC.
WORKING FOR THE PEOPLE OF NORTH CAROLINA BY SUPPORTING QUALITY GOVERNMENT