Public Health Infrastructure for Rural Pennsylvania

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The Center for Rural Pennsylvania is a bipartisan, bicameral legislative agency that serves as a resource for rural policy within the Pennsylvania General Assembly. It was created in 1987 under Act 16, the Rural Revitalization Act, to promote and sustain the vitality of Pennsylvania's rural and small communities.

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INTRODUCTION

Pennsylvania's local public health infrastructure needs a shot in the arm. Currently, none of Pennsylvania's 48 rural counties has a local health department (LHD), which is an agency of a local government that develops and administers programs and services for maintaining a healthy community.

The lack of a public health infrastructure in rural Pennsylvania becomes more critical when the number of primary care physicians and dentists in rural Pennsylvania is considered.

According to the most current data from the Center for Rural Pennsylvania, there were 76 primary care physicians for every 100,000 rural residents, while urban areas had 153 primary care physicians for every 100,000 residents. Rural areas also had 44 dentists for every 100,000 rural residents, and urban areas had 74 dentists for every 100,000 residents. (Center for Rural Pennsylvania, 2003)

According to the U.S. Department of Health and Human Service's Health Resources and Services Administration (HRSA), Pennsylvania has the lowest ratio of public health workers to population in the nation at 37 workers per 100,000 people, compared to a national average of 138 workers per 100,000 people.

The inadequate level of health care professionals in the public health infrastructure exists in spite of state legislation that provides state funding for the creation and operation of LHDs. Act 315 of 1951 was passed to improve local health administration throughout the commonwealth by authorizing the creation, establishment and administration of single-county or joint-county departments of health in all counties. Under Act 315, county health departments may receive state funding of up to 50 percent of total expenditures but no more than $6 for every person within the jurisdiction of the local health department.

Act 12, a 1976 amendment to Act 315, authorized the commonwealth to pay local health departments an additional annual grant of up to $1.50 per resident for environmental health services. Therefore, local health departments may receive up to $7.50 per resident.

Areas without LHDs lose the opportunity to access these funds and additional categorical grant funds at the federal level.

With these circumstances in mind, the research set out to:

- identify and describe the policy issues that influence the establishment of LHDs in rural counties in Pennsylvania;
- identify and describe the financial issues that have an impact on the establishment of LHDs in rural counties in Pennsylvania; and
- develop viable LHD models for rural counties.

Existing Literature

Most states organize their public health systems around county or local health departments that develop and administer programs and services aimed at maintaining a healthy community. To ensure that these efforts address a community's most important health problems and concerns, LHDs encourage residents to participate in assessing public health needs and in formulating a community health plan. They also work with other community organizations to assure that needed services and programs are available. While a single county is the most common jurisdiction for LHDs, many serve multi-county districts.

In 1997, the National Association of County and City Health Officials (NACCHO) identified 2,912 LHDs. Of these, 1,747 served single counties, 232 served multiple counties and the remainder covered smaller geographic areas. Therefore, a significant number of the nation's 3,141 counties lack LHDs; a situation much like Pennsylvania's where only five counties have LHDs and another five cities have LHDs. (NACCHO, 1997)

Figure 1 – Sample services/programs available through local health departments nationwide

- Provide vision/hearing testing (preschool and school-age children)
- Conduct well-baby clinics
- Provide immunizations
- Investigate communicable diseases
- Issue water well permits
- Provide permits for private sewage systems
- Provide health awareness information
- Provide dental sealants
- Case management
- Conduct health screenings (blood pressure, diabetes, cholesterol and other chronic diseases)
- Conduct restaurant inspections
- Provide training for food service workers
- Investigate food borne illnesses
- Screen/test water samples
- Conduct well inspections/surveys
- Investigate solid waste, insect, rodent and nuisance complaints
- Make referrals to other agencies
- Breast cancer awareness
- AIDS counseling and testing

The literature highlights various major factors that show the deterioration of the public health infrastructure. These include the lack of public awareness of the functions of public health infrastructure, the prolonged decline in public health infrastructure funding and other varied problems including leadership, workforce, and telecommunications.

Understanding the value of public health infrastructure

Before identifying the existing needs for local public health, it is important to understand the value of public health infrastructure, and to realize that the issue of public health in itself suffers a problem of definition, especially among the public. The average citizen is challenged to provide compelling and clear examples of public health and its value, since the need for public health is not as clear now as it was in the past (Baker & Koplan 2002). In general, public health is concerned with the health of the population rather than the individual. However, since the public health system functions within the market-based U.S. health care system, which favors individual choice, it is difficult for the public to recognize its value (Burris 1997). In the past, the control of disease outbreaks was a very visible need with clear measures of success. Today, however, the needs for and demands of public health work are more diverse and complex and more difficult to measure (Bradshaw, 2000).

According to the literature, the lack of public awareness of the functions of public health infrastructure has been the sources of two fundamental problems: inadequate funding and organizational diversity.

Funding

Before the events of September 11, 2001, there had been a 10-year decline in public health infrastructure funding. From 1990 to 1993, the percentage of the nation's health care dollars spent on public health declined from 2.7 percent to 1 percent (Johnson, 2000). In some parts of the country, the combination of the Balanced Budget Act of 1997 and government cutbacks saw the per capita spending in public health decline by 33 percent between 1997 and 2003 (NACCHO, 2003). Surveys and studies conducted before September 11, 2001 found that many communities lacked adequate laboratories or epidemiologists trained to detect infectious disease outbreaks.

Even the Centers for Disease Control and Prevention (CDC), the nation's premier public health agency, relied heavily on antiquated laboratories constructed in the 1960s and 1970s. Furthermore, prior to 1999, one-third of local health departments serving fewer than 25,000 people did not have access to the Internet or email, and almost 20 percent of all local health departments had no email capacity at all. In recent years, federal funding has tended to focus on individual health services (Medicare and Medicaid) and categorical disease programs, while public health programs became targets for funding reductions. Prior to the anthrax attacks of late fall 2001, there was little political support at the federal level for substantial new investments in local public health activities (Frist, 2002).

It took the most serious biological attack on American soil for federal policy makers to fully recognize the importance of a sound public health infrastructure (Frist, 2002). Therefore, federal funding for public health has increased since 9/11 and LHDs throughout the country are experiencing an infusion of federal funds for bioterrorism preparedness.

However, in many states, the reduced tax base resulting from the economic downturn since 2001 has meant that the cuts in funding from state and local governments have completely overwhelmed the benefits of the federal funds, leaving LHDs in worse shape (Elliott, 2002).

The funding decline has been exacerbated by the fact that LHDs have suffered from the influx of managed care. Historically, LHDs, especially in rural areas, provided a disproportionate share of health care to the poor and the uninsured (Johnson, 2000). Before mandated Medicaid managed care, LHDs that served as safety-net providers were able to use their Medicaid reimbursements to subsidize less profitable services, such as broad-based disease prevention, nutritional services, lead poisoning prevention, and public-safety. However, in the era of Medicaid managed care, LHDs that serve as safety-net providers have not been able to negotiate capitation contracts with managed care organizations that allow LHDs to use Medicaid funds to subsidize these programs. This has led 76 percent of LHDs to privatize their personal health services (Keanne, Marx, Ricci and Barron, 2002). As this has occurred, public health agencies find themselves cut out of the funding stream as the dollars that used to pay for personal health services are now going to private providers (Johnson, 2000).

Leadership and workforce weaknesses

A 2000 study by the National Advisory Committee on Rural Health highlighted leadership, workforce and telecommunications as areas of weakness for public health in general, and rural public health in particular. The report pointed to a void in public health leadership on rural issues, which is exacerbating the problems of a deteriorated public health system. According to the report, few real rural voices are taking part in the policy discussions and decision-making processes that shape the public health infrastructure because, as rural areas continue to lose population relative to urban and suburban areas, there is a corresponding loss of political power in state legislatures (Johnson, 2000).

The report also highlighted the lack of a prepared workforce, a continuing problem faced by local health departments across the nation. Recruitment, training, placement and retention of some health professionals are familiar headaches to public health managers. In fact, three-quarters of all public health employees nationwide have no degree, certificate or formal education in public health

(Johnson, 2000). The Pew Health Professions Commission report entitled, *Critical Challenges: Revitalizing the Health Professions for the Twenty First Century*, concluded that while the future will show a surplus of 100,000 to 150,000 physicians in the next century, the 21st century will demonstrate a substantial increase in the demand for public health professionals (Pew, 1998).

The Case of Pennsylvania

Out of 67 counties in Pennsylvania, only five have a county health department. In addition, five cities have local health bureaus[1]. Every rural county[2] in Pennsylvania lacks an LHD.

The state of public health in Pennsylvania is a product of the decentralized nature of the state's public health system, which leaves the decision-making and over a quarter of the funding for LHDs to local county and municipal governments. While existing state codes require boroughs and cities to have boards of health (made up of residents and at least one practicing physician), these boards, for the most part, serve in advisory roles, do not provide services, do not have an oversight capacity, and are not necessarily made up of professionals with formal public health training. There are no codes that require local governments to establish LHDs.

In Pennsylvania, Act 315 provides local governments with financial incentives for the creation of LHDs. So although there is up to $7.50 per person available to local governments to operate LHDs, most counties have eschewed this funding and rely on the Pennsylvania Department of Health for their public health services. As this research will show, rural counties rely on the department because existing policies guiding the establishment of LHDs make them very expensive propositions.

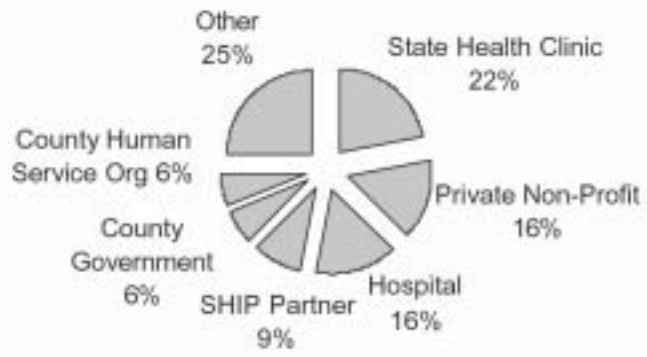
Counties without LHDs have services provided through a disconnected network of governmental and non-governmental organizations. The state Department of Environmental Protection provides environmental services, such as water supply testing, the Department of Agriculture provides restaurant inspections, and the Department of Health provides the remaining public health services. The counties without LHDs have a state health center with a staff of three to four nurses that engage in community health assessment and quality assurance activities and provide other public health services, including community integration and outreach programs, to promote healthy behaviors. These centers also provide communicable disease clinical services including sexually transmitted disease and tuberculosis diagnosis and treatment, immunization, HIV testing, counseling and education. The health centers operate under the direction of district offices, whose staff provide coordination, consultation and administrative support to the health centers in communicable disease reporting and investigation, epidemiology, information and referral services, chronic disease prevention and intervention programs, and environmental health services (Pennsylvania Department of Health, 2003). In addition, the Department of Health has more than 800 contracts with local nonprofit agencies to provide other public health services throughout counties without LHDs.

Evidence of LHD benefits

The impact on the everyday lives of people in areas with a limited public health infrastructure is unclear because of the difficulty in measuring the performance of a system that delivers intangible services. For example, disease rates, such as sexually transmitted diseases (STDs), in a locale with an LHD may show higher rates than locales without LHDs because LHDs are doing a better job of reporting the cases. This makes it necessary to use indirect variables to show the impact that LHDs have on the population.

A 2004 analysis published by the

Figure 2 – Institutions offering public health services in counties without LHDs, 2004



[1] Counties with health departments are Allegheny, Bucks, Chester, Erie, and Montgomery; cities with health departments are Allentown, Bethlehem, Philadelphia, Wilkes-Barre, and York.

[2] The research used the Center for Rural Pennsylvania's definition of rural: a county is rural when the population density of the county is less than the statewide density of 274 persons per square mile.

University of Pittsburgh's Center for Public Health Practice (CPHP) cited a study that demonstrated how Pennsylvania counties with a local health agency are making better progress toward the Healthy People 2010[3] (HP 2010) goals and are helping citizens to enjoy more productive lives. Compared with counties nationally, Pennsylvania counties are making about the same progress in meeting the HP 2010 goals in combating lung cancer and stroke; however, Pennsylvania counties exceed the national average for combating breast cancer, colon cancer, and coronary heart disease (CHD). However, Pennsylvania counties served by an LHD are pulling ahead of the rest of the commonwealth in meeting the HP 2010 goals for all five conditions (Center for Public Health Practice, 2004a).

The second study, also funded by the Center for Public Health Practice, analyzed the existing public health infrastructure in rural Pennsylvania. Institutions delivering public health services were surveyed to determine the structure, funding and services offered by these institutions in 15 rural counties of Pennsylvania without LHDs (Center for Public Health Practice, 2004b). Counties without LHDs receive services from state programs, direct county services, county contractors, state contractors and hospitals.

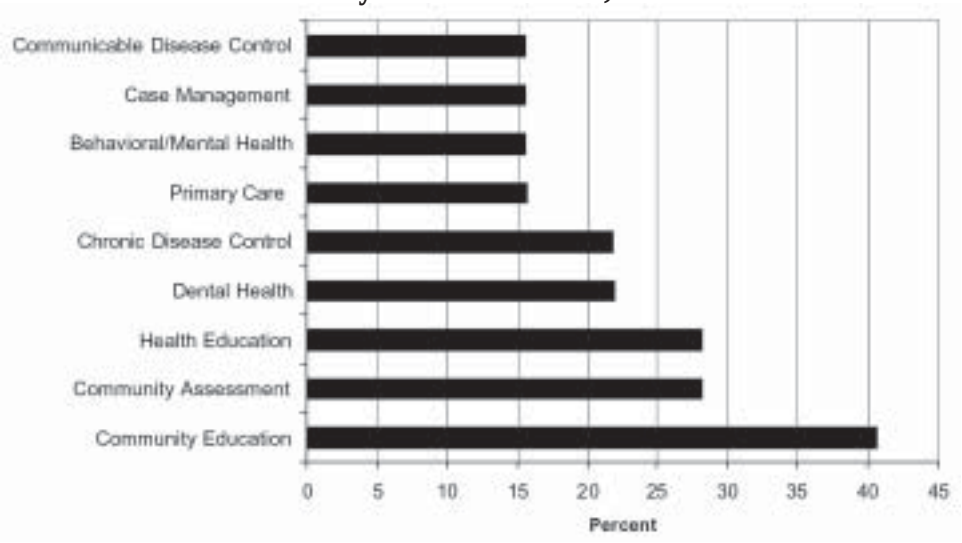
Figure 3 identifies the most common priorities identified by these health institutions and shows that 40 percent of the organizations ranked community education, one of the essential functions of public health, as being a priority. However, fewer than 25 percent ranked chronic disease control and fewer than 20 percent ranked communicable disease control as being among their top priorities. Issues not making the list were restaurant and food inspections and environmental health services, which are critical services offered by existing LHDs in Pennsylvania.

Among the 35 institutions in the 10 counties surveyed, the majority of organizations delivering public health services were either not able to identify who delivered essential public health services or indicated that the services were not offered in their area.

For example, 50 percent of the respondents could not identify who inspected recreational facilities, and an additional 20 percent reported that those services were not offered in their area. Close to 80 percent of the respondents could not identify a provider for vector control and 50 percent could not identify providers of HIV testing or hazardous material control, or who maintained epidemiological records. These are all services that existing LHDs typically deliver.

This analysis demonstrates how areas without LHDs also have weak information delivery systems. The public health infrastructure can be defined as being the "systems, competencies, relationships and resources enabling the performance of the 10 essential public health functions" (Lewin Group, 2002). And since one of the essential functions of a public health department is to "inform, educate, and empower people about health issues," it would follow that locales with limited infrastructure would be unable to

Figure 3 – Most commonly mentioned priorities cited by health institutions, 2004



[3] Healthy People 2010 is the prevention agenda for the nation developed by the U.S. Department of Health and Human Services. It is a statement of national health objectives designed to identify the most significant preventable threats to health and to establish national goals to reduce these threats. It includes a set of health objectives for the nation to achieve over the first decade of the new century.

"provide health information to enable individuals and groups to make informed decisions about healthy living and lifestyle choices and sponsor educational programs to develop knowledge, skills, and behavior needed to improve individual and community health" (CDC 2004).

The third assessment, completed by this researcher, compared the ease and accuracy of accessing basic public health information in counties and municipalities with and without LHDs. The researcher selected a sample of 10 counties and 18 municipalities without LHDs that were similar in population and income to the counties and municipalities with LHDs. The non-LHD locales fell within a two standard deviation range of the mean population size and per capita income of the nine LHD locales (Philadelphia was not included) that were sampled.

Trained college students collected the data by calling the county or municipality, introducing themselves as college students, and asking if a municipal or county contact was available to answer one of the following six questions (there was only one question per inquiry):

- Does this municipality/county have high incidence levels of Lyme disease? If I found a tick on me, what should I do?
- Do I need to get a meningitis vaccine at my age?
- Where can someone get checked for chlamydia?
- Who is at risk for West Nile virus?
- Why should I get my house tested for radon? How do I get my house tested for radon?
- Who is at risk for lead poisoning? What are the signs of lead poisoning?

The response from this initial call was intended to result in a referral. However, responses sometimes resulted in a negative answer whereby the student then asked if there was a local health department or a public health director. If the answer was still no, the student then asked if the person could suggest another contact for the information. The students completed a total of 181 calls to 15 counties and 22 municipalities. Of the 181 calls, 142 were made to locales without LHDs and 39 were made to locales with LHDs. Eighty percent of the inquiries required three or fewer telephone calls. Sixty-four percent of the inquiries resulted in the caller receiving useful information.

Inquires made to locales served by LHDs required fewer calls to receive useful information, and useful information was attained 100 percent of the time. Locales with LHDs were significantly more likely to provide useful information in fewer calls across all themes.

Locales without LHDs required almost three calls for the questions on Lyme disease and STD testing and more than 2.5 calls on the question about immunizations, radon and lead poisoning. In addition, non-LHD locales had a lower percentage of inquiries resulting in useful information. While 80 percent of the inquiries made about STDs resulted in useful information, only 26 percent of the inquiries on radon and 32 percent of the inquiries on West Nile virus resulted in useful information.

A second major difference between locales is the varied types of referrals made during the inquiry. While locales with LHDs referred the caller to the LHD during the first three calls 100 percent of the time, inquiries made to locales without LHDs were referred to other government agencies 55 percent of the time after the initial call. In these locales, other government agencies were the most common referral after the first and second referrals; only during the third referral are non-LHD locales likely to refer the inquiries to the Pennsylvania Department of Health.

This assessment shows that in locales without LHDs, requests for public health information required more calls and callers were referred to more diverse places.

It is important to highlight that more than 85 percent of the calls that were eventually referred to public health entities, such as state Department of Health clinics, county vector control programs, and county West Nile control programs, resulted in useful information. Therefore, the issue was not that the personnel in the network of organizations that provide public health services to locales without LHDs could not provide useful and timely information; the issue was that it took the caller longer to get to the proper organization. In both types of locales, once the caller was forwarded to a public health entity, the chances of receiving useful information improved dramatically. The difference is that in locales without LHDs, the caller had to demonstrate a greater determination in following up on the referrals.

Summary

The results of the three studies indicate that areas without LHDs lack the infrastructure with which to adequately provide essential public health functions. In areas across the country that lack LHDs, a proposed solution has been the creation of a network of coordinated entities that could provide essential functions of public health. However, these networks are not charged with providing public health services. The disjointed services offered or the lack of useful information provided is a reflection not of the competence of the personnel in these network-based infrastructures but of the lack of a centralized portal into the infrastructure.

As a result, residents of locales without LHDs are more likely to be without the services needed to make informed decisions regarding their health. These differences create a public health disparity that, given the increasing threats to the public's health with the likes of SARS, West Nile virus and bioterrorism, stands to negatively affect the long-term health status of the population.

RESEARCH METHODS

To identify policy and financial issues of establishing rural LHDs, the researcher gathered and analyzed data on the state's 48 rural counties and developed rural LHD models. First, the researcher grouped the state's 48 rural counties according to the Pennsylvania Department of Health's six community health districts. The counties were then stratified by income, population density, and poverty rates. Twelve counties from the most rural health districts were selected. The Southeast Health District was not used because it contained only one rural county, and the Southwest Health District was not used because it had the highest average population density among its rural counties. Three counties from each of the remaining four districts were sampled using counties that were within two standard deviations of the mean income, population density, and poverty rate.

The researcher analyzed the budgets from the sampled counties and the budgets from the five counties and five municipalities with existing LHDs to determine the LHDs' prototypical balance sheets, revenue streams, expense categories and key cost drivers.

The researcher also reviewed Act 315, Act 12 and the Pennsylvania Code guiding the establishment of LHDs to determine the mandated program and financial requirements of the law. The researcher interviewed policy makers and administrators from the five counties with LHDs, and employees of the Pennsylvania Department of Health to collect information on the policy and program mechanisms permitted to satisfy the mandates. Finally, the researcher developed several models for rural LHDs by creating organizational, program and budget structures for single-county LHDs for three of the sampled counties, for bi-county LHDs for four of the sampled counties, and two tri-county LHDs for six of the sampled counties (Wyoming County was used for both the bi-county and tri-county models).

Figure 4 – Sampled counties by health district

Health District	County
Northwest	McKean Clarion Jefferson
Northcentral	Bradford Snyder Tioga
Northeast	Monroe Susquehanna Wyoming
Southcentral	Mifflin Fulton Juniata

POLICY ISSUES THAT INFLUENCE THE ESTABLISHMENT OF LHDS IN RURAL COUNTIES

Act 315

The purpose of Act 315 is to improve local health administration throughout the commonwealth by authorizing the creation, establishment and administration of single-county or joint-county departments of health in all counties. The following is a summary of the critical sections of Act 315 describing the establishment of departments of health.

Creation of county health departments

County commissioners may establish a county department of health through resolution or referendum. A joint-county department of health may also be created by resolution or referendum, or by a combination of these methods. In joint-county departments of health, each participating county shall be adjacent to at least one other participating county.

Before enacting a resolution or submitting the question at an election, the county(ies) must receive a certificate of approval from the state Secretary of Health showing that the proposed county department of health conforms to the county health administration plan.

The following preconditions need to be satisfied before the Secretary of Health certifies that a county health department is ready to function:

(1) local funds have been appropriated,

(2) the organization of the county department of health has been completed,

(3) personnel have been employed in accordance with the regulations of the state Department of Health,

(4) required facilities and equipment have been obtained, and

(5) necessary rules and regulations have been prepared by the board of health.

County departments of health eligible for state grants under Act 315 may draw down state funds that equal 50 percent of total expenditures incurred by the LHD. However, no county department of health or municipality may receive a grant that exceeds $6 for every person within the jurisdiction of the county department and no county department of health may receive annual grants until one year following its establishment.

Act 12

Act 12 is a 1976 amendment to Act 315 that provides funding for environmental health services provided by health departments. According to Act 12, the commonwealth shall pay an additional annual grant of not more than $1.50 per resident to each county department of health for environmental health services provided by the county or municipality. A match of local funds is not required. Environmental health services are defined as services such as, but not limited to, air and noise pollution control, restaurant and wholesale food inspection, rodent and vector control, water and sewage inspection, housing code enforcement and other similar services in addition to other local health grants for public health services.

County Health Boards

In a single-county department of health, except in counties of the second class, the county commissioners are authorized to appoint five resident citizens, two of whom shall be licensed Pennsylvania physicians. In counties of the second class, the county commissioners shall appoint nine resident citizens, two of whom shall be licensed Pennsylvania physicians.

Counties participating in a joint-county department of health will create a joint-county health commission. In joint-county health departments, the combined boards of county commissioners will appoint the membership of the health board to equal one more than twice the number of counties participating. One licensed physician per county will be appointed. All the appointed members must be residents of the participating counties, and at all times at least one resident of each county must be on the board.

Basic package of services required

While Act 12 delineates the responsibilities assigned to grantees of Act 12 funds, there is limited specificity in the language of Act 315 to the broader public health functions. However, Act 315 allows for other commonwealth laws and administrative regulations from the various departments of the executive branch, such as the state Department of Health, to establish mandates for the departments. The Department of Health has established requirements for health departments and for environmental health services (Pennsylvania Code, Title 28, Chapters 15 and 17). According to Chapter 15, the minimum program requirements for local departments of health include:

1) Administrative and Support Services
   a) Personnel (hiring, payroll and benefits)
   b) Fiscal (budgets and audits)
   c) Government and community liaison
   d) Reporting
2) Communicable Disease Control
   a) Tuberculosis
   b) Sexually transmitted diseases control
      • Prevention
      • Detection
      • Treatment
      • Counseling
3) Public Health Laboratory Services (may contract with private or state laboratory)
4) Public Health Education
   a) Chronic and communicable disease
   b) Grant specific
5) Public Health Statistics
   a) Statistical and epidemiologic data
      • collection, maintenance and analysis
6) Personal health services
   a) Maternal and child health services
   b) Home visiting and education
   c) Public health nursing services
7) Chronic Disease Control

According to Chapter 17, local departments of health must provide, at minimum, permits for and the response to complaints about the following services or sites:

1) Public drinking water
2) Bottled water plants
3) Public wells
4) Sewage treatment
5) Solid waste
6) Restaurants
7) Public swimming pools and hot tubs
8) Beaches
9) Playgrounds
10) Recreational areas (petting zoos, summer camps and campgrounds)
11) Institutions
12) Schools
13) Mobile home parks

The act also requires the investigation of disease and public education for:

1) Vector control
   a) rats, mice and insects
2) West Nile virus
3) Gypsy moth
4) Lyme disease

Local bureaus and departments must report to the state Department of Health once a year about the services provided in the previous year and a health plan for the upcoming year. The analysis of these reports shows that some LHDs also provide a diversity of programs that go beyond the required services. Some of these include colorectal health, mental retardation services, dental services, emergency medical services and highway safety.

Policy Implications: Federal and State

At the end of 2001, the 107th Congress considered various pieces of legislation to strengthen the public health infrastructure. The final product was "The Public Health Security and Bioterrorism Preparedness and Response Act of 2002," which President Bush signed into law June 12, 2002 (PL 107-188). The law authorized $1.6 billion in state grants to establish new controls on biological agents and toxins, additional safety and security measures affecting the nation's food and drug supply, additional safety and security measures affecting the nation's drinking water, and measures affecting the Strategic National Stockpile and development of priority countermeasures to bioterrorism.

In Pennsylvania, the funds for non-public health first responders have been distributed through the Pennsylvania Emergency Management Agency and the regional Bioterrorism

Taskforces. However, as of the summer of 2004, funds aimed at upgrading public health preparedness, allocated through the state Department of Health, had not been delivered to local entities. According to the independent foundation Trust for America's Health, budget cuts, bureaucratic red tape and interagency wrangling are hurting public health preparedness in Pennsylvania (Trust for America's Health, 2003). In a study of preparedness carried out by the foundation, Pennsylvania scored three points out of 10, while the national average was five.

To address the issue of bioterrorism, U.S. Sen. Arlen Specter and the Centers for Disease Control and Prevention have been working with stakeholders in Lehigh and Northampton counties since April 2004 to develop a pilot program that would deal with bioterrorism. As of June 2005, the project's goals were still under consideration and the project had not received federal funding. However, the potential pilot is still a positive step forward to respond effectively to a public health emergency.

At the state level, two pieces of legislation were introduced in the 2002 session that would have amended Acts 315 and 12 by increasing state funding for LHDs and providing counties with grants to establish LHDs. Neither bill came out of committee. In the 2003-2004 session, another bill was introduced in the Pennsylvania House of Representatives. The bill would have granted county health departments the authority to collect baseline health status data, disease data and other data that would allow counties to assess the health status of residents and evaluate the success of any public health improvement effort. The bill also would have increased Act 12 annual grants from $1.50 to $3 per resident and have allowed the Department of Health to help counties plan for the development of local health departments. However, that bill also expired at the end of the legislative session.

Experience of existing LHDs

In the researcher's interviews with administrators from existing LHDs, three related policy themes emerged – the critical role played by county commissioners or municipal leaders; the importance of identifying initial funding; and the concerns of townships, boroughs, and other county departments about jurisdictional coverage and the loss of autonomy.

In all of the county LHDs, there was a combination of two factors that brought the idea of creating an LHD to the table. First, there was a grassroots demand for increased services, and second, there was a local elected official who assumed a leadership role in championing the issue. Administrators also highlighted the importance of an event, such as flooding or bioterrorism, that threatened the public's health that served as a catalyst. There is no demand for the establishment of LHDs emerging from the state Department of Health. In fact, two LHDs reported that state government was not forthcoming with the required procedures to establish the LHD and in clarifying the criteria for financial requirements (for example what qualified as a match). In two cases, local state legislators played a big role in helping gain final approval of the LHDs.

The second policy area that the LHD administrators highlighted was the need to have an established source of initial funding. Since Act 315 dictates that state monies cannot be drawn down until after one year of operation, counties or municipalities need to identify local sources of funding for up to one year. Also, since Act 315 can only provide up to 50 percent of total expenditures incurred by LHDs, local governments must establish a separate fund for a new LHD with revenue sources that will qualify as matching funds. The existing LHDs that had the greatest ease in clearing this hurdle were those established by referendum or those that had a private source of funds from an endowment or foundation.

The administrators point to the reluctance of townships and boroughs to participate in county level LHDs as a source of policy bottleneck. Boroughs and townships within counties must agree to be served by the county departments. If boroughs and townships decide not to participate, then their population may not be counted for state funding. The primary concern of boroughs and townships is over jurisdiction and autonomy. Borough and township leaders are usually wary that LHDs may interfere with the functions of the township and borough services. For example, a concern of local governments in one of the existing LHDs was that LHDs would close down food vending services at local township parks and other recreation areas, and that LHDs would take over sewer inspections that generate funds for townships. A clear policy guiding the relationship between LHDs and local services needs to be established. Some LHDs in other parts of the country have used Memoranda of Understanding to establish the township-county department relationship. Given this, county-level LHDs must have policy alternatives regarding how to function without 100 percent of the townships in their jurisdiction participating in the LHD. Chester County's LHD, for example, was initiated with just 50 percent of townships participating in the LHD, although 100 percent were participating a few years after its creation.

There were also jurisdictional disputes with other county departments, which expressed concerns that an LHD would interfere in their services. The definitional difficulty faced by public health contributes to this perceived threat, as does the fact that many of the services provided by LHDs are likely provided by human service agencies in the absence of an LHD. With the possibility of an LHD looming, these human service agencies may fear the loss of funds. According to administrators, these jurisdictional disputes can be overcome with very clear policies that delineate the roles and responsibilities of the LHD.

The administrators indicated that, although local officials express initial concern over loss of autonomy with regard to local public health decisions if state funds are used, the Department of Health's supervision of Act 315 funds does

not compromise local decision-making in any way. The existing bureaus and departments report a more stringent reporting and supervisory process with some of their categorical grants than with Act 315 funds. No entity indicated that the state demanded a change in its health plan. It is more likely that departmental services are determined by the emergence of special funds than by state intervention. For example, all of the departments interviewed have been increasing their tobacco control programs as a result of the tobacco funding from the state.

FINANCIAL ISSUES OF LOCAL PUBLIC HEALTH

The financial issues associated with LHDs emerge from their funding streams and the revenue drivers that determine the capacity of LHDs to generate revenues. This examination will look at these issues and will also include an examination of the cost drivers that determine budget sizes of the existing county health departments and health bureaus.

LHD Funding Streams

An LHD budget may include Act 315/12 funds, grants, fees and other funds. The annual Act 315 grant is paid in four quarterly installments, but the monies received in any quarter may be used any time during the year.

Eligible expenditures are those that:

(1) are not paid for out of any special grants received from the state;

(2) are not paid for out of any grants received directly from the federal government; and

(3) represent expenditures made within the lawful scope of the powers of the county department of health or the department or board of health of the municipality, or

(4) are public health related.

As Figure 5 demonstrates, Act 315 and Act 12 funds represented anywhere from 21 to 43 percent of the funds, with an average of 28 percent in 2002.

Another important source of funding for LHDs is grants, which are usually either state or federal categorical and block grants. All of the LHDs reported that 100 percent of their increase in funding comes from these grants. Existing LHDs received an average of $2.3 million in federal categorical grants. There are more than 750 federal categorical grants available. The most common categorical grants received by LHDs are for immunization, family planning, clean water, HIV/AIDS, and cancer prevention.

Pennsylvania LHDs receive an average of $1.8 million in state grants (non-Act 315 and -Act 12). A majority of these funds are passed through the Preventive Health and Health Services (PHHS) Block Grant that Pennsylvania receives from the federal government. The PHHS block grant is the primary source of flexible funding for any of 265 national health objectives available in the nation's Healthy People 2010 Health Improvement Plan. Although the department does not set aside any state grants specifically for local LHDs, there are state grants that are more easily assigned to them than to non-LHDs. More importantly, LHDs have a significant comparative advantage in that, at the end of budget periods with budget surpluses, one-time funding opportunities are made available to LHDs. Periodically, federal grants that are available for entities that work directly with the state Department of Health may also be made available, so LHDs have an advantage in various different respects.

The third source of funding for LHDs is inspection fees and licensures costs. Local health departments that carry out restaurant inspections and public and recreational pool inspections charge the sites a fee for the inspection and license. Although these services are covered as Act 12 reimbursable services ($1.50 per capita), the LHDs use this money not only to offset their additional environmental services costs but also to match Act 315 funds. In other words, any income that LHDs can generate from services helps to offset the amount the county must generate as a direct contribution to the LHD, which is the fourth source of revenue for LHDs. Direct funding is any source that is not generated from Act 315/12 grants, or categorical grants or fees collected. These direct funds are usually not new funds

Figure 5 – Revenue sources for Pennsylvania LHDs, 2002

Existing LHDs	Total Budget	Act 315/12	%	Grants	%	Fees	%	Direct funds	%
Allegheny*	43,866,737	9,046,501	21%	22,189,752	51%	3,832,800	9%	8,797,684	20%
Bucks	9,056,640	3,833,500	42%	1,662,000	18%	907,100	10%	2,654,040	29%
Chester	7,493,410	3,225,007	43%	1,953,872	26%	1,607,349	21%	707,182	9%
Montgomery	7,200,000	3,000,000	42%	1,690,000	23%	620,000	9%	1,400,000	19%
Allentown	3,048,295	756,000	25%	666,000	22%	161,000	5%	1,465,295	48%
York	1,096,246	319,177	29%	480,747	44%	30,000	3%	227,000	21%
Average	11,960,221	3,363,364	28%	4,773,729	40%	1,193,042	10%	2,541,867	21%

* Note: The Allegheny County budget includes monies for its emergency medical system while the other county budgets do not.

collected by the local government for the purposes of subsidizing the LHDs, but may be for other health services that the local government has historically provided. The following are examples of services that local governments have at least partially paid for and that have become part of the LHDs' revenues;

1) Vector control (mosquito and Gypsy Moth control),
2) Drug and alcohol prevention programs,
3) Preventative health services for seniors in long-term care settings (chronic disease screenings),
4) Preventive health services for prisoners in county jails (STD screenings),
5) Solid waste and litter control programs,
6) Weights and measures,
7) County/municipal health services information and referral systems,
8) County/municipal health and wellness fairs,
9) County/municipal contributions to emergency services,
10) Any other service that is designed to protect the health of the public.

The most difficult financial hurdle associated with Act 315 grants is the source of funds available for the match. One perspective is not to see Act 315 as requiring a match, but to view it as a way to subsidize existing health activities (Dreiker, 2004). On average, the non-LHD counties analyzed for this study were spending $75,000 of reimbursable funds. So, for counties already providing some level of services, Act 315 funds could be helpful. An important financial reality of existing LHDs is that they represent a minimal per capita investment and show a very high return on investments.

Figure 6 shows Pennsylvania's LHDs demonstrate a simple return on investment (ROI) of at least 100 percent, with an average of more than 400 percent. For example, for Chester County's Department of Health's annual investment of about $700,000 of direct county revenues, the Chester County Health Department provides about $7.5 million in services.

Figure 6 – Pennsylvania LHDs return on investments, 2002

Bureau/County	Per Capita Cost	ROI	Per Capita Benefits
Allegheny*	$6.93	399%	$27.62
Chester	$1.63	960%	$15.65
Bucks	$4.51	241%	$10.89
Montgomery	$1.93	414%	$8.01
York	$5.72	383%	$21.89
Allentown	$13.74	108%	$14.85
Average	$5.74	417%	$16.48

* Note: The Allegheny County budget includes monies for its emergency medical system while the other county budgets do not.

Revenue drivers

The analysis looked at various revenue drivers to determine the factors that most influenced the ability to generate revenue. The drivers explored were total population, poverty rates, geographic size of the areas covered, the size of the local government and the demographic structure of the population covered, each of which was mentioned by at least one LHD administrator as a factor that affected her ability to generate funds. However, it is important to highlight that the role of the revenue and cost drivers discussed in this and the following section are based on the experience of six urban LHDs. Therefore, the conclusions may not be completely applicable to rural areas, although they do provide a strong indication of what rural LHDs may encounter.

The analysis showed a positive correlation between the population covered by the LHD and the revenue it receives. In other words, the greater the population, the greater the revenues received by the LHD. This finding is an important consideration for rural areas with small populations, since these areas would be less likely to generate funds from grants and fees, thereby requiring a greater proportion of revenues to come from local government. An obvious potential solution would be the creation of multi-county health departments thereby improving the economies of scale.

In the analysis, poverty was also determined to be an important revenue driver. The analysis showed a very strong positive correlation between poverty rates and all the revenue sources. This relationship is expected given that poverty levels are key criteria in targeted categorical grants.

Cost drivers

All of the LHDs interviewed indicated that the most important determinant of their expense structure is their revenue stream. In other words, what they spend is predetermined by their success in obtaining funds and their revenues from grants was most influential.

As mentioned earlier, the only revenue growth experienced by most LHDs was from grants. The analysis of the expenditures showed that an LHD's grant revenue is most influential on its personal health services. As LHDs generate more grant revenue, they are more likely to increase their personal health services. This again is consistent with the objectives of these grant sources, which include maternal and child health, and STD treatment, counseling and screenings. There was also a very strong relationship between user fee revenues and environmental services. This is also an expected outcome since a major source of the user fee revenues came from LHD environmental services. Finally, direct funds are most influential on public health services. While the reason for this is not completely clear, it is likely that these services are in part associated with LHD activities in policy development and consultation with government officials.

Another major cost driver is staff size. However, this is not an independent factor in that it is closely

associated with population covered and overall revenue. Nonetheless, the personnel structures of Pennsylvnia's LHDs fluctuate according to their different revenue streams. LHDs control their expenses by using temporary staff for the categorical grants and keeping permanent staff positions exclusively for the more steady revenue streams from Acts 315 and 12. The reasoning is that the expertise required for categorical grants changes and that categorical grant funds are less permanent.

Personal health services can be a significant cost driver for LHDs. Not only in Pennsylvania but throughout the country, LHDs that serve as safety-net providers were forced to invest a significant amount of resources in their personal health programs. LHDs in areas with fewer primary care physicians tended to fill the service void and provide a wider array of personal health services, which in other areas would be provided by private practitioners. It is important to highlight that, nationally, the trend has been for LHDs to reduce their personal health services as Medicaid has moved toward a managed care model because reimbursements have declined. This has been a major factor in the reduction of funding for LHDs nationally.

Environmental service expenses are the largest expenditures of existing LHDs. While the reasons for this are not completely evident, there are four influencing factors. First is the size of the territory covered by the LHD. Unlike the other types of services, environmental programs, such as restaurant and pool inspections, require periodic onsite visits thereby increasing the need for staff and transportation. The percentage of overall expenditures that LHDs spend on environmental services correlates strongly with square miles covered by the LHD. Second, environmental services, compared to such other services as education and screening, are more costly since they involve testing and laboratory procedures. Third, the environmental services division is a revenue generating division for LHDs. Since LHDs charge a fee to the sites that are inspected, LHDs have the incentive to provide extensive and continuous coverage to maximize their revenue-producing activities.

Lastly, administrators report that environmental services are the most visible and most publicly and politically scrutinized. Since no local government, and more importantly no local elected official, wants to have an environmental incident in their jurisdiction (food poisoning or disease outbreak), local health officials feel compelled to provide thorough environmental services.

Summary

Overall, the above analyses demonstrate the influential role of both cost and revenue drivers to LHDs. The impact of population, geographic area covered and the availability of primary care services are significant issues to most rural Pennsylvania counties that want to establish LHDs.

VIABLE RURAL LHD MODELS

Following are three viable models for single-county, bi-county and tri-county LHDs for four regions of rural Pennsylvania. These models include a sample revenue structure, an expenditure budget, a personnel structure and a program budget.

The model budgets were developed by creating a general revenue and expenditure budget using a basic forecasting method based on the revenue and expenditure data of LHDs in Allegheny and Chester counties and the municipal health bureaus in Allentown and York cities. The forecasted revenues and expenses used total population covered, area covered, poverty level and primary care provider availability as cost and revenue drivers. Specific sample program budgets using the Allentown Health Bureau budget structure were created for each of the models to estimate the costs of the specific services. In addition, potential match sources were approximated using the county budgets of the sample counties.

Each model's feasibility is discussed using the forecasted direct contributions required by the counties, on a per capita basis, as well as the potential match sources. The models constructed are exhibited in Figure 7.

Figure 7 – Single-county, bi-county and tri-county model counties

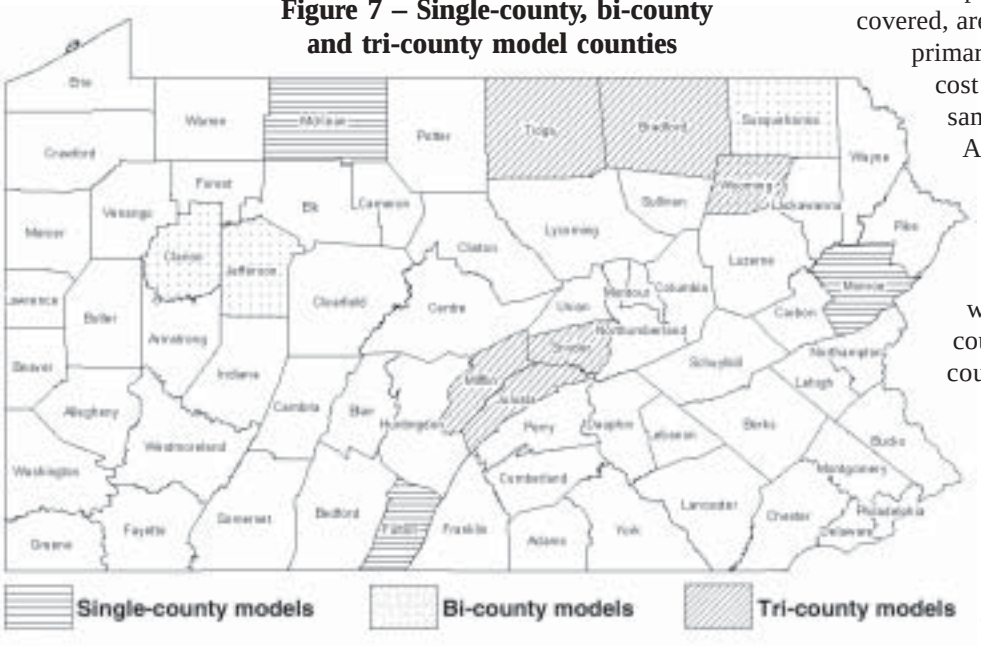


Figure 8 – Staff requirements for county models

Model	Staff
Bradford-Tioga-Wyoming	137
Mifflin-Juniata-Snyder	60
Susquehanna - Wyoming	56
Clarion - Jefferson	70
McKean	35
Monroe	73
Fulton	23

Revenue and Expense Forecast

The researcher developed a personnel structure for each model. However, as Figure 8 demonstrates, the models' personnel structures differ significantly based on population but most importantly on the land area covered. The tri-county model designed for Bradford-Tioga-Wyoming would cover only 132,000 persons but would be spread over 2,500 square miles. The large geographic area covered by that model requires the most personnel.

Using the total population to be served as a multiplier for all potential revenue sources, the researcher developed potential revenue streams for each model. In addition, the percent of the population living below poverty was used to determine categorical grant revenue since levels of poverty are a significant categorical grant revenue driver. The grant revenues were calculated by giving both factors (population and poverty level) equal weight. Figure 9 shows the result of the revenue forecasting. The forecasts show that Monroe County and the two tri-county LHDs would have multi-million dollar revenue streams. All of the models show high contributions from grants of more than 40 percent because of their relatively high poverty levels.

Figure 10 shows the forecasted expenses by categories. These figures were forecasted using population and land area covered, and medically underserved areas. Population and land area to be covered were used to forecast all of the expense categories. Underserved areas were used to forecast personal health expenses since the availability of primary care was a significant cost driver of personal health expenses. The forecasts show the clear effect of having to cover large areas. The two tri-county LHDs have very large budgets relative to their populations. The Bradford-Tioga-Wyoming model would have a budget of more than $7 million. For both tri-county LHDs, environmental health expenses are significantly higher because of the area to be covered. On the other hand, personal health services are a significant expense in the Fulton, Monroe and McKean models because of the relatively low number of primary care providers in those areas.

Figure 11 shows a reconciled revenue budget based on the expenses forecasted. The local direct contributions increase dramatically so that local contributions now represent more than 40 percent of the budget revenue in all but two of the models. The assumption is that these locales

Figure 9 – Forecasted revenue budgets for county models

Model	Forecasted Revenue Budget	Act 315/12	%	Grants	%	User fees	%	Direct funds	%
Bradford-Tioga-Wyoming	$2,571,363	$734,889	29%	$1,153,966	45%	$232,143	9%	$450,366	18%
Mifflin-Juniata-Snyder	$2,028,745	$568,161	28%	$908,345	45%	$187,290	9%	$364,948	18%
Susquehanna-Wyoming	$1,312,304	$320,956	24%	$630,752	48%	$122,295	9%	$238,301	18%
Clarion-Jefferson	$1,718,374	$435,779	25%	$832,984	48%	$152,485	9%	$297,127	17%
McKean	$842,004	$154,561	18%	$455,842	54%	$78,547	9%	$153,054	18%
Monroe	$2,775,084	$846,490	31%	$1,160,584	42%	$260,468	9%	$507,541	18%
Fulton	$330,312	$73,261	22%	$182,928	55%	$25,139	8%	$48,985	15%

Figure 10 – Forecasted expense budgets for county models

Model	Forecasted Expense Budgets	Administration	%	Personal Health	%	Environmental Health	%	Public Health	%
Bradford-Tioga-Wyoming	$7,809,675	$2,202,220	28%	$1,792,416	23%	$3,107,756	40%	$707,282	9%
Mifflin-Juniata-Snyder	$3,259,014	$881,479	27%	$850,496	26%	$1,243,937	38%	$283,103	9%
Susquehanna-Wyoming	$2,321,767	$608,341	26%	$659,561	28%	$858,486	37%	$195,380	8%
Clarion-Jefferson	$2,906,886	$776,562	27%	$785,040	27%	$1,095,878	38%	$249,407	9%
McKean	$1,362,989	$332,492	24%	$454,501	33%	$469,210	34%	$106,786	8%
Monroe	$2,991,986	$798,330	27%	$810,661	27%	$1,126,597	38%	$256,398	9%
Fulton	$431,135	$63,817	15%	$256,765	60%	$90,058	21%	$20,496	5%

Figure 11 – Reconciled revenue budgets for county models

Model	Reconciled Revenue Budget	Act 315/12	%	Grants	%	User fees	%	Direct funds	%
Bradford-Tioga-Wyoming	$7,359,310	$734,889	10%	$1,153,966	16%	$232,143	3%	$5,238,312	71%
Mifflin-Juniata-Snyder	$2,894,065	$568,161	20%	$908,345	31%	$187,290	6%	$1,230,269	43%
Susquehanna-Wyoming	$2,083,466	$320,956	15%	$630,752	30%	$122,295	6%	$1,009,463	48%
Clarion-Jefferson	$2,609,760	$435,779	17%	$832,984	32%	$152,485	6%	$1,188,512	46%
McKean	$1,209,935	$154,561	13%	$455,842	38%	$78,547	6%	$520,985	43%
Monroe	$2,484,445	$846,490	34%	$1,160,584	47%	$260,468	10%	$216,902	9%
Fulton	$382,151	$73,261	19%	$182,928	48%	$25,139	7%	$100,823	26%

will have to provide more direct funds to cover the shortfall between the higher expenses. Due to their small populations, most of the models do not generate enough funds from Act 315, Act 12 and user fees to cover the expenses related to the large geographical coverage area. In Bradford-Tioga-Wyoming, the largest of the models, direct funds would now represent 71 percent of the revenue.

The expenses and revenues of the different models were also calculated using a program budget resembling the existing program budget for Allentown. The budgets were constructed using a personnel structure that took into account the population and geographic area covered. These budgets recalculate the Act 315 and Act 12 funds using a more exact calculation of 50 percent of the eligible budget or the maximum of $6 per capita.

These program budgets show that the multi-county health departments have very high expenses relative to the department base funding. For example, the Bradford-Tioga-Wyoming model has close to a $1 million deficit just as a result of the environmental services provided. In comparison, the deficits with regard to the environmental services are smallest in the Mifflin-Juniata-Snyder, Monroe and Fulton models. The reason for the small deficit in the Fulton model is its small size; however, the small deficits in the Mifflin-Juniata-Snyder and Monroe models are due to their substantial populations within manageable geographic areas, which lower expenses and maximize funding. This is the trend throughout the budget calculations. In the models with small populations and large areas, the expenses are not offset by revenue from grants and fees. This problem of small population is evident in a number of the models that employ the per capita funding versus 50 percent of the Act 315 formula. Among the existing LHDs, none of the LHDs receives the full $6 per person. They all receive 50 percent of the budget. However, because the counties covered in these model LHDs have such small populations, the per capita formula is the less expensive funding approach. This also means that the inclusion of existing local health expenditures as a way to increase the Act 315 subsidy (activities such as prison health, solid waste, etc.) would have limited impact in these models since they already are receiving the maximum subsidy under Act 315. The overall result is very high county contributions that may make these structures untenable at the present funding levels.

Overall, Figure 11 shows that, with the exception of the single county health department models in Monroe and Fulton, all of the models represent higher per capita investments. The large multi-county health departments with large geographical areas and small populations show the highest investments. Of the two tri-county health departments, the Mifflin-Juniata-Snyder model is much more feasible because of its smaller geographic area and larger population. However, even the two-county LHDs have relatively high investments. This is again a result of population and geography.

Summary

The analysis in this section highlights the financial barriers that most local governments face when considering the formation of an LHD. Although the model budgets represented here are representative of the expenses of a fully functioning LHD, which most likely would take a few years to develop, they demonstrate the need for a combination of significant new funding or significant restructuring of local government funding and budgets in order to make LHDs viable. The most critical cost driver for these models is the land area to be covered. The existing funding stream dependence on population as the sole criteria for the Act 315 formula grant signifies that areas that require extensive coverage are at a major disadvantage. In the models that had larger populations and less extensive geographic areas to cover, the models are more viable. The tri-county LHD model covering Mifflin-Juniata-Snyder had local contribution amounts that were closer to the norm as did the single county LHDs in Monroe, Fulton and McKean counties. However, the other models highlight the problem of using population-based formula grants for rural areas.

CONCLUSION

The fundamental assumption guiding this research is that a strong local public health infrastructure, in the form of local health departments, is a critical component of the health care continuum. Given this assumption, the research showed that the lack of an LHD has a negative effect on the ability of individuals to gain health information, and may have an impact on the ability of local officials to respond to health emergencies. The national trend shows a slow erosion of the national public health infrastructure. Funding for public health has steadily decreased since the 1980s, which has created significant gaps in services and increased vulnerability to the spread of disease. The threat of bioterrorism and the preparedness that has followed since 2001 has highlighted these gaps. Various federal level studies have shown a lack of communication between public health agencies and complete voids in certain areas of the country.

The financial analysis of the different LHD models open to rural counties of Pennsylvania demonstrate that the relatively high levels of local funds required to establish LHDs would be a major financial undertaking.

The research also showed that, relative to this national trend, the local public health infrastructure in Pennsylvania is weak. With only five county health departments, five municipal health bureaus and a network of state clinics in the remainder of the state, Pennsylvania has the lowest public health workforce in the country with about 37 public health workers per 100,000 persons.

Despite the existence of Acts 315 and 12, which provide locales with per capita funding for public health and environmental services, much of the state's municipal areas lack a local public health department. The areas of the state with local health departments have demonstrated a very good capacity to use both state and federal funding to provide an array of public health services. These existing LHDs have been able to grow their locales' capacity to provide public health services by using not only the state formula grants but also federal and other state categorical grants. As a result of these grants, these LHDs have an average 420 percent return on investment. Residents of these locales contribute an average of less than $5 per capita annually and receive services totaling more than $2,000 per capita. The LHDs have been very successful at expanding services without using local funds.

Nonetheless, there are critical policy and financial issues that locales must satisfy in the process of establishing these LHDs. Among the most critical are the requirements to identify initial start-up funds, the potential tensions with local municipalities over the jurisdiction of certain service areas, and the need for a catalytic agent to initiate the process. Initial start-up funds have historically been the most critical issue.

The financial analysis of the different LHD models open to rural counties of Pennsylvania demonstrate that the relatively high levels of local funds required to establish LHDs would be a major financial undertaking. The three models analyzed for rural counties would require an average of $16 per capita annually in local funds. The principal reason for this financial reality is that rural counties must cover wide geographic areas and have relatively small populations, which is the primary revenue driver for state funding under Acts 315 and 12. The analysis showed that population, geographic area, and the availability of primary care services drive expenses. Although rural counties do not have very dense populations, they cover broad geographic expanses and suffer from chronic lack of primary care services. This means that LHDs covering rural counties will have to handle a very large geographic area, a critical cost driver especially for environmental services, and will be pressured to provide personal health services in areas that have a limited number of primary care providers. The result is very high expenses, which means that rural areas will have to generate significant local funds to operate LHDs.

This trend varies somewhat among the different models, and those models that are geographically large and have small populations have the highest levels of local contribution while those with smaller geographic areas and larger populations tend to have more viable levels of funding. In the models tested in this research, the tri-county model that included Bradford, Tioga and Wyoming counties needed the most local funds while the models that included the single counties of Monroe and Fulton demonstrated the most viable financial models. In general, the reality is that the existing funding mechanisms in place for local public health are not appropriate for the realities of rural counties in Pennsylvania.

POLICY CONSIDERATIONS

The results reported in this research are important for the Pennsylvania General Assembly, the Pennsylvania Department of Health, and local county governments and community coalitions, such as the State Health Improvement Plan Partners (SHIP)[4]. Below are specific policy considerations for these entities. The assumptions implicit in these considerations is that the possible solutions to problems that create a limited public health infrastructure in rural Pennsylvania are inter-connected and, that the long-term solutions of these problems will involve the development of either new policies or a new way of thinking about the local public health infrastructure. Although the barriers to a robust public health infrastructure are significant, many have a policy basis and may be overcome.

1) The General Assembly may reconsider legislation that would address the viability of all of the models discussed for rural Pennsylvania.

a) Provide additional funds under Act 12. As was demonstrated earlier, most of Pennsylvania's LHDs and all of the models analyzed have significant deficits as a result of their environmental services, which then become part of their Act 315 reimbursable expenses. In many respects, the available Act 12 funding limits the services that counties can offer under Act 315. This additional funding would be critical for rural counties that would have to cover a wider geographic area.

b) Provide additional funds to county health departments to collect baseline health status data, disease data, and other data. Additional funding would allow counties the opportunity to further assess the health status of residents and evaluate the success of any public health improvement effort. Many counties, and especially many rural counties, have never completed a needs assessment. Less than 20 percent of the surveyed rural counties (Cardelle, 2004) had completed a countywide assessment in the previous five years. The lack of an assessment increases the chances for misallocation of limited funds in the initial existence period of an LHD. An assessment would allow new LHDs to target limited funds and make better allocation decisions with regard to categorical grants, user fees and other revenue sources.

c) Provide start-up funds for local health departments. Start-up funds would help lower the financial threshold that local governments must meet in establishing a structure for the first year of an LHD. The greatest barrier faced by local entities is identifying funds for the initial establishment of an LHD before they can begin to draw down state funds or before they can generate revenues from grants and fees. An initial one-time grant to help locales hire the personnel mandated by Act 315 would allow local governments one year to establish the infrastructure that will in turn allow them to generate revenue from other sources.

2) The General Assembly may consider establishing secondary formulas for calculating Act 315 and Act 12 funds for rural counties so that the cost drivers faced by rural counties are taken into account. These formulas would allow LHDs to draw down the additional funds necessary to cover large geographic areas. The formulas could be revised to take into account population density, with an additional allotment for travel expenses as population density decreases. There are many examples of formula grants that take population density into consideration. For example, transportation grants to cities with fewer than 200,000 persons receive a greater subsidy than cities with more than 200,000 persons to offset the lack of local revenue because of low use (U.S. Department of Transportation, 2003). In the area of bioterrorism, homeland security grants have "updated formulas that better take into account threats, population density and the presence of critical infrastructure" (U.S. Department of Homeland Security, 2003). The existing legislation could then create an additional subsidy for countywide LHDs that fall below a specified population.

3) The Pennsylvania Department of Health may consider increasing awareness and knowledge among local government officials about Act 315 and Act 12. Periodic workshops and more active consulting from the department about the availability of funds and the process for establishing LHDs would greatly facilitate the process. It is interesting to note that once LHDs are established, they describe their relationship with the department as being very collaborative and positive. In interviews with local commissioners, council persons, and

[4] SHIP is a statewide health plan that places emphasis on improving the health status of populations by addressing the root or underlying causes of premature disease, death, and disability. The plan calls for engaging with organized community-based health improvement partnerships to coordinate resources and address local health improvement issues and priorities. These partnerships are made up of coalitions of local social service agencies, health providers and other community-based organizations engaging in the delivery of health services (Pennsylvania Department of Health, 2001).

boards of health from counties without LHDs, there is an apparent lack of knowledge about the existence and function of Act 315. Less than 10 percent of those interviewed were aware of how the acts functioned, and less than 40 percent were aware of Act 315.

4) The General Assembly may consider amending certain provisions in Act 315 that would allow local governments to use funds to support existing infrastructures.

a) Most of the counties in the commonwealth have a State Health Improvement Plan Partner (SHIP). A possible model for improving local public health infrastructure in areas that are expansive and lack the critical population levels would be to formalize the link between these partners and local governments. Local public health services could be offered through community-based organizations, but with a central public-sector-based coordinating body. A potential policy option would be a modification to Act 315 that would allow local governments to use Act 315 funds to provide services through community-based organizations and still retain the coordinating and planning responsibility. This would allow for decentralized services and more flexible expense structures.

b) A second policy option that also entails a break from the Act 315 structure would be the creation of decentralized regional offices of the state Department of Health. This option would be in response to the national trend of LHD consolidation. Baker and Koplan (2002), for example, estimate that as a result of a national level consolidation trend, the number of local public health entities across the nation could diminish from 3,000 to an estimated 500 to 1,000 entities. Therefore, under this policy scenario, the option would be to use the existing six regional health offices that now cover an average of 10 counties to cover areas that cannot feasibly be covered by an LHD. However, these regional offices would need to be restructured into a network of sub-regional offices that would cover no more than three to four counties each. This would allow the state offices to have greater access to underserved areas, without the need to create new structures.

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