2013
Chapter 1
The Health Director

The local health director is the chief health policy advisor to the elected officials in a jurisdiction for

- 1. Public health.
- 2. Assessment of Community Health Status
- 3. Access to Medical care.
- 4. Financing of health and medical care

He or she is responsible for short and long-range public health (including medical care) planning) and for defining the department's vision (strategy) to meet public health needs for the community through using three principles or components:

- **Assessment:** [1]
  - Goal and outcome definitions
  - Financial analysis and budget development.
  - Use of primary and secondary prevention.
  - Use of environmental services.
  - Access to medical care.

See Future of Public Health: A 1988 book published by the I.O.M. (Institute of Medicine, a branch of the National Academy of Sciences [NAS] defines the three components of public health. Read the summary, and scan book. Also, look at the 2003 updated version. Also look at the Health United States-2020. Finally review the RWJF The *County Health Rankings* in which allows you to compare data between states and between citizen counties. For example the following data is for the city of Richmond for 2012:

•	Richmond City	Error Margin	National Benchmark*	Virginia	Trend	Rank (of 131)
Health Outcomes						**125**

•	Richmond City	Error Margin	National Benchmark*	Virginia	Trend	Rank (of 131)
Mortality						126
Morbidity						108
Poor or fair health	15%	13-18%	10%	13%		
Poor physical health days	3.4	2.8-4.0	2.6	3.2		
Poor mental health days	3.3	2.6-4.0	2.3	3.2		
Low birthweight	12.4%	11.9-12.8%	6.0%	8.3%		
Health Factors						**125**
Health Behaviors						100

•	Richmond City	Error Margin	National Benchmark*	Virginia	Trend	Rank (of 131)
Adult smoking	21%	17-24%	14%	19%		
Adult obesity	31%	27-36%	25%	28%		
Physical inactivity	28%	24-32%	21%	24%		
Excessive drinking	19%	16-22%	8%	16%		
Motor vehicle crash death rate	12	10-14	12	13		
Sexually transmitted infections	1,100		84	398		
Teen birth rate	62	59-64	22	35		
Clinical Care						56

•	Richmond City	Error Margin	National Benchmark*	Virginia	Trend	Rank (of 131)
Uninsured	18%	16-19%	11%	14%		
Primary care physicians	620:1		631:1	1,053:1		
Preventable hospital stays	53	49-56	49	60		
Diabetic screening	82%	77-87%	89%	84%		
Mammography screening	63%	60-71%	74%	67%		
Social & Economic Factors						128
High school graduation	70%			87%		
Some college	62%	60-65%	68%	65%		

•	Richmond City	Error Margin	National Benchmark*	Virginia	Trend	Rank (of 131)
Unemployment	10.1%		5.4%	6.9%		
Children in poverty	35%	28-42%	13%	15%		
Inadequate social support	24%	20-29%	14%	18%		
Children in single-parent households	64%	61-68%	20%	29%		
Violent crime rate	870		73	252		
Physical Environment						115
Air pollution-particulate matter days	2		0	1		
Air pollution-ozone days	5		0	7		

•	Richmond City	Error Margin	National Benchmark*	Virginia	Trend	Rank (of 131)
Access to recreational facilities	5		16	11		
Limited access to healthy foods	8%		0%	7%		
Fast food restaurants	44%		25%	50%		

- **Policy Recommendations, and**
- **Assurance (accountability and quality control)**

Each of these will be discussed in detail in appropriate essays in this series.

HEALTH DEPARTMENT PROGRAMS

Before examining the responsibilities and training incumbent upon a health director, a description of the scope of the health department in and outside the U.S. provides a base for comparison. The types of programs organized by a local health department depend on the region or country in which they are found. Programs may be unsophisticated if their purpose is simply to ensure that children are immunized, potable water is provided and waste is properly removed, as is typical of many developing countries. In most urban areas of the United States and Western Europe however, local health departments have divisions devoted to administration, technical support, environmental services, nursing, health education, and planning and clinical services. In addition to these typical public health programs, a department may also manage mental health and medical care services, as well as hospitals and nursing homes (Los Angeles & Chicago for example) . Finally, the department may also provide primary medical services to underserved populations. The detailed scope of these programs is discussed in chapters 7 through 9. The British NHS and The Canadian National Health System have spent considerable time and effort planning their programs, and ensuring universal access. The Virginia Department of Health's Website shows program responsibilities similar to those of the majority of the U.S. State Health Departments. In the last 12 months the national Association of city and County health officials has started local health department accreditation programs.

THE DIRECTOR'S RESPONSIBILITY

The local public health director should be able to manage either an unsophisticated health department in a developing country or a large urban health department in a developed

country. Even in industrialized countries there are rural areas where health services are only marginally better than those in many developing countries (far southwest Virginia, rural Kentucky). The health director, the community's health advocate, is responsible for developing grass-roots support for many kinds of health services. Private and public efforts should be blended to meet defined goals and objectives. Every health department needs to develop special-interest support groups, such as local boards of health to promote policies throughout the community. Special emphasis should be placed on educating elected public officials to whom roads, schools, water, and sewage may be the most visible and expensive parts of the public infrastructure.

A health director needs the support of elected officials to develop the department's programs while working with the private health care sector to integrate public health programs into the community's total health care system. Both politicians and the private medical sector need education about their joint responsibility to help plan and manage the manpower, capital, and services that make up the complex health care environment, of which public health is just a part.

DIRECTOR'S TRAINING

Although many public health directors in the United States are physicians, some communities choose health care administrators or other public health professionals (nurses and health educators) as directors, especially since both trained/certified public health and primary-care physicians are in short supply. Public health physicians often begin their careers in a primary care clinical setting, then become assistant health directors in large departments, or enter preventive medicine residencies. Medical schools that have public health and preventive medicine residents ensure their residents develop their clinical and epidemiologic skills.

It is advantageous for a preventive medicine specialist to be being trained as a generalist first. Having several years' practice, as a generalist, enhances understanding of how the skills of population medicine mesh with the skills needed for clinical care of individuals. This improved communication with physicians in private practice allows the public health physician to demonstrate an understanding of clinician’s problems. The clinical skills of the primary care physician, particularly experience in treating chronic diseases (currently an increasing epidemic in the USA) related to behavior, are valuable when talking to other physicians. By contrast, public health residents trained immediately after completing their MD rarely encounter the clinical or private practice problems seen in primary care medicine. Since 1990 it has became more common to find physicians who have completed a residency in primary care, followed by primary care practice and then a residency in preventive medicine. Additionally, more of these physicians are supplementing their medical training with degrees in law and/or public administration. Nevertheless, only a minority of local health directors have such training. In small communities with limited populations (less than 75,000 people), Nurses may serve well as local health directors, as they, like physicians, can speak from a biological understanding with community physicians.

The health director who comes from a background other than medicine (particularly health administration) will find it advantageous to have spent time in a clinical setting, to be able to relate to issues of access and cost of health services as well as understanding how population based services can improve health status.

Just as training requirements have increased in other fields, they are expanding in public health. The residency in preventive medicine requires a minimum of a year in a ‘transitional’ internship followed by a master's degree in public health including specialized training in public health program administration; environmental health, biostatistics, and epidemiology (see the requirements of the Residency Review Committee (RRC) of the Accreditation Council for Graduate Medical Education (ACGME). This is usually a 10 to 12-month course for a physician, followed by a year of practical training to ensure that the skills taught in the Masters of Public Health course (MPH course) are demonstrated in practice. Further emphasis has been placed

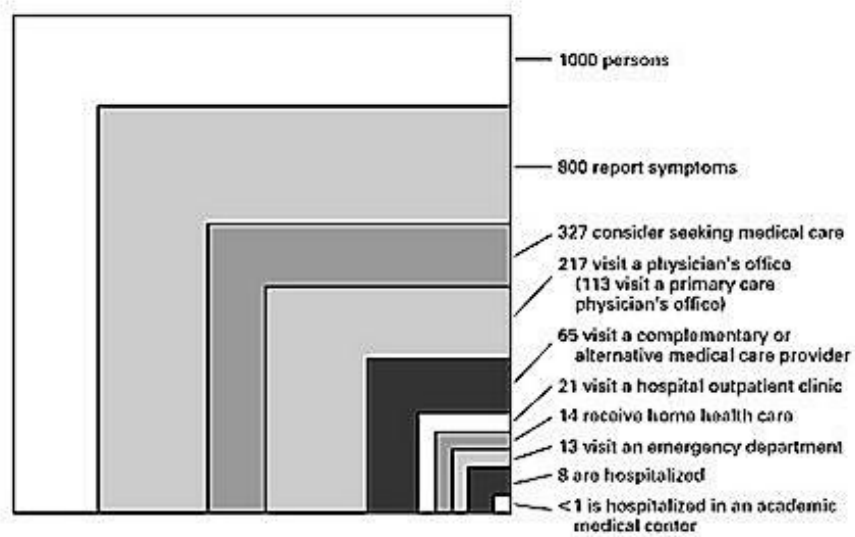
on such training by the 2007 report of the Institute of Medicine (IOM). For non-physicians the MPH program is likely to last 2 years. Skills needed by public health practitioners have also multiplied. Increasingly training includes courses in genetics, toxicology, mutagenicity, teratogenicity, hydrology, waste management, maternal health, behavioral science, information systems and hazard assessment. Comprehensive curricula that include these topics are being developed in schools of public health and medicine throughout the United States. Deficiencies seen in the application of clinical preventive interventions, seen among physicians completing primary care residencies, or direct from private practice, show that the curricula in both medical and public health schools need updating. MPH courses are accredited but the Council on Education for Public Health (CEPH.) In the future more health directors will come from people with backgrounds in health administration, nursing, behavioral science and environmental health as the focus of public health shifts from prevention of infections to control of chronic diseases. In 2008 a certification in Public Health became available for the first time for Non-MDs, or MDs without residency training, to attest to their competence in basic public health skills. This is offered by the National Board of Public Health Examiners. Concurrently the National Association of City & County Health directors, and others, are developing certification standards for local health department agencies.

THE DIRECTOR'S SUPERVISOR

Usually, though not always, a health director has two or more masters. Many local health departments serve multiple jurisdictions, including combinations of cities, towns, and counties in which there may be disagreement among the elected officials about priorities for funding and service. The health director may report to a non-physician city manager and a county executive. In some states, they report to a state health commissioner as well, through a regional public health system. Only health directors in the larger counties and cities report to a single supervisor.

COMMUNITY HEALTH CARE PROBLEMS AND MEDICAL CURRICULUM

In 1961, Kerr White[3] described the medical problems likely to affect a random sample of 1,000 Americans in any month. Of particular interest, was the finding that for each sample of 1,000 adults that had an episode of illness, consulted a physician, were hospitalized, and needed consultation, only one needed referral to a tertiary care center.



This study was updated in mid-2001 with similar findings, as shown above. Unfortunately, medical school curricula are still based on treating the one in 1000 referred to the medical

school (although this is starting to change), not the other 999. In the 1960s and 1970s, Maurice Wood, in the department of family medicine at the Medical College of Virginia analyzed the types of medical problems occurring in primary care and confirmed Kerr White's original studies. Additionally, data from the 1978 National Ambulatory Care Survey (NAMCS) showed that of over 760 conditions reported by primary care physicians, were responsible for the problems seen in their practice, and 155 were responsible for 95% (CMGB at Eastern Virginia Medical School –1978 -1980). More recent studies from the NAMCS surveys confirm that primary care content has not changed. Ten conditions, of which pregnancy and heart problems are the most common, lead to the majority of all admissions to all hospitals, not just community hospitals. As medical schools become more attuned to the market need for care seen by their graduates, as opposed to the conditions about which tertiary-care specialists (the majority of clinical teachers in medical schools) teach, many are changing their curricula to one closer to that taught in most other developed countries. Medical schools in other countries focus on producing generalists who provide the majority of care. This change has been stimulated in the US by a Robert Wood Johnson Foundation program, The "Generalist Initiative." But unfortunately most medical schools have only given lip service to the project. The new Affordable Care Act contained within this multiple provisions some that planned for a greater proportion of primary care physicians although funding to enhance such programs in medical schools remains missing.

PHYSICIAN OR NON-PHYSICIAN DIRECTOR?

Because most physicians lack administrative skills, particularly in budgeting, accountability and financial management, some states and local communities select non-physicians as health directors. They may be trained as health care and nursing administrators in schools of health administration, hospital administration, or even public administration. The ideal background is a combination of patient care and organizational management skills. The master's degree in public health alone does not adequately prepare either a physician or non-physician for administrative duties. It deals mainly with technical public health issues. Training for health care administration is very limited in schools of public health, despite the existence of departments of health administration in many of these institutions. It teaches administration of 'normal' programs in such fields as maternal and child health, infectious diseases, and environmental medicine. For public administration skills, one needs a degree in public administration at a school of business or health care administration. Physicians and nurses in the military services who specialize in preventive medicine and public health have a number of educational opportunities available in general and medical administration (school of hospital administration, command and general staff college, the industrial college, and the three services' War Colleges). These courses are also available, at no charge, to military reservists They offer preparation in health care administration in the public health sector as well as the military. With the recent military interest in civilian support programs these skills are needed more than ever.

NON-MEDICAL SKILLS NEEDED

Public health directors need skills in negotiation, leadership, persuasion, clarity in written and verbal communication, technology and data collection and management, and effective public presentations of issues. They must develop interpersonal skills that promote open discussion of complex and often highly volatile issues. Expertise in financial analysis is essential to explain budget priorities to the agencies that fund local health department programs. The ability to use a computer and communicate electronically is essential today. Personnel evaluation skills are necessary to find and retain high-quality staff. Leadership is a skill that may be taught in Medical schools In the past they taught physicians to work in the individual entrepreneurial environment, but are starting to teach team practice where the physician is a leader rather than the whole team. Past experience with physicians, unable to adjust to working as a team member, has been another reason many communities choose non-physicians as health directors.

LEADERSHIP

Leadership ability lends credibility to both the individual and to the department he or she represents. It involves a willingness to listen to others' views, to not take sides until all issues and their ramifications have been presented. It also involves a willingness to take advice from many sources, to be a team member, and to allow others to lead the team when necessary. It is important for directors to accept all individuals based on performance, without regard to sex, race, age, or religion. Leaders have attitudes that encourage people to work with the health department. If the directors are physicians, they don't allow their professional accomplishments to deter people educated in other disciplines from presenting their own views as community leaders. Leaders also develop many advisory groups, including both professionals and consumers, to work with the health department.

CREDIBILITY

As a public health specialist (lay or medical), you have the opportunity to improve the health of thousands of people. Your ability to make such impact depends largely on your personal credibility. A health director is in the public eye all the time. Consequently, to move programs forward, you must be perceived as a caring, innovative, resourceful leader.

CONSULTANTS

Non-physician health directors need consultants to advise them when biological issues must be resolved. These consultants may include practicing physicians from local medical institutions and from schools of medicine, dentistry, and allied health sciences; nurses, pharmacists, hospital and nursing home administrators. Executive staffs of the health care associations may also serve as consultants. Without this backup, it is difficult for non-physician health directors to speak credibly about medical issues such as infant deaths, premature births, immunization standards, primary care, environmental health, toxicology, health hazard appraisal, and genetics.

READINGS:

1. Future of Public Health IOM – 1988 p7-8
2. Essentials of Public Health, Turnock 2nd edition
3. K. L. White: "The Epidemiology of Medical Care," N. Engl. J. Med. 263: 885-892, 1961

REFERENCES:

1. Reigelman R K: Studying a Study and Testing a Test (Boston: Little, Brown), 1981.
2. Swinscow T D V, ed: Statistics at Square One (London: British Medical Association), 1978.
3. Buttery C.M.G: The Health Directors Handbook. Oxford University Press. New York, 1990
4. Introduction to Public Health, 4th Edn - Schneider, MJ. 2013
5. Essentials of Public Health Management. Fallon LF & Zgodzinski EJ, 2nd Ed: 2008;
6. Governing by Network. 2004, Goldsmith & Eggers
7. The Future of Public Health in the 21st Century (Washington DC, IOM, 2003)

2013

Chapter 2

ORGANIZATION AND

ADMINISTRATION

The effectiveness and efficiency of any health department depends on the type and number of programs, staff size, and the department's relationship with any other parts of the organization. Administration of the department requires both careful analysis of physical and human resources and a proper meld of individual skills and management techniques to carry out its mission. This is illustrated by comparing a state and local health department (see Figs. 2-1 to 2-5), as in the Virginia Department of Health, which serves as our model. However, the management principles, and the relationships among local and state health officials, are similar elsewhere. All state level agencies in other states will have similar sets of responsibilities to those discussed in this model agency.

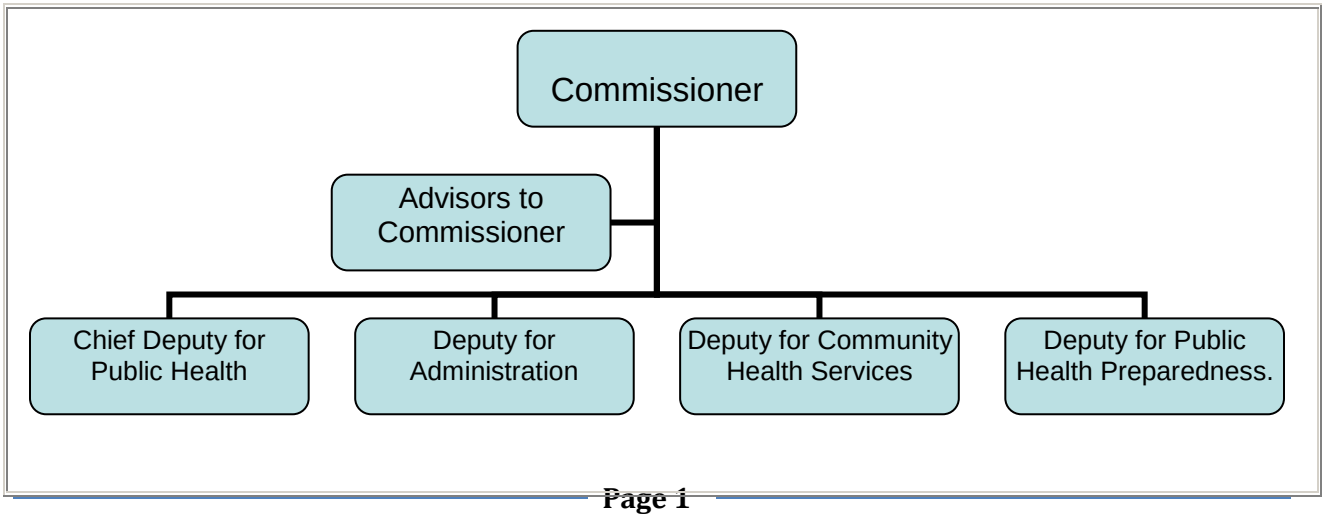
DEVELOPING ORGANIZATIONAL RELATIONSHIPS

When developing a health department's organizational structure, it is ideal to group similar activities together, such as environmental services, prevention programs, medical care, administration and support, and regulatory programs. It is sound management practice to give supervisors a reasonable span of control. A good rule of thumb is five to seven individuals per supervisor. This link demonstrates the variety of programs found in state health agencies.

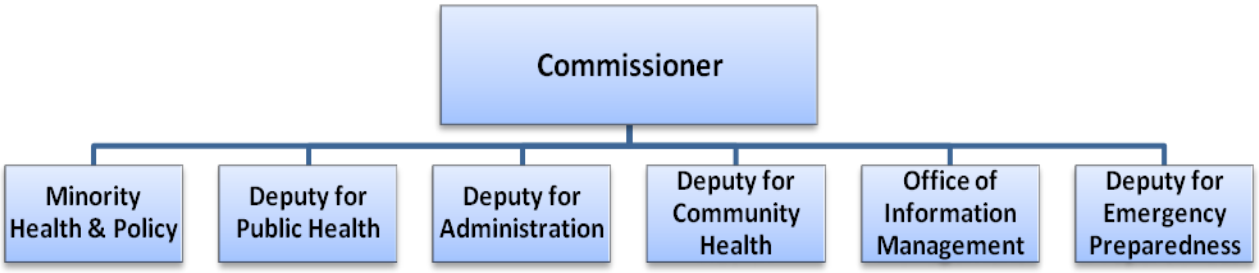
THE STATE HEALTH DEPARTMENT

In a state health department, illustrated in Figure 2-1, the commissioner of health usually has several senior managers such as Administration, Public Health Practice, Community Services Programs, and Emergency Preparedness. The commission will also have a number of advisors in specific areas for not wind administrators as other deputies but whose job is to provide expertise in such areas as internal audit, Information Systems, and Regulatory Affairs. This gives the commissioner a span of control of six to eight people. Everyone, other than the commission's advisors, in the organization reports to one of the first line managers. Such an organizational approach is imperative in any large organization. Although lines of authority from the health director to field staff lead directly from top to bottom, the department's operation is best managed by teams that cut across these lines. While these diagrams for Virginia are typical of many states, the organization changes as often as yearly or only a when a new governor takes office.

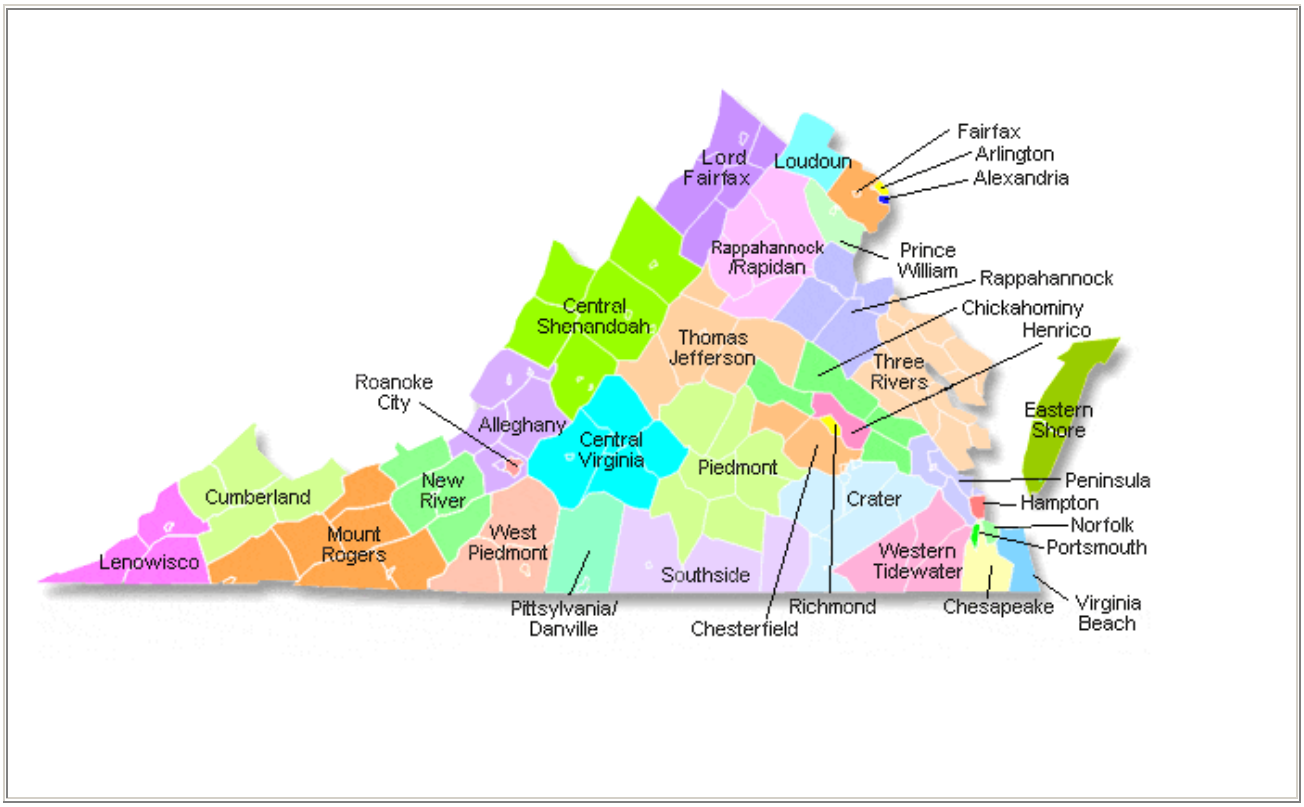
2.1-A Virginia Department of Health January 2011



2.1-B Organization on January 2011



COMMUNITY HEALTH SERVICES 2.2 - Health Districts in Virginia



The line manager for field operations, the Deputy Commissioner for community health services, has a span of control of 35 people, the health directors who manage the local health districts. Each district in Virginia contains a minimum of 100,000 people. The division of the state's 91 counties and 45 cities are combined into health regions and districts is shown in Figure 2-2. In addition to the district directors, the deputy supervises three technical groups that deliver most health department services to the community: the chief nurse who coordinates nursing issues for the deputy commissioner and is responsible for long-range planning and recommendations on nursing needs within the state, the director of environmental health is responsible for home-site sewage systems in a district, as well as food

programs and milk standards by supervising environmental specialists, and finally. The health districts in Virginia have between 100,000 people and 700,000+ residents. The districts may be a single county or a multicounty/city collaborative. Other states may organize local districts differently.

Through these senior staff, the deputy commissioner for community services is responsible for hiring and firing staff, management of the district budgets, and planning for statewide services. This individual coordinates delivery of services by the field staff according to program standards developed by, the deputy commissioner for health care services. This official also develops the technical standards for local district budget preparation and analysis, procurement, and compliance with personnel standards with a third deputy (administrative services.)

With the 2011 reorganization the chief deputy for public health is responsible for statewide technical personal health services such as family planning, maternal health, infant and well child care, as well as statewide technical problems such as epidemiology and surveillance, toxicology, health education, genetics programs, developmental disability services, and nutrition programs. These services fall into the three major areas of health programs, each of which has its own manager. Further, this depth is also responsible for certain statewide standards of environmental health services which include municipal water and sewage systems and an office of minority health services and health equity.

The administrative manager is responsible for the infrastructure services of hiring, equipment purchase, accounting and internal control and information services which over the last few years with federal leadership has developed into a major program linking federal state and local health agencies together and developing record systems for individuals served in the community health services programs.

Since the world trade buildings disaster they deputy for public health preparedness has become responsible for all facets of emergency preparedness that have a health nature whether environmental disasters or disaster such as plane and train wrecks or environmental hazards from hurricanes.

Each manager is responsible for supervision of federal funds, which have different standards of accountability for the state funds with which they have to be matched; therefore, these managers must have fiscal and budgeting skills. Program managers are also responsible for developing statewide performance standards that local directors can use to evaluate and modify services.

TEAM DEVELOPMENT

Many program managers, who deal with technical services, rather than coming face-to-face with the clientele served, make arbitrary decisions that could hamper delivery of health care in the community. To reduce this tendency, it is best to form task forces, or teams, to set standards and performance goals. The teams should consist of technical experts within the central program office, experts from the field and regional office, field staff who deliver the services to clients/patients, and, when appropriate, academic and community representatives.

For example, a team developing standards of performance in perinatal clinics could be made up of staff nurses, nurse midwives, obstetricians, administrators, clerical staff, and directors from local health departments, regional maternal and child health nurses and directors, and prenatal staff including nurse specialists, records administrators, and fiscal managers from the central program staff. It may be necessary to have more than one team for complex programs supported by a coordinating team headed by the appropriate deputy commissioner. It is often useful to have representatives from other agencies. When working with children, one should select representatives from school and mental health systems and advocacy groups. If working in food service, it is best to invite representatives from both the department of agriculture and from the wholesale and retail food service industries. The use of special teams permits a thorough discussion and evaluation of most issues affecting the funding agents, the service providers, and the clients receiving the service. It is also advisable to have public hearings to allow special interest groups to make their points.

All decisions reached by the deputy for health care services should then be brought before the commissioner's other line managers for discussion to guarantee that all ramifications have been studied and that the impact on the management area of each deputy has been approved.

Additionally, an internal auditor needs to be able to certify to the commissioner that there will be an acceptable audit trail. The legislative liaison must be assured that interests of various legislators (particularly those who wrote enabling or appropriating legislation) have been reviewed before final decisions are made. This deputy is also responsible for chairing a number of advisory boards, which help develop statewide policy and provide advocacy when needed. These include advisory groups on radiation, toxicology, perinatal services, and AIDS.

ADMINISTRATIVE AND REGULATORY SERVICES

The deputy commissioner for administration in the state agency reviewed here has responsibility for fiscal accountability. This deputy is the individual who certifies to the state department of accounts that the fiscal balance is positive and will remain so. (Virginia, like most states, is not allowed deficit budgets.) The deputy for administration has three major program area managers: one for fiscal services, one for personnel services, and one for regulatory and planning services. Special technical staffs with direct access to this deputy include the director of data processing (sometimes called "information services") and a specialist in organizational development. This deputy also has an executive secretary and is responsible for health planning advisory boards. The deputy for administration is a key contact for city and county managers, who usually have similar fiscal and planning backgrounds. Budgeting, fiscal analysis, and planning will be discussed in a separate chapter.

THE MEDICAL EXAMINER

The chief medical examiner is a manager who reports to the state health commissioner in many states. This ensures medical supervision in states where, by law, the commissioner must be a physician and provides resistance against political pressure to make this program a law enforcement activity. The medical examiner is responsible for certifying cause of death under certain circumstances such as homicides, suicides, and accidents, as well as in individuals dying without a medical attendant. The medical examiner often works outside the public health system. In Virginia, there are four regional offices that work with community physicians who make the initial determination of cause of death. Only when the cause is not certifiable by the local medical examiner does the chief medical examiner become involved.

THE INTERNAL AUDITOR

In Virginia and many other states, an internal auditor reports directly to agency heads. They certify that programs are run effectively and efficiently, or else make recommendations for improvement. The internal auditor is reviewed by a state auditor, who reports to the governor. There is also an auditor of public accounts, who reviews state agencies for compliance with state and federal law. The department's internal auditor reviews all programs in the department on a (five-year) cycle. Field operations are reviewed mainly for fiscal accountability to ensure that proper expenditures are made, correct control documents are completed, and safeguards against fraud are in place. In the central office, similar fiscal audits are made. The internal auditor is responsible for reviewing the programs funded by the legislature to ensure that department managers spend funds effectively and efficiently. Such audits are based on sample documents from programs and provide senior managers, including the commissioner and the deputy commissioners, with additional checks of program performance.

LEGISLATIVE LIAISON

A legislative liaison [advisor to the commissioner] advises the commissioner and senior staff about inquiries from any elected official. The liaison also coordinates staff appearances at legislative committee meetings or attends these meetings personally. This individual coordinates agency activities with the legislative staff of the budget, appropriations, and health committees of the legislature. He or she

disseminates all rules and regulations adopted under the state's administrative process act. The liaison is a point of contact for members of the state board of health when the commissioner is not available.

THE DIRECTOR'S SECRETARY

an important person in the commissioner's span of control is the executive secretary, who completes all the commissioner's letters, reviews all mail addressed to the commissioner, checks all documents signed by the commissioner for correct grammar and spelling, ensures proper protocol for forms of address, and keeps the commissioner's schedule of appointments.

STATE COMMISSIONERS AND GOVERNORS

The governor's office in Virginia, rather than having over 100+ large and small agencies report directly, a patent impossibility, has a cabinet with secretaries (Fig. 2-3). One of these is The Secretary for Health and Human Resources [currently Dr. Bill Hazel], to whom 16 agencies report. Several agencies are large, such as health, mental health, social services, medical assistance services (Medicaid), and rehabilitative services. Smaller advocacy agencies, such as rights for the disabled or an office on aging, also report to the secretary. Only those decisions that require the governor's approval go to the governor. This arrangement ensures that agencies with interests in health coordinate their efforts before seeking the governor's attention. In some states, the health commissioner reports directly to the governor, in competition with a myriad of health and non-health agencies.

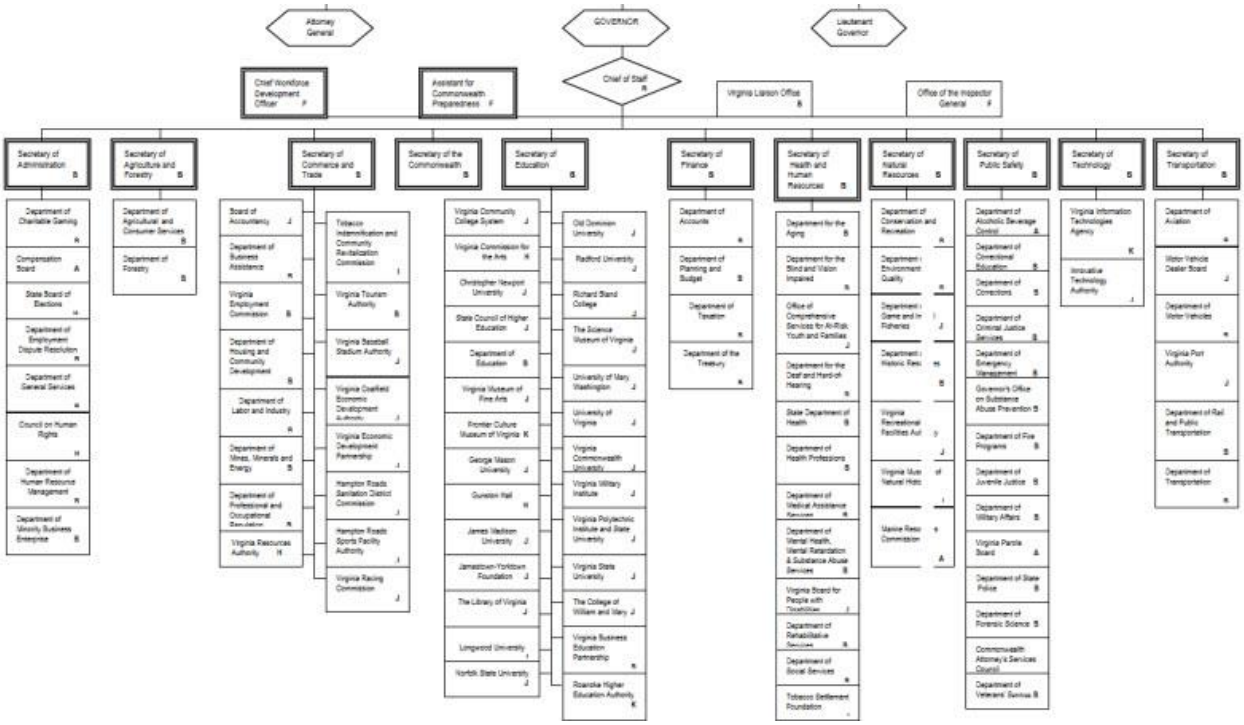


FIGURE 2.3

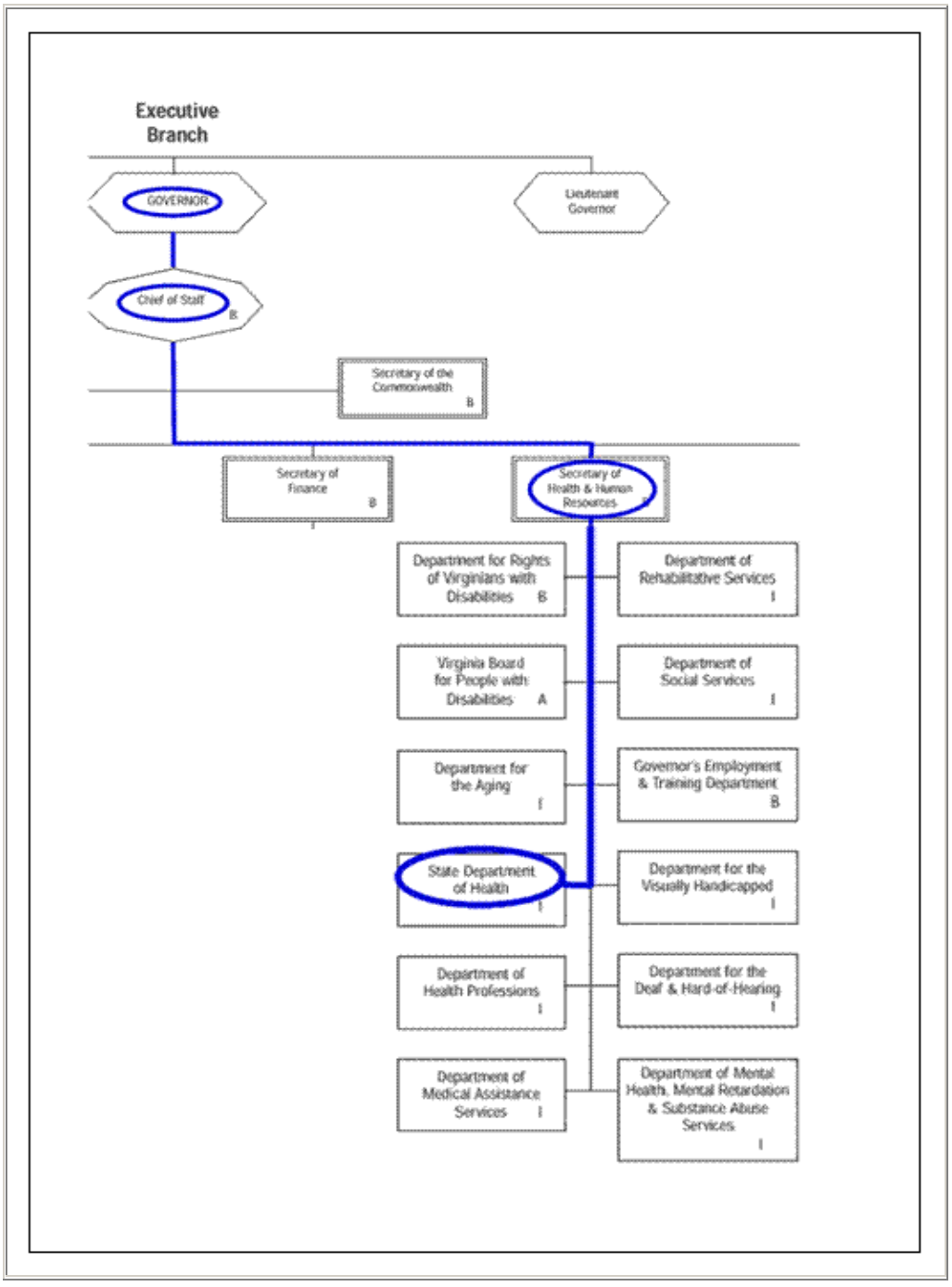
SPANS OF CONTROL

The commissioner's span of control is very similar to that of a local health director as shown in Figure 2-5. The main difference is that there are fewer staff members, and fewer and less complex programs, at the local level (except for the 10 to 12 largest cities in the country e.g. New York, Los Angeles). Organizationally, local health departments have programs and chains of command that are similar to those at the state level. Technical supervision of staff, however, is usually performed by state or regional program directors.

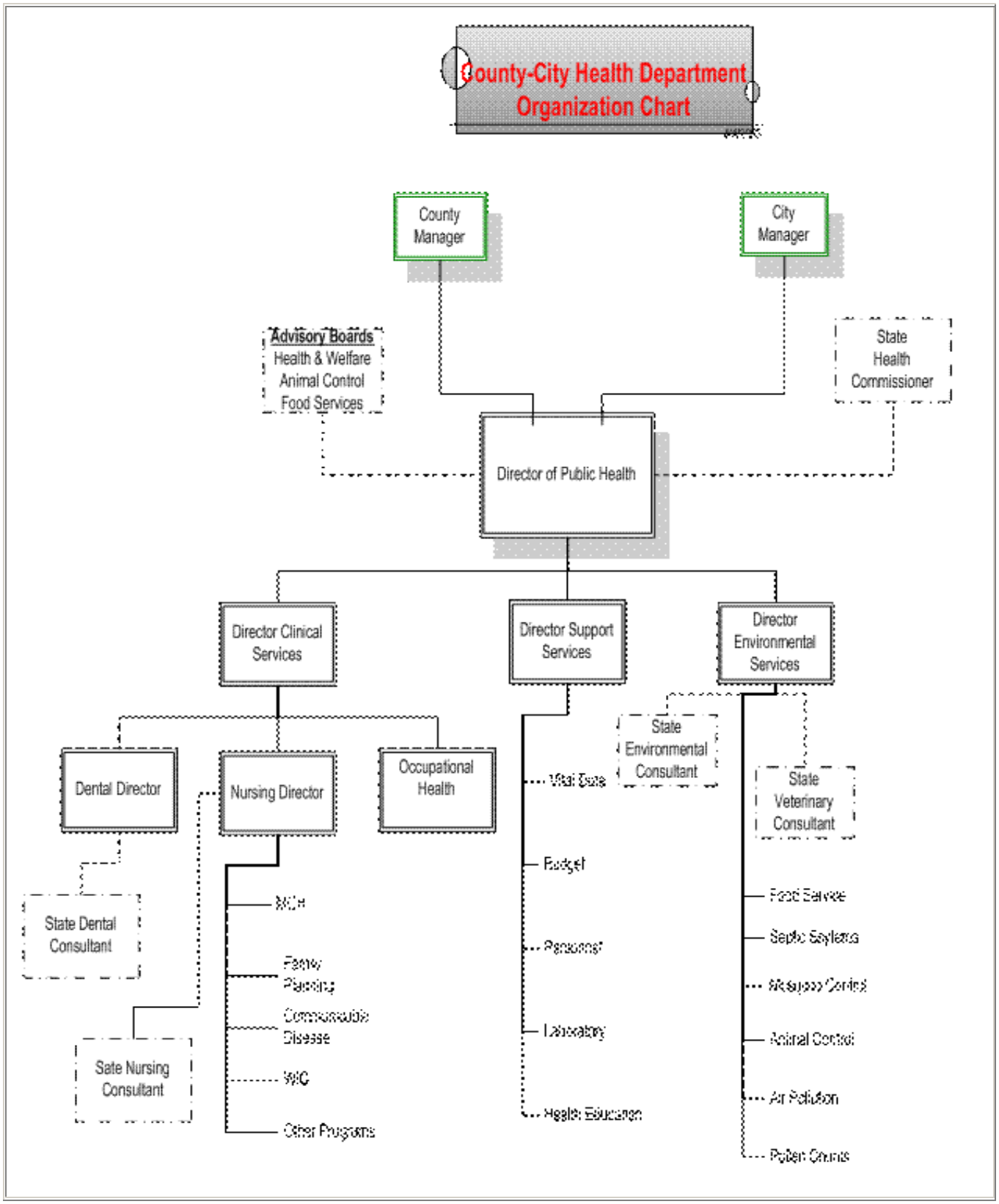
THE FORMAL CHAIN OF COMMUNICATION

Communication between the vertical and horizontal layers of the healthcare hierarchy is very important. All state directives should be channeled through the appropriate commissioner's deputies and through the regional and local health directors who have the fiscal and administrative responsibility for delivering services. Failure to do so often results in confusion at the local level. This confusion may occur because technical staffs don't know all the budgetary, fiscal, and operational issues that have to be coordinated to develop statewide policy. This does not mean that technical issues not requiring operational or administrative changes cannot be discussed between peers at different levels of the organization

2.4 Chain of Command from Governor (Virginia) to State Health Commissioner through Secretary of HHS



THE LOCAL HEALTH DEPARTMENT Fig 2.5



The local health department's structure (Fig. 2-5) illustrates the division of responsibility. Managers of some programs, such as health education, may report directly to the local director, rather than through

the local department's administrator, although the health educator operates more as a departmental support service to the other functional programs. A local laboratory director is also likely to report directly to the director when seeking technical support and direction. It is in fact a mini version of the State Health Department in Virginia and a few other states that are similarly organized.

Many local departments have a set of clinical programs, although they may be prevention oriented rather than therapeutic. These include prenatal care, infant and well child care, growth and development programs, immunization, dental care, and infectious and chronic disease surveillance (Fig. *2-5).* Larger or more sophisticated departments may also have an occupational health program concerned with local government employees' health while on the job. The director of the occupational health program usually reports directly to the health director. In large cities with indigent populations and in some rural areas as well, the local health department may be directly responsible for primary medical care and school health services. Some local health departments are also responsible for mental health services. Because of changes in federal law, mental health services in most localities are administered outside the public health system, although there is often close coordination at the community level. Many "mental health" services are more like social services; they are aimed at the behavioral function of individuals and families rather than the treatment of disease. Health departments that are responsible for these programs may do well to develop a network of mental health-social support services or provide support to social and family service agencies. The failure to set clear objectives in this field has led to much redundancy and inefficiency.

A very few localities around the country, such as Arlington County in Northern Virginia, have eliminated barriers between humans service agencies and meld them tougher into a single human services agency (look at the executive summary) and have a single data system which enhances services to households and reduces paperwork and bureaucracy,

In addition to clinical services, all health departments have an environmental section. In many local departments, the focus of this section is individual sewage-disposal systems and restaurants. In other departments, the environmental section has an animal control program to prevent injury and disease from animal bites and to deter spread of zoonoses for which pets can become reservoirs, such as salmonella, Lyme disease, typhus, and plague. The environmental section may also have a mosquito-control program to prevent spread of diseases such as malaria, dengue, yellow fever, and encephalitis, particularly in the southern and western United States.

An increasing interest in waste disposal is making the employment of toxicologists, engineers, and chemists more common in larger local as well as state health departments. These professionals help the local departments advise their communities on imminent health hazards to humans from ground, water, and air pollution, as well as toxic spills. Although state agencies usually play a large role in environmental assessment, the increasing complexity of federal programs and lawsuits by environmental activists require localities to have such technical expertise available. This expertise should be given to local health departments, where the combination of environmental specialists and physicians trained in epidemiology is most effective.

NEED VS. DEMAND

As public health becomes more complex, it is important that local administration be both effective and efficient. There are always more health needs in a community than there are resources to deal with them. This is true for single agencies such as health departments, groupings of agencies such as human resource groups, and entire local governments. This unmet demand exerts pressure on clinical and environmental programs. Current concerns about sewage and toxic-waste disposal have made both siting and soil evaluation more complicated. Many local health departments find themselves cutting back on other environmental services, such as food protection (a political decision rather than a health policy one.)

LOCAL SPANS OF CONTROL

It is a director's responsibility to develop goals, objectives, and standards. Setting goals and objectives is discussed in Chapters 3 and 6. Setting standards is essential to good administration and deserves attention here. Among a health department's standards are those that cover staffing patterns. Neither a health director nor a supervisor should have more than seven to eight people reporting directly to that person. Unfortunately, management principles are often taught in a vacuum within government. Elected officials are more likely to approve additional field workers than supervisory staff. It takes as much skill to supervise a nursing aide or a clerk as it does to supervise a nurse, environmentalist, or physician. Supervisors must know the breadth, depth, and frequency of their staff's activities and be conversant with their level of performance. They ensure that knowledge and skills are kept current by repetition, supervision, and education. They also ensure the accuracy and effectiveness of the work done by staff. There is nothing more important to good supervision than periodic review of individual performance.

DUTIES OF SUPERVISORS

One of the most important duties of supervisors is to maintain staff moral, and ensure that staff members are satisfied with their work, and select those who will benefit from additional training and can be expected to rise to management levels. Supervisors need to have enough experience to know that staff members have enough work to keep them busy but not so much that they have to work overtime. Work should be sufficiently complex to challenge each person's performance. The ideal employment pattern is that no job is done by someone trained for a higher level of work. Nurses should not do practical nursing work, practical nurses should not perform clerical work, and clerical staff should not perform housekeeping tasks. Each person, ideally, should have to work at maximum skill levels to perform his or her job effectively.

CARING AND TIME MANAGEMENT

Current federal and state labor laws prohibit unpaid overtime. Few departments can afford to pay overtime. It is no longer acceptable to allow staff to work overtime because there are "people out there who need to be seen!" Many nurses say that they don't mind working additional hours if people need their services. However, they expect to be given advanced merit raises because they work overtime, or because they often work "for free." Eventually the nurses will become dissatisfied with their work or their supervisor. Then they look for a way to express their dissatisfaction, frequently by asking how they are going to be reimbursed for the extra hours they put in at no pay. This may lead to morale problems. It is the supervisor's job to provide guidance so staff does not work overtime, without compensation, and become burned out.

MERIT SYSTEMS

The goal of a merit system is to assure that all employees are compensated equitably. Most merit systems require the managers to study prevailing pay rates for similar job classifications. Then an appropriate pay scale is developed that will not deter people from seeking work and won't be excessively costly to the taxpayer. Thus, merit system pay scales in government are not as good as in private industry. They usually lag one to two years behind. There is no requirement that merit system pay scales be equal to any similar pay scale in the private sector, only that they be competitive. The test of a pay scale's adequacy is the number of available positions in that system compared with the number for similar positions in other government agencies or in private industry. The individual payment steps, pay range, and benefits should be similar. Managers must counteract staff perceptions that government is required to pay at the top rates of competing organizations.

FRINGE BENEFITS AND PAY

It is also important to look at non-monetary compensation such as paid life insurance, retirement policies, health benefits, and vacation days. Staff members usually look only at net pay. They frequently forget that fringe benefits differ among different organizations. One problem with government merit systems is

that they pay the average of similar jobs located in different parts of the state. This may benefit employees in depressed areas but hurt those in high-income, low-unemployment areas. Step increases, based on annual evaluations and separate from cost-of-living increases, are also important to prevent excessive vacancy rates and keep staff satisfied with their overall benefits package. Through a combination of longevity pay, increased-skill pay, and bonus pay for above-average performance, some communities and many private firms provide increasing benefits over 20 to 30 years. Many communities and states allow staff members to reach their maximum pay level in 8 to 10 years. This is unfortunate, because it puts civil servants on the shelf after 10 years. There is no incentive to keep working productively, only to work enough to protect one's pension. The way to get around this limitation is to change the pay package every few years and grant pay increases even to those staff members who have been with the organization a long time.

PLANNING STAFF UTILIZATION

In addition to personnel benefits, there are benefits in good supervision, constructive criticism, team building, and opportunities to improve skills and advance in status. These are some of the most important tasks of supervisors. Staff needs to be assigned jobs that allow them to demonstrate their skills that allow them to feel they help both the agency and their clients/patients. They need to know their assignments far enough ahead to plan for them. Assignments should take into account the members of the team who will be away on vacation or training so that clinics or inspection programs will have enough staff to carry out the essential elements of the job. Failure to schedule staff properly reduces supervisory effectiveness. Staff members feel the supervisor doesn't care about either the clients or the staff. In clinical programs, where local physicians and physician extenders often provide part-time service to the department, it is easy for these individuals to lose their interest in the clinic if, having taken time from a busy office practice, they must sit around while clerical chores are performed.

THE ANNUAL EVALUATION

Personnel systems all require annual employee evaluations. Many supervisors look on these annual evaluations as dreaded tasks. If this occurs, it is because the supervisor has not learned how to perform evaluations in a constructive way. Few of us are so lucky that all our employees are self-motivated high performers who never need direction.

The basis for evaluation is a clear description of the tasks expected, the skill level for the task, and the level of individual judgment allowed. Such elements should form the basis of a signed agreement between workers and supervisors. An example of a performance contract between a director and an administrator is shown in Figure 2-6. Such a contract should spell out not only what the supervisor expects of staff, but also what the supervisor will do to facilitate the staff's work. The contract should be developed within the employee's first 30 days of employment. It should be discussed in detail at the start, and then reviewed at least semiannually so that the super-visor can offer suggestions.

THE TWO-WAY CONTRACT

A performance contract requires the supervisor to define technical skills, knowledge, interpersonal behavior and the expectations for future development of staff. If well done, written annual evaluations justify promotion, or supplementary pay awards. Both the supervisor and employee will know before the formal meeting how the other has been performing. Behavior resulting in dismissal should be a rare event if periodic evaluations and constructive direction are performed fairly. If necessary, the periodic evaluations build a case for dismissal. When dismissal is necessary, it should be done in the probationary period, if possible. It is rare that people who are failing during probation turn out well later. Employee grievances referred to federal EEO programs are frequently the result of failing to discharge an ineffective employee during the probationary period. Good periodic evaluation will define any changes in interpersonal behavior that may be needed for effective work.

When poor work is seen in previously good performers, it is usually an indication of events occurring outside the work place, such as marital discord, alcoholism, or drug dependence. Employee assistance (EA) counseling programs help these employees get back on track. These programs are most helpful

when the supervisor presents them as coping mechanisms, rather than challenging the employee. The supervisor should simply specify which behavior deviates from the contract, and then recommend a particular counseling program. This approach avoids charges of favoritism or preferential treatment.

HORIZONTAL MANAGEMENT OR USE OF TEAMS

A management tool used with increasing frequency in government is *team development.* Team-based management is very different from management based on a hierarchical chain of command. It involves a group of people working together to achieve common goals using the skills of each member. Although the best examples of this approach are in heavy industry, it can work just as well in health departments. Most health department staff members are technically oriented, have special skills, and have good one-on-one interpersonal skills. With appropriate goals (delivery of prenatal care, installation of a septic tank, or treating an epidemic, for example), and the willingness to adapt procedures to meet these goals, a team is usually more successful than a single individual. Use of teams requires flexibility and sharing of responsibility among the members. Good administrators realize that they must be facilitators, letting staff members make most of the decisions. The supervisor may provide individual evaluations of performance but does not necessarily have to be a team leader on every project. Supervisors should help with scheduling, obtain resources for the team, and keep senior management advised of progress. Demonstrations of power do not get results.

PROGRAM EVALUATION

Administration of programs requires a different type of evaluation. At the federal or state level, this evaluation is very formal. Auditors trained in "systems review" are used, objectives are clarified, and audit trails are developed. Because most local health departments are tax-supported, with some money from third-party insurance programs (and in some cases fees for environmental services), citizens want to see their tax money used effectively and efficiently. They are usually more concerned about effectiveness:

Does it have the intended result? Without effectiveness, there is no point being concerned about efficiency. Past failures by the federal government to account for expenditure or monitor, performance has forced state and local agencies to prove they are not thieves!

The end of an audit trail is usually a clinical chart or an environmental inspection. Such a trail may start with a federal grant to a family planning program. The program then signs a contract for services with a local department and approves a document to transfer funds. Time and names of staff working in a family planning clinic are recorded and certified by supervisors. Money from the department's grant is used to reimburse the personnel office for staff time spent in the family planning clinic. Except for food service programs, there are few federal standards for either environmental or clinical outcomes. Most audits, unfortunately, emphasize process rather than outcome. There is an assumption that good records indicate good outcome. This is not true, but, because of failure to develop good outcome data, auditors are often left with nothing to review but a process

From: Director of Health

To: Health Department Administrator

Budget Management.

Review the total agency budget and that of your management area monthly. Whenever you are concerned about potential overspending, consult with me immediately. Where you see possible under-spending, consult with the management team at its next meeting. I expect our data system and the city's to be able to provide similar status reports. Continue to oversee development of a system which ensures that deputies and office managers receive timely accurate data on the Status of their budgets - at least monthly.

Take the lead in preparing the annual budget analysis and fiscal summary for the Board of Health, City Council and appropriate committees. Consult with other managers; prepare data for director and present financial data as requested.

Plan an aggressive anneal budget for your management area. Coordinate the department's budget presentation process. Develop and supervise a process for timely review, analysis and submission of the annual budget. Recommend potential savings and operations that are more efficient to division directors. Make clear presentations to the city manager and budget director. Underscore the effect of failure to fund your request to carrying out state law and city codes. Provide executive oversight & guide development of a comprehensive financial management system for the health and social service departments.

Data Processing,

Review progress toward the DP 6-yr plan with me, at least each 6 months. Review the management team's progress on major systems and goals with me every three months. I wish to meet with the senior DP staff at least 3 times a year so they can keep me up to date on use of state of the art systems. Also review progress and problems we have, working with other agencies.

Continue development of Management Information Systems supporting the data evaluation task forces response to the Board of Health's request for objective data to analyze program results and produce expenditure reports.

Personnel

Provide data biannually, demonstrating compliance with our EEO plans. Inform me about any office, region or district developing a trend to non compliance. I want to be informed about late evaluations and steps taken to reduce such events. I want semiannual reports of grievances filed and an analysis of ways to prevent such grievances in the future. Gather data to support payment of our staff at competitive market rates to attract and retain excellent people to our staff. Tell me about state policies that prevent our being competitive within the public health field. I want to know when the Manpower Employment level prevents proper use of resources available to us. I would like to review the costs and benefits of contracting for services, rather than using our own staff, when such an approach will relieve the MEL barrier.

Work with other managers to improve management training. Follow-up the city manager's' training workshops by providing at least one additional workshop targeted to our weakest areas.

I need a semiannual review of short and long range Health Plans. Make maximum use of the talent available in the Regional Planning Offices to help develop area-wide health plans. Assist division managers in development of 6-year plans. Report progress of planning efforts quarterly. Tell about progress in meeting planning goals set by the city council, quarterly. Review the Year 2000 Goals of the USPHS using CDC/ASTHO/APHA Model Standards. Be sure to use recommendations of the "evaluation task force" as part of the planning process.

Regulation,

Semiannually, tell me about progress in updating appropriate city codes. Regulated parties should be part of the process to develop regulations. The public must have an opportunity to review all regulations, before sending them to the Board of Health. Inform me immediately, whenever there are serious differences between staff and regulated industries.

Within staff limitation, develop "standards of quality" for inspection programs within eighteen months. While doing this, compare current and optimal numbers and skills for staff needed to perform new duties.

Interagency Issues.

Each division manager has to plan interagency coordination. Provide me Interagency Memoranda of Understanding for your area. Discuss coordination issues with the management team at least semiannually. Be sure our information officer keeps a copy of all MOUs and their supporting documents.

Coordination.

Be sensitive to issues in your area that affect other division manager's needs. Meet with them regularly, to exchange data and ideas. If you cannot solve differences, see me when you reach a deadlock. This is particularly important for fiscal & personnel matters.

Figure 2-6 Performance contract.

AUDITS

As an example, take an audit of a family planning program. A local health director may know, based on experience, that with the resources available the department's efforts cannot change the birth rate. The best attainable outcome, with current resources, may be to keep the fertility rate from increasing. The federal auditors will be more concerned with whether the local agency has data on numbers of visits to clinics, and with the various tasks performed at each visit rather than with whether the fertility rate was stable or reduced.

Political concerns may influence an auditor's findings. For example, a burning interest the year of the audit may be whether all women have had an annual Pap smear. Not all women need an annual Pap test based on clinical evaluation and past medical history. If they don't all receive one, however, the auditor sampling charts and finding a lack of recorded Pap smears will stipulate payback of funds against the program. In an audit analysis, if *there is no record, the task was not done.* A blood pressure recording may be required at every visit, but in a busy clinic blood pressures may be taken but only recorded if there is an abnormality. With good supervision, this might be an acceptable practice. However, if *5%* of charts fail to show a blood pressure record at each visit, a 5% reduction in funds will be charged as a penalty.

Before starting a program, you must know what the audit requirements will be so enough staff can be assigned to complete all these requirements. Staff morale and patient satisfaction might be better if more time were spent on counseling than on recording blood pressures, but unless this is agreed in advance, failure to record the blood pressure will be regarded as an indication of ineffective administration of the program.

With restaurant visits, failure to check off an item on an inspection sheet is a clear indication that the task was not performed. It may be, locally, that a decision was made to check off only items that failed to meet the standard. If there is a way of validating that unmarked items are unchecked items, such a recording procedure might be acceptable. The program's auditors need to know how you validate staff performance and programs out-come. Thus, you must have policies and standards written down so explicitly that auditors can demonstrate compliance with standards without excessive paperwork.

EFFECTIVENESS and EFFICIENCY

A program supervisor must not only review activities of individual staff members but also evaluate program outcomes for both effectiveness (did the program achieve its goals?) and efficiency (was the outcome achieved at lowest possible cost?). The supervisor has to account for all expenditure of resources when carrying out the program, whether these resources are time, supplies, equipment, or facilities. This will be discussed further in Chapter 4.

SALARY STRUCTURE

State departments of health must develop plans to hire and evaluate their employees. Locally, this is done by the city or county personnel system when the local department is not part of the state. The salary of a nurse working in the health department is compared with that of a nurse working in a school system, hospital, mental health facility, or rehabilitation program. Pay equity should be based on job equity. The skills, knowledge, and working conditions should be similar. Public health nurses are often required to make independent judgments based on greater knowledge and skill levels than nurses working on hospital wards. Consequently, nurses paid at a hospital general-duty staff-nurse pay scale may be remunerated at the wrong level. Health department administrators must watch for such inequities. Similar consideration must be given to all other health department employees.

The state health department may have over 5,000 full- and part-time employees. Local health departments may have less than 100 employees. Despite the difference in numbers, all are expected to provide equal treatment of their employees. The state agency must be sure that all the state rules for employment, including hiring standards, evaluation standards, and causes for dismissal, are enforced in an equitable manner. Although this might seem simple, the biggest problems that occur in management are caused by failure to supervise individuals fairly. In local health departments, this may be even more difficult. A local health director employs staff with similar skills that are paid from different sources such

as a county, city, or state payrolls. All nurses in a single family-planning clinic may do a similar job. Yet, the different nurses paid from different payrolls will have different benefits, despite doing the same work. This may occur because lack of state funds forces a community to hire additional public health staff from local funds. The staff is supervised by the same local health director. In larger communities, the health director may administer grants from the federal government or private foundations. These grant-paid employees may not be employed in either the state or local community's civil service system.

Trying to manage staff where such inequities exist is difficult. There is no simple solution, except to take great care that all staff members see the system as operating as fairly as possible. The health director can do this only through supervisors who know they are held personally responsible for ensuring fair treatment of all employees.

PURCHASING

The purchasing function is often multi-jurisdictional in state and local agencies. In addition to buying or renting space in which to work, any health department needs fixed and disposable equipment and supplies to carry out its activities. This is done through a purchasing program. In state departments, where purchases can be made efficiently by buying for the entire state, the purchasing division is accountable to the chief fiscal officer. Train-car loads of medications paper, desks arid chairs, and computers may be ordered. Local departments may be given discretion to purchase certain supplies locally. A local director may have purchasing authority, not only from the state, but also from the local government. The local director needs an administrator or chief purchaser (depending on the size of the health district) who understands all the ins and outs of bidding for supplies on the open market. The purchasing manager must know which firms in the community must be included in the bidding process and how to prepare for sealed bids. He or she must understand all the audit and accounting variables in such purchasing.

It may be possible to use local group purchasing where a number of local jurisdictions or hospitals have developed group purchasing capability. Whether or not you can do this will depend on state and local law. This very technical area needs careful supervision. Failure to exert oversight of purchasing standards has cost more than one health director and administrator their jobs. Don't hesitate to call for help if this is a new area for you or if you have the slightest doubt about the capability of your staff in this area. Such help can be found in either local or state governments, often from the state comptroller or state auditor.

REQUIRED READING

Goldsmith S. & Eggers wd: Governing by Network. The Brookings Institute. 2004
Essentials of Public Health: Chapters and 7, 6. Turnock B J; Jones & Bartlett. 2007
Essentials of Public Health Management, Chapters 8 and 9; Fallon FL, & Zgodzinski EJ, Jones & Bartlett, 2008

RECOMMENDED READING

The Future of Public Health in the 21st Century (Washington, DC: National Academy Press), 2003
Who Will Keep the Public Healthy (Washington, DC: National Academy Press), 2003
T*he Future of Public Health* (Washington, DC: National Academy Press), 1988.
Townsend R: *Up the Organization* (New York: Knopf), 1978. This book is a classic and worth putting in your developing library.

2013
Chapter 3
Planning, Analysis and Assessment.

Mission statement.

The health director's first task is to develop a Mission Statement. This is a simple one-paragraph statement of the agency's function, such as:

"The mission of the City Health Department is to ensure that all citizens of 'This City' have access to health services that provide an opportunity to attain optimal health".

After writing a mission statement, you must develop a health department plan to support the mission. The plan will be composed of *Goals* and *Objectives*. All organizations have goals and objectives, whether they are written down explicitly, or exist informally as a set of ideas in the mind of the organization's leader. A mission statement, supported by goals and objectives gives the community a standard with accountability from which to judge the director's leadership and the department's actions (see "Trying is not good enough" Freidman M. at www.raguide.org).

A city council under the mayor's leadership, and a county government through the board of supervisors (or in some states the judge of the commissioner's court, a body identical in function to a board of supervisors) develops a mission statement for the elected officials and government, which should be supported by its own goals and objectives. Among these goals, one is usually to protect the public safety and welfare. Under the goal of public welfare there is usually an objective relating to public health services such as "provision of public health services including but not limited to maternal and child health services, chronic disease prevention and environmental safety. This city/county objective provides the basis for your agency's mission statement.

A mission statement should be developed with a local board of health, though you may have to lead them through the various steps of goal and objective setting. See the Ten Essentials CDC has PowerPoint show at this site.

From Mission to Goals

Just as the local government's objectives led to development of your mission and goals, your department's objectives such as "ensuring prenatal care for all pregnant women" will lead to program goals within your department.

Goal and objective setting is a hierarchical exercise performed at all levels of government and business, from federal to local. Local government is the entity through which the federal and state governments usually put their goals and objectives into action to serve either individuals, or the community as a whole.

A Goal is a broad statement of direction for the long term.

An Objective is a specific, measurable, statement of actions, to be taken in a limited time.

The major difference between the two is the all-encompassing nature of a goal such as: "to improve maternal health," a general statement of policy direction.

- It is supported by one or more objectives, such as: "The proportion of patients entering maternity care in the first trimester will increase from 25% to 35% in next 12 months.

- The proportion of women receiving prenatal care will increase from 70% to 85% in the next 12 months.

From goals to objectives.

Objectives, as opposed to goals, have a limited time frame and include a measurable change. Your time limit should not be so short that you may only be measuring a fluctuation around the mean (typically a change in a state's infant mortality rate from one year to the next, rather than a change in a five year moving average). The measure has to have an associated time span such that any apparent change is real and relevant. You may have to study a trend line to decide whether the program in question actually caused the change, or whether the change would have occurred anyway. It is as important not to take credit for naturally occurring events, as it is to claim responsibility for outcomes that resulted from your department's activities. The CDC Office of Public Health Practice provides standards you can use for setting local objectives and goals.

The ability to reach an objective depends on available resources. Thus, you should develop both long- and short-range plans. Local government normally budgets over a twelve-month period. State government may budget on a one-year or two-year cycle. In the latter case, the first year is the base year in which major changes in policy initiatives and supported funding occur. The second year is used to correct miscalculations that may have been made the first year. Because of inertia many federal agencies, particularly the military, may use a time frame of 25 years for long-range planning and five years for short-range planning. Nonetheless, congressional committees keep tinkering from year to year! Because it is difficult to obtain useful data for most health planning objectives in a single year, five years may be the shortest time period in which data is likely to show changes in response to policy initiatives. Although congress approves annual budgets, most of the major budget changes reflect policy redirection stemming from presidential elections. Even at the state and local level, the budgets necessary to support policy changes are often influenced by elections and perceptions rather than by reality

Consistency in policy application is difficult at the local level where elections often take place every two years, unless the same cast is re-elected each time. Where a jurisdictional manager is appointed, (the strong-manager form of government), as opposed to a chief operating officer who is elected (the strong-mayor form of government) there is likely to be more continuity of policy from year to year. Based on a careful analysis of your community's health status and needs, with an understanding of the difference between these forms of governance, it is essential to present plans and related policies with careful forethought. Consider the operational behavior of your chief executive.

Developing a planning team.

The first step is to weld a strong team together. It should include your senior staff, local government specialists such as the community planner and information systems manager, and your immediate supervisor, if this is not the county or city manager. To reduce the span of control, the city or county manager usually has several deputies, one of whom will usually be responsible for the human service agencies such as health, mental health, social services and recreation. Other deputies will be responsible for public safety, or for water, sewer and solid waste disposal. In multi-county or city-county districts at least one deputy or assistant manager from each jurisdiction should be part of the planning team. Including senior staff from the different local governments within a health district will improve the credibility of your plan and increase the likelihood of its acceptance without major changes, once presented for adoption and funding. Enabling different representatives to critique and suggest changes during development of the plan facilitates its acceptance. It is useful to obtain advice from groups of people likely to be affected by the plan, the 'stakeholders'. These are people with special health/medical interests, also those with environmental concerns. This opportunity to provide constructive criticism during the plan's development builds support from those likely to be affected by it. Besides community groups, it is essential that your staff, particularly field staff, be given a chance to recommend goals and objectives for the department's long range plans. Once a valid long-range plan to meet the community's health

needs has been developed, and revised once, future revisions will take less work. Doing the job right, the first time, takes a major effort from all concerned.

Using the "Model Standards".

Major tools for developing Community Health Goals include a planning manual developed jointly by the Centers for Disease Control (CDC), the American Public Health Association (APHA), the Association of State & Territorial Health Officers (ASTHO), the National Association of City and County Health Officers (NACHO). This used to be the "Model Standards: Guide for Community Preventive Health Services". The latest version was released in the spring of 2001 (last modified in October 2008) and became the 'National Public Health Performance Standards Program'. It is the public health partner to the 'US Preventive Services Task Force' reports. The title has been changed to indicate that the publication is a framework, not of 'standards' but of *model goals and objectives* in a standard format. The model will be comprehensive and cover all areas of public health. Just as for the Healthy People 2020, each recommendation is associated with data indicating the strength of research upon which the recommendation is based. Because the recommendation is based on evidence rather than past activities the measurements are outcome, rather than process, based.

The revision to the model standards are closely linked to the 'Healthy People' documents, the latest being "Healthy People 2020" which provides goal statements and objectives which cover 42 topic areas (goals) and 1200 objectives (select the 'topics & discussions' tab) that can be adopted, usually with little or no change by local health departments; examples are given in lecture on program analyses. Small departments with scant resources probably will want to combine some of the goals, reduce the number of objectives and modify the expected outcomes. Healthy People divides each goal into several "major" topic areas (past editions had 'focus areas') each of which has one or more outcome objectives. The first page of the MCH area is shown as an example. Each objective in the document is cross-referenced, where necessary, to other goals and objectives. This has been an evolving process since the 1970s. For example, objectives to improve early and middle childhood health now have their own specific section Objectives for delivery of maternal health services may complement those intended to ensure health maintenance for women or to reduce births of children with developmental disabilities. Finally CDC's NPHSP has developed a Version 2 of its Assessment Instruments-2008 for local planning and assessment, see the local instruments section.

Low tech and high tech.

Another critical issue that affects national and state priorities is the increasing cost of delivering "high tech" health care to an entire population. When the total health care costs were 8-9 percent of the Gross National Product (GNP) there was little complaint about cost. Now it has reached 17.8% and is likely to increase further. In May of 2000 the WHO released its studies on effectiveness (See pages 13 and 58) of national health care systems. Japan came in first, the ***US 34th***. Although the proportion of the GNP used to provide medical care in the US is greater than in any other country in the world, it now competes with money that could be used for investment to produce jobs in the industries that support the service sector (which includes health). In November 2007 the Commonwealth Fund (CF) released a similar survey looking at high performance health systems and comparing the US with 6 other developed Countries. The USA came in a dismal last place! The CF also produced a Chartbook of comparisons among Health Data Systems for 2006 Look at the financial . The European Health Atlas was released in December 2008. All these references provide a starting point for evaluation the quality of the US Health System. For many people, medical care expenditures compete with the purchase of food, education, housing, transportation and other essentials of daily life. Because of improvements in general health and a delayed death rates chronic diseases, and the elderly are the fastest growing health issues/segment of our population, and make the greatest demands on the health care system. At the other extreme of life, small babies born early in the third trimester survive at great cost in NICUs, though we fail to provide basic health services to every pregnant woman. The move by obstetricians to induce labor when convenient, rather than wait for a natural outcome may well be part of this problem. More children are being diagnosed earlier with moderate developmental disabilities. The federal government enacts mandates for costly remedial services without providing the resources to prevent the disabilities from occurring in the first place.

The incurred high cost of medical care, generated partly by high technology, has started to reawaken an interest in health planning. Moreover, the focus now is on "health" planning rather than "medical care" planning. A underpinning is the use of evidence of effectiveness, rather than efficiency, Outcome versus Process. As the federal government recognizes the limits of available resources, it tends to focus more on constitutional mandates such as international relations, defense, and social security. Looking at some key measures such as infant mortality and life expectancy, health planners find that, despite its high technology, the U.S. has nowhere near the best health outcomes, when measured by morbidity and mortality (let alone cost effectiveness). International data on distribution of morbidity and mortality do not show any value in having a 50-100% greater proportion of the GNP devoted to medical care in the U.S. Political and business leaders at all levels are beginning to recommend policies that will reduce expenditures for medical care, although there is general agreement that a basic minimum of medical services should be provided to all people. See the most recent IOM study (2013). A focus on preventing disease has still not become generally acceptable in this country. Currently (2013) the debate is about tweaking the law and ensuring that all citizens have access to all necessary health services, despite lack of controls on the system. This will inevitably cause the system to spiral further out of control; current % of GNP is 18% (2013).

The issues have become more important as we move further into the epidemic of chronic diseases. In 2008 there were 100 million U.S. citizens with one or more chronic diseases, for those over 65, eighty eight percent have at least one chronic disease. 75% of the national health budget goes to chronic disease care. Within 10 15 years there are expectations that without change the share of the GNP devoted to "health" will be 25% instead of the current 17%. The current European average is 9%, although their outcomes are superior to ours.

Planning failure, while the world changes.

The climate for goal setting in the health care arena is very different at the end of the first decade of the 3rd Millennium, compared to the late 1960s through the early 1980s. In the 1970s there was little concern for limiting social spending. The Regional Medical Programs offered treatment for cancer, heart disease and stroke without any relation to the rest of the medical care infrastructure, or a concern for prevention. Emphasis on specific diseases changed to a focus on state and regional health planning systems. Despite this shift, costs kept increasing. Money was given to local communities for many kinds of new programs, but little effort was put into evaluation. The public health establishment contributed to the problem by embracing programs without much effort to evaluate effectiveness, let alone efficiency.

Shifting from federal to state planning

With the loss of federal support for regional and state health planning agencies, it has become even more important for departments of public health at all levels to develop credible health status assessment and plans to improve health. Public health departments can no longer plan for only traditional public health programs, but must develop coordinated, comprehensive plans that target reduction of disease, disability and death Planning starts by analyzing the population distribution, gathering data about prevalence of disease, and access to primary care services. The initial focus should be on prevention and access to an integrated health and medical delivery system. Using this approach, health departments do not have to deliver all the services; they do have the responsibility to plan for them. This is the **assurance** function of the health department, described so well in the Institute of Medicine's 1988 "The Future of Public Health" This approach to planning health services for the entire community is even more important as we enter the 2010s with some 45+ million Americans (about 15% of the total population) lacking health insurance. Many of these are employed, often at minimum wages, without insurance provided by their employer. Many are neither insured nor employed, yet are not eligible for Medicaid because they don't fit into one of the designated categories; social security beneficiaries, permanently disabled, old aged, pregnant women or children. Community-wide comprehensive planning is particularly necessary in rural areas where residents are losing access to primary care. Physicians, concerned about medical liability costs, are not providing services with a potential for litigation, such as obstetrics. . As physicians reduce the scope of their practice they move to the suburbs, do not locate in rural & center city areas or go into a specialty practice. The Institute of Medicine updated the "Future" in its 2003 publication "The Future of the Public's Health in the 21st Century"

Short term vs. long term health policy making.

The problems cited above reflect the failure of health care policy-makers to look at long-term changes while continuing to react to short term problems. After World War II we built many rural hospitals to attract physicians, rather than analyzing the epidemiology of disease and disability to determine resources needed and their proper location. Now many facilities have more than 40% of their beds empty while there is evidence we have an excess of specialty physicians by 50%. The physicians we do have are trained in specialty care while we have a major shortage of primary care physicians. We built new hospitals because we thought there was a doctor shortage. Then we built new medical schools and have produced so many doctors that a review by the American College of Surgeons showed that there was enough work to provide each surgeon with only 1-2 “hernia equivalents” of surgery a day.

If we had a distribution of physicians similar to other developed countries (1 generalist for each 2000 people and 1 specialist for each 3 generalists) we would only need about 400,000 physicians rather than the over 780,000+ currently in practice, chasing too little work (Parkinson's second law!). Then, we found that too many older people could not afford care. We enacted Medicare which focuses on acute care rather amelioration and prevention of chronic diseases. We focused on payment for services delivered rather than analyzing services needed. Instead of developing clear long-term national and state policies, based on health services planning, we reacted to each media event of the week. Current 'health' policy is based on a reaction to group perception (not logical planning). The media glamorizes research rather than focusing on the value of funding currently effective methods. Infant mortality, although improving is still too high, compared with other developed countries. We know how to reduce infant death rates and increase the likelihood that nearly all children will be born healthy, but we keep pouring money into neonatal intensive care units (NICUs.) instead of funding basic prenatal care. There is not enough money to do both. NICU’s photo opportunities make better theater than a well baby. The media continue to lavish attention on the desperate state of one child needing a transplant, which is always expensive and often likely to have limited success. The same amount of money might be used to provide prenatal care to 500 pregnant women preventing deaths, mental retardation, and developmental disabilities.

Responsible planning includes educating the public about limited and hard choices that have to be made. The process requires improvements in both the planning process and presenting the goals and objectives, to motivate the public to elect leaders likely to make informed choices about health programs. The skills for these activities should be available in every health department. A health director's most important task is to provide this leadership.

Basic Planning Data.

This lack of comprehensive national, state and regional health (as opposed to medical) planning, and the overuse of high technology, has created a gap which public health departments have a responsibility to fill. Many other countries have kept medical care costs relatively low by focusing on primary care and preventive medicine as the foundation of their health care programs. As a prelude to the planning process it is useful to review certain data.

Figure 1, (below), shows the changes in the leading causes of death in the United States between 1900 and 2001.
This continues to change, see the leading causes for 2002. Two other tables show the main reasons for discharge from hospital, and why patients go to doctors (See page 21.) All the diagnoses identified are for conditions commonly seen in primary care practice. Almost forty years ago Kerr White [3] showed that in any month, for any 1000 persons in the U.S., 250 had symptoms of disease. Of these 100 went to a primary care physician, 9 were hospitalized, five received a consultation but only 1 was referred to a tertiary care center. Such data suggest that health planners should focus on better ways to improve access to primary care and while targeting the maximum use of interventions to prevent the development of chronic diseases. A recent update of Kerr White's work [Figure 2], by the American Academy of Family Physicians shows that there has been little change in primary care practice since 1960.

Year	Tuberculosis, all forms	Malignant neoplasms (cancer)	Major cardio-vascular/renal diseases	Influenza and pneumonia	Motor vehicle accidents
1900	194.4	64.0	345.2	202.2	n.a.
1910	153.8	76.2	371.9	155.9	1.8
1920	113.1	83.4	364.9	207.3	10.3
1930	71.1	97.4	414.4	102.5	26.7
1940	45.9	120.3	485.7	70.3	26.2
1950	22.5	139.8	510.8	31.3	23.1
1960	6.1	149.2	521.8	37.3	21.3
1970	2.6	162.8	496.0	30.9	26.9
1980	0.9	183.9	436.4	24.1	23.5
1990	0.7	203.2	368.3	32.0	18.8
2000	0.3	200.5	340.4	24.3	15.2
2001	0.3	194.4	323.9	21.8	15.4

Finally the CDC/NCHS publishes annual reports on trends in health statistics as "Health United States 20xx."

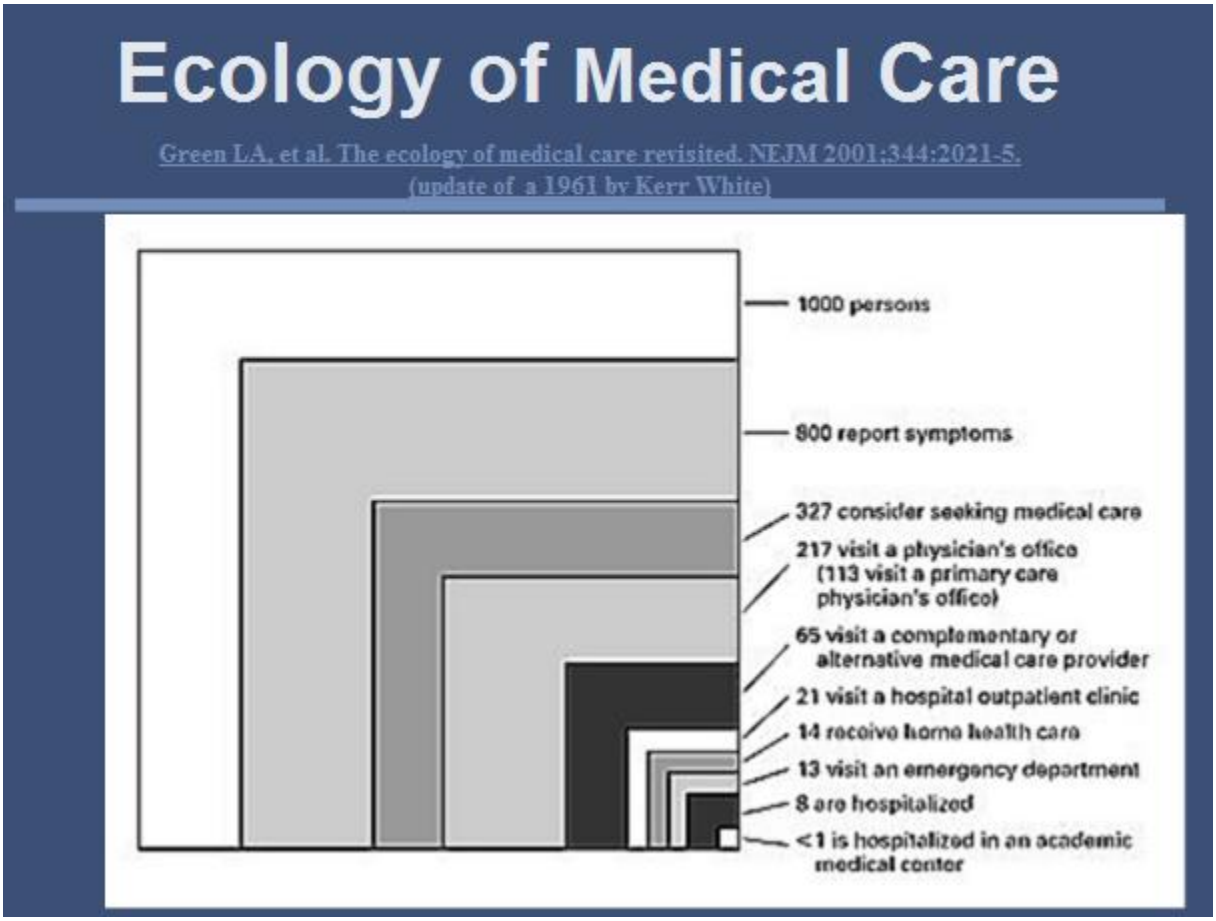


Figure 2. Update to Kerr White's Study by AAFP, 2006

Over the last 15 years the incidence of death from stroke has dropped almost 60 percent, while coronary heart disease deaths have dropped more than a 20 percent (for men, for women CHD deaths are rising). Stroke related deaths dropped following efforts to find people with untreated hypertension and treat their high blood pressure before symptoms occurred. The reduction in coronary heart disease deaths has been associated with a number of early interventions, mostly discovered by the Framingham Heart Disease study. Recent interventions to reduce high serum lipid levels should reduce coronary disease still further. These lower death rates are the result of good research, good planning; effective programs and leadership from the CDC[i] and the National Institutes for Health (NIH). Many other deaths from chronic diseases can be averted by application of known public health principles.

Planning for different age groups.

Distinct from the improving health status of the middle aged is the poor health status of many elderly persons. The fastest growing segment of the population is the aged, especially those over 85. Many previously competing causes for death, at younger ages, except for intentional and unintentional injury, have disappeared. People are living longer, but not necessarily better. Alzheimer's disease, rarely diagnosed 10-15 years ago, is now commonly found among residents of nursing homes. National nursing home surveys show in the Advanced Data publication show that many residents in nursing homes suffer from some form of dementia, the majority with Alzheimer's disease. Older people now live

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The community health plan.

To assess community health needs (community health status), complete with goals and objectives; first gather morbidity & mortality data to evaluate distribution of diseases and deaths. Use this data to identify needs rather than expressed desires. Once the data is gathered, analyze them and rank the problems by numbers of diseases and deaths, and the department's ability to intervene successfully. Examine the cost of intervention and access to available technology. Develop an algorithm that takes all these variables into account to provide a simple rank order. Cost can be measured in terms of medical care only, or by adding in all the social support mechanisms put into place if care is not given. When you have ranked the conditions define the goals necessary to change health status for each problem. After defining the goals,

select the objectives (or tasks) necessary to meet the goals. Certain goals, while praise worthy, may have no measurable outcome associated with a planned objective. First, do the things you know how to do, then plan research necessary to intervene in other areas. Public health should not be considered a "do good" activity, but an application of medicine that improves and maintains health with clearly visible, tangible results. (Also see Part 3 of the of the CDC's PHPPO Principles of Community Engagement). New resources that are particularly useful in developing community heath plans include data found at Community Health Status Indicators (CHSI) which provide an overview of key health indicators for local communities. There is considerable additional data on state health department webs sites such as that in Virginia. The Robert Wood Johnson Foundation and the University of Wisconsin have just completed a joint program, to compare with the RWJF health of all counties/jurisdictions in the US,

Efficiency or effectiveness?

Once you have a list of goals and objectives review them for their combined effectiveness and efficiency. There is excellent data on the value of immunizing (see pages 23-32) against communicable diseases and providing treatment for sexually transmissible diseases available from the Centers for Disease Control. Data on providing maternity care and many other public health clinical activities has been well documented in publications of the Institute of Medicine, the Guttmacher Institute, the Children's Defense Fund and the American Public Health Association. Although a program may be efficient (takes minimal money in relation to activities) it may be ineffective (shows no outcome change) and therefore is a waste of money. First: be sure that an activity necessary to carry out an objective is effective; otherwise lower the priority for the objective within the plan. When you have completed this review and check your priorities again. While this topic focuses on local health departments the Dartmouth Atlas project compares state & county health financial outcomes.

While assessing the department's ability to use various preventive interventions such as immunization, prenatal care, and family planning also consider problems that require personal behavioral changes such as eating, drinking, exercising and wearing seat belts. Examine what can be done by environmental intervention such as installing sewage and potable water systems, or restaurant inspections. These traditional public health practices have minimal cost compared with providing medical care. They can provide a rapid response to many community needs.

Review data on death, disability and disease to determine which problems will respond to additional intervention by primary care providers such as family doctors, pediatricians, general internists and obstetrician-gynecologists. Lack of primary physicians may make it impossible to respond to community health needs. A community health status assessment may reveal problems, which requires you to help community leaders develop long-term goals to support short-term public health activities. The HWO focuses on inter-country comparisons the CDC's NCHS publishes an annual Health United States. Assessment. The latest is for 2011.

Budgeting.

Having collected data, analyzed the data, validated your objectives and set goal priorities you are ready to develop a budget. Budget development is discussed in the next lecture. A budget presentation is the culmination of the planning effort. The budget adopted by your local government demonstrates the effectiveness of your health plan, which is in competition with plans of all the other government departments. The funded, as opposed to presented, budget is a measure of your organization's credibility. Part of the decision-making to fund your budget depends on how effectively your department markets its services.

Validating objectives to the community.

A difficult problem, discussed in the chapter on 'communication', is how to obtain funds for programs which, when working well, have no 'obvious' outcome. For example: When most children are immunized there are no children dying from measles encephalitis. When a food service program works well there are no outbreaks of food related illness.

Many people over 60 years of age can remember the iron lungs used to treat poliomyelitis. Young pediatricians and generalists (under 35) may never have seen a case of polio, measles, rubella, whooping cough, mumps or diphtheria. Neither they, nor younger legislators, can remember children who died or were disabled permanently by many of these diseases.

Competing with other agencies.

You compete for resources with agencies whose 'time has come,' by popular demand. Although many of these agency's programs have not been proven successful, the public and the politicians they elect may deem them valuable. An example could be a program to curb alcoholism. Despite public acclaim, there is little scientific data to show that any government-sponsored programs are as good as Alcoholics Anonymous, which gets no public funding.

Three of the most important ongoing tasks for a health director are:

1. To assess the community's health needs
2. Planning the budget and getting it approved
3. Communicating the value of the department's services.

These three tasks form a constant inter-related cycle upon which all else depends. You can't get resources without communicating the need and a clear plan of action. You cannot plan without careful analysis of the community's needs.

DATA COLLECTION.

This is the first step in planning. You and your staff will know, generally, what the health status of the community is from your contacts with doctors, nurses, dentists, school principals, hospitals, nursing homes, the news media, your clients and your bosses. Larger health departments have their own laboratories, vital statisticians, health educators, nutritionists, engineers, soil scientists, administrators, social workers and other staff with contacts in the community who can collect data. Further use the data described above that provides baseline national and state comparisons to compare with your data.

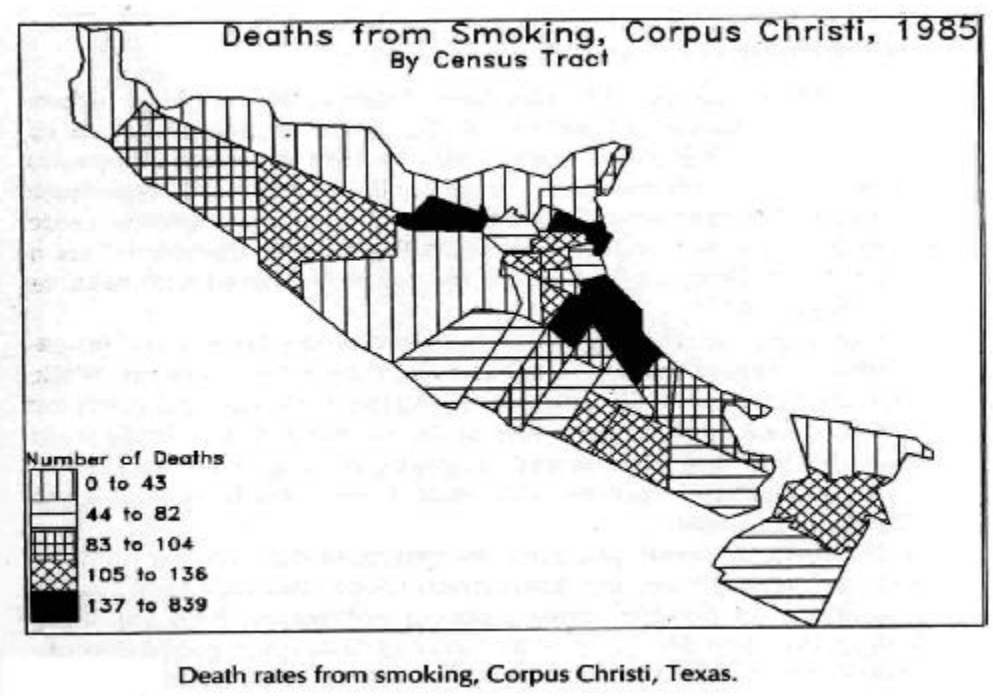
Preparing the written report.

Start by preparing a general summary of health conditions in the community. You will know from records, also from the state health department, what the major causes of death are in your jurisdiction. Other agencies can provide information about disabilities. National health surveys, mostly carried out by the National Center for Health Statistics, tell you who died from what, at what age, by sex, race and regional location. Besides deaths these surveys include data on perceived health status from the "health interview surveys", on actual health and nutrition status from the "health and nutrition examination surveys". Data is also available from the "national hospital discharge data surveys" nursing home surveys, family planning surveys and from the "national ambulatory medical care surveys". As health departments become more involved in preventing chronic disease the Behavioral Risk Factor Surveillance systems (BRFSS) are essential to develop baseline for progress. The latter examine why patients go to doctor's offices, what their diagnoses are and what treatment is recommended. National data should be used to develop "*synthetic data sets*" for the community, by adjusting the population data in the national survey to the local population by age, race, national origin and sex in your community. This data can be used to comparison actual data from your community with national data, to see whether the expected patterns exist. If not, you need to look further to determine why not.

Collecting data.

Those who work in a department where data has been kept by census tracts for several years are fortunate. Most national and regional health surveys collect data by areas as small as census tracts. Few local health departments have done this routinely. Such collection allows comparison of socio-economic

data to be aggregated from census tracts and compared to national data. View two sets of health characteristics, one from Corpus Christi, Texas and the other from Virginia.



Death rates from smoking, Corpus Christi, Texas.

Figure 3

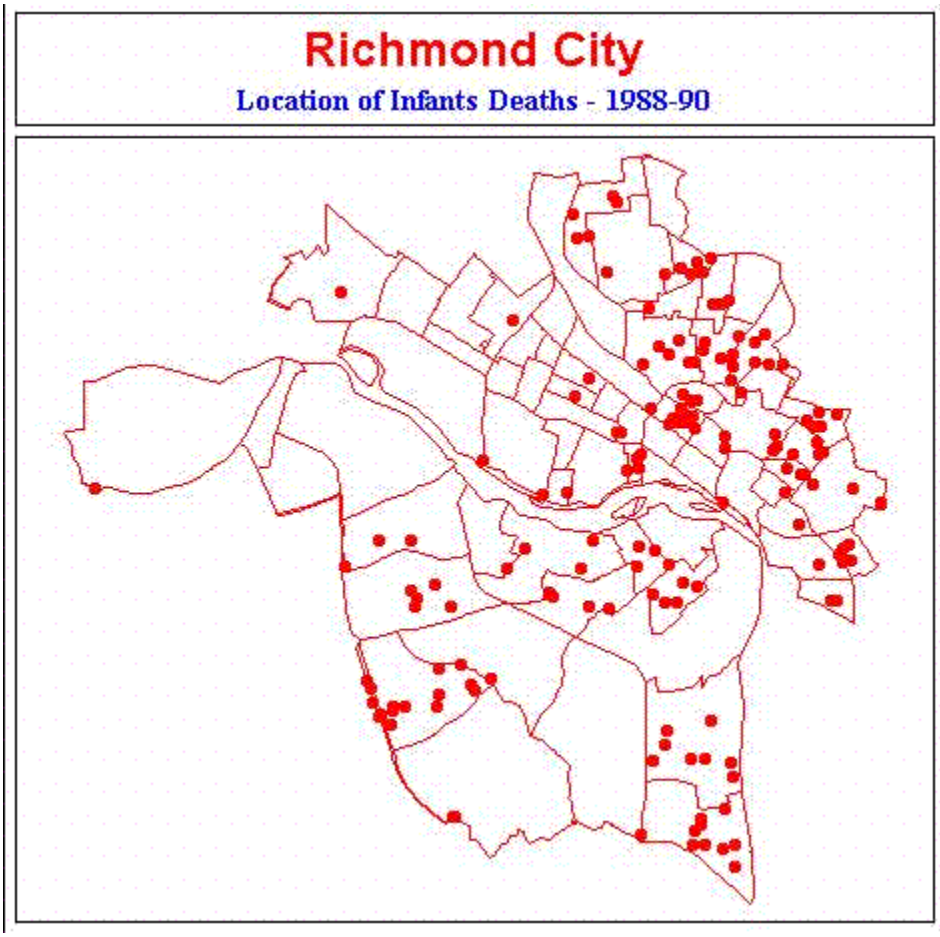


Figure 4

The maps show events by census tracts. Mapping of health events enables one to look at the distribution of events by population groups. Geographic analysis is an important tool used by epidemiologists to analyze disease distribution. All large urban areas are part of Metropolitan Statistical Areas (MSAs). These areas are used by many government agencies to collect data about respective interests such as housing, small business, and economic development (E.G. City of Richmond, VA - Maps & data). .Most data about people, collected by government, is aggregated by census tracts as the smallest area that will not identify the individuals concerned. Some rural areas have not been mapped by census districts but use similar aggregations of people called "enumeration districts". Areas smaller than census tracts are rarely used for public health purposes because the denominator and nominator are too small. Summary data collected at less than the census tract level produce small numerators for calculating rates. While thwefirst map is old, (I wrote the program that produced in 1982) it illustrates that the technique has been available for at many years, although most public health agencies have only been using them for 5-10 years.

When the numerator is small the analysis is usually inconclusive and leads to erroneous conclusions. Some local health departments and other local agencies collect data by census tracts. This allows different agencies to correlate data from different databases to develop better plans. For example some local health departments already code births, deaths, attendance at clinics and location of environmental visits by census tracts. Planning departments usually have a wealth of economic and physical data coded by census tracts. These datasets can be matched up to make more comprehensive analyses. Older data collected by zip code rarely correspond to census tract data developed to identify neighborhoods. Sometimes boundaries change between decennial censuses so that data collected from two consecutive decennial censuses are not comparable. Even when census tracts boundaries remain intact, population growth, changes in housing patterns from single to multi-family dwellings, land use from housing to

industry, or slum clearance all affect denominator data used to calculate rates. In some parts of the country floods and hurricanes occur regularly enough to alter denominators between census surveys. These changes reduce comparability of data from decade to decade, and at times within a single decade. Local officials must be aware of other community changes so that data can be adjusted accordingly, to allow realistic inferences to be made about the need for health services. Most population based planning data are good for the time of the survey, two years before and two years afterwards. If you wait much longer you probably need to perform a new survey, unless the neighborhood is very stable. Many communities have building officials who keep track of new, condemned, and removed buildings. They also know when buildings are converted from single to multi-family use. This information is all useful in evaluating neighborhood changes.

Before beginning an analysis, you must examine the socio-economic content of the community. Certain diseases are more likely to occur in certain socio-economic neighborhoods. Sexually transmitted diseases, tuberculosis, and enteric diseases are far more likely to occur in low-income neighborhoods where education is often less than 9th grade. In high-income neighborhoods where people live to an older age, chronic diseases such as heart disease, stroke and arthritis are of more concern. While the map shown was developed 40 years ago many communities are still not using this easily available technology.

Locating the Data.

Additional socio-economic data are available from planning and social service departments. Utility departments know who has and does not have electrical and water hook-ups. Waste management services know about garbage pickups by amount and type. The telephone company knows who has telephones. Your roads department knows about access to various facilities and the barriers people have to cross to get to services. The postal service knows how many families in a neighborhood receive mail.

School principals have information about numbers of families and children by neighborhood, the health status of their pupils, and the children's nutritional status. In many communities the school nurses are employees of local health departments. They can identify which children need special education and physical resources and their immunization levels. The school nurses, in addition to having information about children's health needs know about the entire family of many of these children. The public health dentist knows about the need for children's dental care.

Medicaid and Medicare expenditures and services provided in a community are now often available online, either from your state Medicaid office or HCFA. The Kaiser Family Foundation also provides excellent summaries of Medicare and Medicaid impacts on their y recipients. Data reveals the proportion of low-income persons receiving categorical health services and helps define the remaining need for financial access to health services. The Kaiser Foundation also has a site for comparative State Health Facts. Besides all the information on living arrangements, social support systems, and educational capabilities, clinic charts contain other facts about the people who visit the department's various clinics. Clinical data can often be obtained from HMOs.and State agencies, in addition to the NCHS panoply of surveys. Another valuable place to look is the Dartmouth Atlas of healthcare which provides comparative data on outcome for both hospitals and communities.

Data on environmental needs are estimated from knowledge about the distribution of the various food service places, as well as location of homes on private waste disposal and water systems and those homes connected to public systems. The location of health facilities such as hospitals, nursing homes and doctors offices and the travel time to these facilities; as well as occupancy level of the various facilities and their range of services are important data. Information about aggregate discharge and treatment data by disease category are useful in evaluation availability of services.

Analyzing the Data.

In poorly computerized community data systems you work with paper printouts and transfer aggregate data to spread sheets manually. These are still found in many local health departments in 2013. In better-organized health departments much data can be found in electronic spreadsheet format. Much of the

local information will be numerator data about incidents of disease or environmental hazards. The denominator data of persons at risk comes from the community planning department's surveys or statistical projections. Check the sources of all data you receive to validate its accuracy. Compare numbers and rates for events such as births, deaths, and diseases. Rates are less likely to change because of changes in housing stock. They can be compared between appropriate communities to decide whether a change would have occurred despite the department's programs or whether the change was a result of programs.

Rates and numbers.

When reviewing rates you must examine both the numerator and denominator data used in the calculations. Frequently individuals unused to analyzing incidence or prevalence rates come to false conclusions. For example; a census tract with 10,000 people and a gonorrhea rate of 50/1000/year has 500 cases of gonorrhea per year. A census tract with only 2000 people and the same rate contains only 100 infected people. One may forget that the second census tract only requires one-fifth the control effort of the first. In a second instance a census tract with 5000 people, and a young population (between 15 and 25) with an attack rate only 50 percent that of the first group may have the same *number* of cases as the census tract with 10,000 people. Here the problem will be more difficult to control than in the first example. It is hard to change risky behavior of adolescents. These distinctions are an important part of community epidemiology and planning. You must know the population distributions by age, sex, race, and other attributes, which can influence the health problems under examination. It is vital to standardize (age adjust) populations in different areas within a community and to be able to explain these differences to the community.

Incidence.

It is particularly important to look at incidence (new cases) for acute problems such as gonorrhea, encephalitis, or injuries. For the chronic diseases such as Tb or Heart disease, and AIDS examine both incidence and prevalence. A disease with low incidence, but relatively high prevalence may require a different approach to one with both low incidence and low prevalence. The age at which symptoms of disease and concomitant disability occur is important. The measures you take, and the community perception, may be different for diseases which occur in children or young adults, compared to those which affect older people. The amount of incapacity and the guardianship needed changes for different health problems, as does public perception. AIDS and Alzheimer's disease both cause serious disability. Dementias occur in older populations whose behavior might not seem related to the disease. Both may require an increasing amount of guardianship. Both have a drawn out clinical period. The public sympathy may be greater for the Alzheimer's patient than for the AIDS patient. With current knowledge AIDS is preventable, Alzheimer's disease is not. One of the problems with using hospital data is that poor coding and address information mean that the data is representative only of those people admitted to the hospital and cannot be used for community assessment.

From crude to specific data. After calculating crude incidence rates for a disease the next procedure is age adjustment by census tracts, economic strata or neighborhoods. In the maps shown, the census tracts, colored by high-risk or low-income, have relatively homogeneous populations. Different strategies for access to primary care were developed for each differently colored aggregate. Once the basis for the grouping is decided standardize the population to the same age, sex, and race distribution. This allows risk of specific diseases and health problems among different population groups in the community to be compared to the community as a whole. The resulting data can then be compared with representative state and national figures. The more careful the comparisons the more likely you are to be able to tell the story of why various health problems occur in your community, what can be done to correct them and what resources are needed. A standard population, useful for age adjustment, can be any population for which there is good data. Alternatively a "synthetic" population can be generated. The denominator for calculating this population depends on the denominator used when reporting the particular problem. It may be as small as 1000 for infant mortality and family planning or as much as 100,000 for deaths and infections. It is essential to use similar denominators for each population you intend to analyze.

Using data to answer citizen complaints.

Data is particularly useful when a special interest occurs for a specific problem. For example, a citizen may claim that her husband died of cancer and that "many" people in her neighborhood had died of cancer. In a real case in Corpus Christi an individual lived downwind from a refinery and across the street from a battery disposal plant. She stated, at a city council meeting, that not only her husband but also everyone on her block was dying from lung cancer. Department staff examined the incidence of cancer deaths in this block, the neighborhood, the entire census tract, the surrounding tracts, and the city as a whole. Data for the preceding 15 years was examined using five years groupings (cohorts) so the numerator would be large enough for valid comparison. This census tract was compared with other census tracts downwind from refineries and industry, as well as other census tracts with similar socio-economic and racial mixes. All the comparison groups were age adjusted to allow calculation of expected cancer rates in the control and target populations. When this was done the likelihood of dying from cancer in the specified block was less than for any other comparison block, census tract or group in the community. The CDC and NIH confirmed these results. Everyone was satisfied except the complainant. Unfortunately, good data rarely changes opinions based on irrational beliefs. This incident, however, underscores the need for careful data analysis, and knowing how to find data to analyze.

Once you have identified the major health and environmental problems in the community you need to track them. Describe the number of people affected by race, sex, socio-economic stratum and any other relevant variables. Describe the rates, incidence, and prevalence of health problems as well as the numbers at risk of disease from environmental hazards. Although we use the entire population to figure out birth rates; fertility rates, by convention, are calculated using only the number of women between 15 and 44. Fertility rates are better indicators of risk of new births in the community by excluding infertile women from the denominator. The calculation of fertility rates exemplifies the problem of finding purely homogeneous groups of persons to serve as denominators when calculating rates. Because of hysterectomy and sterilization some permanently infertile women will be included in the denominator. This is the type of compromise that often has to be made when you use the only data readily obtainable that is comparable from community to community. Next, you have to determine what levels of intervention are available to prevent, modify or cure a disease. You can prevent measles by immunization; modify arteriosclerosis by diet and cure tuberculosis with antibiotics. Each intervention requires a different approach, effort and measurement of success. The plan also requires estimates the proportion of those exposed to your intervention that will accept the offered care. When setting the objectives you must also evaluate barriers to care such as cost, access, and available services.

Community health priorities.

When the data have been identified you can develop an initial set of priorities and estimate the public's desire for the department to intervene and improve health status. You may believe that stopping all tobacco use will be the best return for effort, but the community may be prepared only to limit exposure in public places, not to change individual behavior.

Many children may be at risk for measles, and the cost of immunization may be relatively small. Only 2 immunization are needed one as an infant and a booster as a teenager). It is easy to reach children on entry to day care centers or school. You know, from historical data, the costs of measles in terms of medical care, deaths, chronic disabilities, and long-term support. Similar analyses can be made for other childhood infectious diseases.

Many people will be infected with gonorrhea, but reporting by doctors has never been good. Many people see this disease as a punishment for sinning. Only grudging support, if any, will be given to efforts to control rather than eliminate the disease.

An example of a disease specific goal comes from Portsmouth, Virginia in 1969, where tuberculosis rates had been determined by socio-economic area. This example shows the 1969 goal and the outcome three years later, where the slide shows that the target was met for each socioeconomic area. The results were clear; they gained support in the community from clear planning and goal setting. Though the entire set of objectives had not been reached, sufficient progress was made to justify increased efforts and associated budgets in following years.

Although such objectives to control infectious diseases and receive support may seem clear each community has limited resources, for which you compete. Sometimes, national and state laws set your objectives. Regulations may require certain health interventions such as immunizations for foreign travel, immunization against childhood diseases, permits for installation of sewage systems or provision of public food services. There are laws, which require collection of vital data used for school, community growth and economic projections in addition to health analyses. Most states have policies to deliver maternity and child health services. When such activities are required by law they will be high on your list of priorities, though all the resources necessary to carry of the objectives supporting the goals may not be available. One purpose of planning is to set priorities and objectives that move you part of the way toward your own and imposed goals.

Some goals and programs are funded by federal, state, or local government, or by foundations. Some of these programs are mandated by federal or state law, while others are required to reduce local health problems and may be considered optional. An example of a program without state or federal mandate is mosquito control. Communities in subtropical climates around the Gulf of Mexico have areas where frost is rare and mosquitoes breed the year round. Corpus Christi and Houston have had several well-documented outbreaks of St Louis encephalitis, transmitted by mosquitoes breeding in storm sewers. This mosquito requires different control measures from others. Local ordinances dictate year round control and provide funds for control efforts.

Once you have identified all the community's health problems and developed goals and objectives divide them into four groups:

- Prevention
- Protection
- Promotion, and
- Medical intervention.

Community health goals and the national priorities.

Depending on your community's priorities and funds available it may be more important to work with private or non-profit organizations, such as the Cancer Society, Red Cross, or Lung Association to meet the community's health objectives, than by providing the service from the department. However, it is the Health Director's job to provide the leadership to ensure progress to meet the community's health goals within the resources available.

Excerpts from Healthy People 2020 describe goals more clearly than in the past. This may be supplemented by the Community Guide, Healthy People 2020 contains hundreds of objectives found in many Focus Areas which makes it unwieldy to use at the community level. Some of the best examples of prevention are immunization, prenatal care, and fluoridation of water. The latter, with improved nutrition, has been followed by closure of several dental schools. Among the best example of health promotion is blood pressure control education. Reduction in smoking, and weight control unfortunately, have had little effect in producing permanent changes in behavior, measured on a national scale. The best examples of protection are potable water and waste disposal programs. Among the successes of medical intervention are 'pap' smears to control early cervical carcinoma-in-situ, use of emergency medical services to stabilize and transport injured persons, and prevention of late effects of diabetes by strict control of the disease. The Healthy People 2020 publication has just become available and is another useful reference guide.

Cost-Benefits

The final steps in completing the community health plan involve cost-benefit analyses to make final decisions about priorities. Examine how the population at risk that may benefit from each program. Determine the likely numbers of interventions needed, such as immunizations, prenatal care visits per client, treatment for gonorrhea, or numbers of food service facilities, and the likelihood that each additional intervention will reduce health care and social costs. Each of these actions can be priced.

When these steps have been completed you are ready to write the goals and objectives for each program, and place all the programs in priority. These priorities must include not only clinical, educational, and environmental interventions but support services such as administrative, facilities and equipment. These must be combined into a single document, which can be used to develop a budget.

Selling the department.

When describing the department's priorities be sure to tell the whole story. Regarding prenatal care for instance, discuss the probability of preventing maternal morbidity, maternal deaths, and distress and injury to the fetus. Use historical data to show what might happen without the program. For example, describe how the prenatal programs prevent children being born dead and how they reduce the likelihood of abnormalities associated with poor nutrition and use of alcohol, tobacco and other drugs. Discuss the increased cost to other agencies such as social services, mental health, and education when a child is born with less than optimal outcome. Explain how a defective child may need full or partial support for the next 70-80 years. You should review the objectives from the MCH portion of Healthy People to examine recommendations that can be used in your community assessment analysis. Also discuss the costs of neonatal intensive care units for children born too little or too early. Statements of priorities should point out the costs likely to be incurred if programs are not funded. The midcourse review shows how periodic assessment of goals and objectives leads to modifications, and should be a part of all community assessments.

Because many younger elected officials never saw the health problems caused by poliomyelitis, measles, and rubella infections you may need to explain the successes from immunization for these diseases to validate the need to maintain immunization programs. When you have to present your plans in public, before your city council or county board, it may help to have some parents present whose children had bad outcomes or death from previously common childhood infections. Their presence will add personal visibility to your presentation of scientific data and statistics. You may wish to refer to the costs of recent outbreaks of measles, found even in highly immunized populations, and to note the extreme communicability of this disease which does not even require the carrier and infected person to be the same room at the same time.

Similarly, when looking at costs associated with food service programs, discuss the costs associated with hepatitis-A, salmonella, and staphylococcal and ptomaine food poisoning outbreaks. Not only for the sick person, but also the effects on the reputation of the restaurants affected, and whole vacation communities are relevant.

Even in times of fiscal distress health departments that present their programs, goals, and objectives clearly and with conviction will get their fair share of available support [funding] from the community. Good and effective use of community epidemiology to set goals and objectives is a major priority for every department of public health.

Finally most other countries are far ahead of the US in developing and tracking goals and focusing on the health of the population, rather than the diseases. For examples look at

The NHS – UK Core Principles
Health Canada Mission & Vision
European Health Plan 2008-2013

Recommended Reading:

1. Turnock BJ, Essentials of Public Health, 2007. Chapter 2
2. Model Standards for Community Preventive Health Services. ed 2, Washington DC, American Public Health Association, 1986 succeeded by a 3rd edition on the Web **2001**
3. The Future of Public Health in the 21st Century Washington DC, NAP **2003**

4. Zaza, Briss & Harris: Guide to Community Preventive Services Oxford University Press; 2005
5. Samuelson PA (ed): Economics, ed 18, New York, McGraw-Hill Book Co, **2004**
6. Healthy People 2010, USPHS Web Pages, **2000** AD
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10. The Future of Public Health. Washington DC, National Academy Press, **1988**
11. Healthy People, Surgeon General's report of Health Promotion and Disease Prevention. US Department of Health, Education, and Welfare, **1979**
12. Forward Plan for Health**, FY 1978-1982**. US Dept of Health, Education, and Welfare, 1976
13. National Center for Health Statistics, Health Data Series (All) US Public Health Service
14. American Medical Association, Center for Health Policy Research:
    - Socioeconomic Characteristics of Medical Practice
    - Physician Characteristics and Distribution in the U.S. Chicago, American Medical Association, Periodic Reports.

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2013
Chapter 4
Budgeting and Analysis

A health director or program manager's main task is to provide leadership in developing and enabling health policies to protect the public and ensure a minimal acceptable level of health services. Though the health department may have an administrative manager, the health director is still responsible for running a fiscally sound agency. Most state realize that a minimal population mass is necessary to provide sufficient staff for a reasonable range of public health programs, whose performance is measurable by specific outcome objectives. In many states 100,000 is the minimum population size for a health district supervised by a director trained in public health. In rural areas, several counties and small cities may be grouped into "health districts."

Fiscal management includes all those activities necessary to ensure that an agency stays within its allotted monetary resources. This requires an accounting system to track expenditures and revenues. The system should provide periodic summaries of accounts (whether weekly or monthly), and show when the funds in any "line item" or program are out of balance, either by showing a likely deficit or unexpected excess at the end of the accounting period. Budgets (funds) are provided to local health departments annually. A major problem for most agencies is that the money usually comes from multiple sources such as cities, counties, states, the federal government, private foundations and earned revenue. Each of these revenue sources may have a different fiscal year. Your fiscal manager, or administrator (if the same), has to combine these different funds into comprehensive spending plan and track expenditures from month to month. Also, he or she must be sure that while the different funds contribute to specific programs that they can be tracked individually by an external auditor as well as by program staff. This is essential to demonstrate to the funding source that you spent the money in accord with the objective(s) for which it was given. For additional clarification See this Excel Spreadsheet examples of budgeting alternatives in Virginia, which will be similar to those in other states,

Good management requires that the various funds be placed into a single account, with codes to identify each program and the source of funds contributing to that program. This process starts with local government funds. They are transferred to your account as "line item" funds for personnel, rent, contracts, supplies, or major equipment, not as funds for specific programs. These funds are then distributed a functional division such as nursing or health education. While this example from one of my prior health departments is a couple of decades old, many health departments still do not provide such an explicit fiscal analysis by program (i.e. an activity - STD, within a program - nursing). The funds received from various sources are compiled into a budget to accomplish the department's objectives for the current fiscal year. The objectives contribute to the operating division's (e.g., nursing) and department's overall goals set during planning sessions the previous year, as described in the chapter on planning. The fiscal manager works with division heads and staff to figure out the cost of doing business, while the director helps them to develop an annual detail budget. He or she helps to determine how many people are necessary to staff a clinic, provide a specific service, and care for a specific number of clients by developing a line item budget. Working with the fiscal manager, division and program directors review organizational alternatives to accomplish the objectives. It may be cheaper and more effective to provide services at a site more accessible to your clients if transportation is a problem. It may be more efficient to be co-located with another agency such as a hospital or a social service agency. A new building might reduce overhead costs of heating, air-conditioning, waste disposal, or computer linkage. A different site might provide parking and be an inducement to new staff when competing with other groups for the same people. Each of these considerations has a fiscal impact. This PowerPoint show describes budgeting in a local health district.

Developing an audit trail: for personnel as an example. Staff may be paid by a central agent such as your local government or by the health department itself. At a minimum the

department has to account for attendance, perform semi-annual evaluations, and ensure proper and timely pay raises or disciplinary action that may demand leave without pay. Each pay action must have an "audit trail" to validate it and ensure any change is allocated to the proper fund. Modernizing your computer system may be part of an integrated fiscal management program. Except in the most up-to-date health departments, there is still excessive paper work. Many good fiscal management systems are available for either stand alone or networked computer systems.

The personnel system is a major administrative system within a health department. Because 75-85% of the average department's funds go to pay people, it is the one function that must be integrated into a fiscal management system. Purchasing is a major cost-center. Another major function of the fiscal management system is that of purchasing supplies and equipment. You need to be able to track purchases from the time they were ordered, through the bidding process (if used), and to purchase and finally timely payment. Failure to pay bills on-time incurs additional charges better spent for services. In many agencies an order goes to your supporting government's purchasing office. For all practical purposes the funds needed to pay for an item are encumbered once the order is placed. Encumbrance means that although the money may still be in the department's bank account, it has been obligated and represents a debt to be paid. It cannot be spent twice. Many administrators and health directors, discharged for bad fiscal management, foundered on the shores of a bad supply system. Do not assume that other agencies will treat your money carefully, or that their management systems are either foolproof or efficient. Money provided to operate the department is your responsibility if you are the director. This includes checking the performance of administrators in the department, and means you must have a basic grounding in fiscal management.

You do not earn interest on money in your budget. That interest is earned somewhere else. Often the fiscal office that provides your funds expects expenditure delays and anticipates a certain amount of interest to keep its own budget in line. Each department must develop an expenditure tracking system. There is nothing more frustrating to field staff than trying to work without proper supplies and equipment. Just as you need to track the department's spending it is necessary to track supplies. The fiscal management system should have a subsystem to order supplies based on a specified stock level. The fiscal manager and his staff should decide how many supplies the field staff use weekly, or monthly, on the average. They need to determine how long it takes for supplies to reach the department after they are ordered. Then add six weeks. If it takes six weeks for supplies to reach you after they are ordered, plan to have at least one month's supplies on hand for the ensuing month, plus six weeks supplies for the average order to receipt time, plus a further six weeks for back orders. This may mean having four months' supplies on hand at the beginning of each month. These figures should be adjusted based on experience. Remember that supplies are money that has been spent. With too many supplies on hand you may have trouble with cash flow (too much need for money and not enough in the bank). Without enough supplies you will have to make emergency orders that usually cost more, again depleting assets below the level planned when the budget was submitted. To reduce the cost of supplies, provided you have sufficient storage, a year's supply of non-perishable items may be ordered at one time to take advantage of reduced cost. Another way to arrange bulk purchases is through combined purchasing with similar agencies. Many local governments band together to purchase boxcar loads of items, reducing costs significantly. Several health departments have reduced costs by combining purchases of drugs, syringes, and other clinical supplies with local hospitals. There are many innovative ways of reducing costs. This is where skilled administrators can have a major impact on stretching available financial resources.

Another function of your fiscal system is to keep track of expenditures for utilities such as light, heat, water, and telephones. Capital assets, whether fixed in place such as buildings and built in equipment, or rolling stock such as trucks, trailers, boats, back hoes. Your fuel supplies should be tracked carefully also. All these assets have costs for which the department is accountable. The fiscal management system must have the capability to identify all non-consumable equipment such as tables, chairs, computers, laboratory equipment, and nursing bags. Federal and state auditors expect each item to be labeled and available for inspection

during periodic audits. It is simplest to check a sample drawn from a database than check each piece on a typed list. Each item should have indestructible labels attached and be counted annually. Each item has a predetermined useful life that serves as a basis for annual depreciation, and defines when to order a replacement. Depending on geographic location, utilities have a greater or lesser impact on the budget and require greater or lesser fiscal control. Heating in northern states is important in the winter while air conditioning is essential in states along the Gulf of Mexico. Capital expenditures for building require program analysis to determine where to house staff, and how well the facility will support their activities. Buildings with more than one floor you should have ramps or elevators that can take wheel chairs. Clinical facilities need to have space for examining, interview and changing rooms as well as administrative areas. Rooms should be big enough to train new staff and students. Space used for more than one programs must have a fair share of the cost apportioned to each program. Always plan for 20 percent more space than you think will be needed. Large health departments have routinely assigned the cost of space to the various programs. As the range of services provided by a department grows so does the need to figure out costs. These should include not only personnel time but administrative costs such as space and utilities.

Developing revenues: A department should not only look at proper management of local funds but should explore methods to produce revenue as an efficient and effective form of fiscal management. Frequently, local health agencies are finding that they need to charge (at least some clients) for certain services. Medicaid pays for clinical services (immunization, family planning, STD/TB treatment) and matches federal to state dollars anywhere from 1:1 in the wealthiest to 4:1 in the poorest states. With such federal funds available to defray costs it is not fiscally prudent for a department to pay 100 percent of the cost of providing services. Departments should participate as Medicaid providers, just like physicians, hospitals and drug stores. Revenue from services allows diversion of some of your funds for other pressing needs. Because Medicaid puts an emphasis on MCH programs, by expanding eligibility to at least 180 percent of the poverty level for pregnant women and children up to 5 years of age, there is an opportunity to expand your services using revenue obtained from Medicaid. States participating in the SCHIP program have expanded eligibility to children up to eighteen years of age and 200% of the federal poverty level. Some local health departments still provide home health services. In some communities other than major urban areas, health departments remain the only agencies still providing home health services although improvement to the Medicare program have resulted in development of many private home health agencies. With good money management and better marketing the local health department can maintain its role in the community. Still, in most states, the home health services reimbursement, particularly for management of "activities of daily living" should support not only the home health services but other clinical programs. This requires careful attention to development of good accounting and money management.

Just as fees can support clinical programs, they can also support environmental programs. Most environmental programs are provided to citizens who can afford to pay for services. A person who can afford to build a home can afford to pay for the services necessary to install an individual sewage disposal system or a well. People who eat in restaurants can afford to pay their share of the certification programs used to ensure the food is cooked, stored, prepared and served sanitarily. This is even true for Little-League programs that serve short-order foods in the stands. The restaurant association may agree, as a matter of policy, that all commercial food servers should be trained in food handling and supervised by a certified manager. It is possible to get the support of this association to recommend that its members provide such training and supervision and pay the costs of inspection if the quality control provided by the department is seen as strengthening its leadership in the community. Few states, or localities, that charge fees for inspection of private septic systems or wells charge the full cost. When developing the environmental budget the fiscal manager looks at the number of septic systems installed during past years to develop an average of annual services. This manager also reviews records to determine the actual processes carried out and time taken, including driving time, to figure out manpower costs for installation. Floor space may be used to apportion facility costs. PCs, printers, modems used in a program can be fully charged to it unless the same equipment is used in other programs. If so a proportionate

share of equipment costs should be assigned to the program. Staff support from the administration section, for managing a program's personnel and fiscal management, can be apportioned also. When all this is put together, a program budget can be developed. Once the program's costs are identified they can be discussed with local realtors and builders to let them know who will be affected. The program and recommended fee system can then be reviewed by the city or county manger and, if approved, then discussed with the elected officials and the local advisory board of health. Finally the board of health or elected officials can hold a public hearing for all those who want to express their views. At this point a policy decision can be made whether it is in the public's interest to charge user fees or fund the program from the general tax base. The advantage of user fees is that the costs are borne by those who use them and the program, being self supported, does not have to depend on the tax system. It is worth noting that in 2012 state & local health departments are starting to develop programs to prevent and ameliorate chronic disease.

Recommended Reading:

1. Turnock, BJ: Essentials of Public Health, 2007, Jones & Bartlett
2. Fallon and Zgodzinski: Essentials Public Health Management, 3rd Ed. 2012, Jones & Bartlett
3. Friedman, Mark. Trying Hard is not good enough. Fiscal Policy Studies Institute. http://www.raguide.org
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2013
Essay 5
ACCOUNTABILITY

One issue that gives many public officials trouble is accountability. There is a general perception that trying hard, or feeling good about a product, is all the accountability that is necessary. Health directors are managers as well as policy-makers. They are accountable to many different groups but particularly the public. Chief executives and managers, at all levels of government and private enterprise, are held publicly accountable for their decisions. It is not acceptable to pass blame for failure to a subordinate. Professionals cannot hide behind their M.D./R.N./MBA degree and blame an administrator for fiscal mismanagement. Department and program directors are held accountable for staying within a budget. There is no excuse for spending unallocated funds. When I was a state health commissioner I removed more health directors from their positions for mismanaging their budgets than for any other cause.

Fiscal Accountability

The health director is responsible for the department's mission, goals and supporting programs. The budget is a tool that defines priorities and provides a means to track fiscal performance, program by program. It must be reviewed at least monthly to be sure that program costs stay inside their allowable totals with minimal deviation. This does not mean one twelfth of a program's budget must be spent each month, but that you must have a spending plan for each budget item. For instance, all capital equipment for a program may be bought in the first quarter and 50% of the program's budget spent in that quarter. Or, a major training course in the last quarter may spend 30% of the program's funds in that quarter. What is important is that you have a spending plan for which your supervisor can hold you accountable. If you have to deviate from this plan, do so in a timely manner with explanations to your supervisor. Mismanaging a budget is a serious failure and warrant's removal or retraining, or in the worst case prison time!

In addition to careful fiscal management, accountability includes having a plan of work for immediate, mid-term, and long-range time periods. It requires understanding how management fits into the department's entire operation, and the external world. You are expected to understand a city or county manager's explicitly (derived from, a County Board of Supervisors or a City Council) stated goals for your department, as well as the implied ones necessary to support the locality's mission statement. Accountability includes a responsibility to treat people as humans, to expect the best rather than the worst from them. This does not excuse you from guiding staff and holding them accountable. It does not excuse you from taking necessary remedial action to correct poor performance.

Personnel Accountability.

Personnel management is a major area of accountability. Failure to pay adequate attention to personnel management is likely to lead to legal action. How much of the department's budget is set-aside for staff? How much of this will be used for raises, merit increases, or part-time staff during peak periods and vacations? Many organizations fail, or appear to fail, to administer their personnel system fairly. Staff often perceives promotion or benefits given as based on favoritism, not performance. This is usually a misunderstanding caused by lack of clarity when setting standards to reward performance, or failure to communicate such standards to all who might be affected. Standards of performance are often expressed in terms such as "above the average" but no one ever explains what the "average" is. For a public health nurse the standard may be "completion of six home visits a day with a clear, complete, written description of the patient's condition and actions taken by the nurse." More vaguely, it may be simply "performs at the same level as peers."

Physicians, nurses, and human service specialists such as social workers and case managers are trained to be concerned about their patients and clients, usually with little regard to cost. Unfortunately, this training rarely covers accountability for the results of providing care, let alone the cost. Public accountability is just starting to change from measuring numbers of visits made to a clinic, to concern about whether the service made any difference to a patient's health (think of examples of such measurements). Due to the increasing cost of health care, health departments are expected to show that the care they provide, with public funds, makes a difference to the patient's health. Additionally, many health departments are expected to show that a patient's dependency on public services is reduced, or the cost decreased, as a result of services provided. Measurement of results is important to demonstrate accountability.

Physicians and nurses report through a medical chain of command during their training, and in most jobs. If they work in a clinic or hospital setting they tend to consider only what their patients need without regard for the administrative structure or the various support services assisting them. Physicians are used to writing "Doctor's Orders" and having a ward supervisor or house staff carry them out. Rarely have they been taught, or motivated, to think seriously of the non-medical players on the team. Their priority is to make sure that patients get all the care and technology that might help them. Few physicians have any kind of management experience. Those trained in public administration or business management have less difficulty adapting to results-oriented accountability.

Accountability to Supervisors.

When managing a local health department, one is accountable to a state, regional or district health department or jurisdictional manager. Depending on how a local health department fits into a local, regional, state or national organization, the line supervision of a health department may be from a technical supervisor such as a regional or district environmental or nursing director, or directly from the state health commissioner. It may also come through a non-technical administrative or political superior such as a city or county administrator, or in large population centers through a deputy or assistant city or county manager. If the local health director is a physician reporting to a non-physician supervisor, it is often difficult for both. Health directors must learn how to work within a large organization as a member of a team. No one works in a vacuum. Everybody in an organization must be held accountable. Most jurisdictions today hire administrators trained in management of public organizations such as cities and counties, who serve at the pleasure of the elected mayor, city council, or board of supervisors [managers, selectmen, judges]. Occasionally, health directors report to a politically appointed Board of Health.

Health directors should have frank discussions with their immediate supervisors about the performance standards for which they will be held accountable. The first discussion should take place during the job interview. Regular periodic discussions about performance should be held at least semi-annually. This avoids any question about your own performance, and whether the health department is making satisfactory progress. You need to know whom you can hire and fire, particularly when you work in a civil service or a patronage system. Most health directors work in a civil service system where all individuals are hired under personnel standards that include formal job descriptions and pay steps. Such positions must be advertised and selections made from the best candidates. The director is held accountable for ensuring equity in hiring practices and must be alert to any effort to work around the system. One's staff learns rapidly whether people are hired on merit or because they `knew someone'. Any perception of such behavior has a bad effect on morale that is very hard to overcome. It is also important that the staff's profile represents the community as a whole by sex, age, and race. To some extent this depends on the work force available locally. The larger the department, the higher the expectation will be that its staff reflects the population from which they are drawn.

Cross-cultural accountability.

If immigrants come to your health department, as is common along the US-Mexican border or near major ports, appropriate representation is especially important to avoid language and cultural difficulties. Sensitivity to cultural and semantic differences are necessary to communicate recommendations to such groups. In some cultures it is taboo for a male to examine a female. If you have someone on your staff sensitive to the practice, a female physician or nurse can be assigned to that patient. Many immigrants from Caribbean or South American cultures have a deep-seated belief in Curanderos or "witches". Understanding such beliefs and using indigenous practitioners can help new immigrants accept the American way of providing care. Failure to understand different beliefs and values can be a barrier to improving health care in both immigrants and some of our own neighborhoods that have developed from other than western European immigration. Similar words among the romance languages may have very different meanings when translated to English, due to syntax, context or inflections of speech. Asiatic languages do not have any way of expressing certain American values.

Staff accountability and resources.

It is important not only that you hire staff fairly, but that your supervision promotes coordination to carry out the department's goals. One of the essential chief executive's skills is delegation. Although the health director is the chief executive of the health department, he or she still has a limited range and depth of skills. It is necessary to delegate both responsibility and resources to your staff to help carry out activities. Staff should not be held accountable for failing to reach an objective if they were not given the authority and resources to complete it. The health director should have a "management team" to help set priorities and to allocate staff to tasks. Team members are usually willing to be responsible for decisions they made as part of the team. They know the other team members that took part in making the decision will help them carry out the necessary actions. Allowing staff to make decisions in their area of expertise improves their willingness to solve problems. This technique allows you to guide staff members toward the goals you wish them to achieve without their feeling the task was force on them arbitrarily.

Monitoring subordinates.

Despite a team members' acceptance of a task, the health director must still monitor progress. If staff are falling short of your expectations intervene early by providing additional recommendations. Your staff may be making bad decisions. They may not be telling you everything because they think you do not want to hear bad news. You may be seen as a blamer, rather than a facilitator. This deters staff from holding themselves accountable to you. There is a fine line between holding a staff member accountable for a task and taking over for them. A manager may argue that sufficient resources such as people, money, or time were not provided. You should review the task given initially and make sure the manager remembers the discussion at the time the task was given, including resource limitations. You may need to agree on changes to your expectations. But you must hold the manager accountable for the task given.

Being Monitored

You should expect your own supervisors to hold you accountable to them just as you hold staff accountable to you. A director may have to change both short and long-term goals and objectives if supervisors change their goals and objectives. Directors may be in a position where their supervisors fail to listen or agree with their recommendations. If this happens discuss the issue with your staff and see if the department can and should modify its goals to meet the new challenges. If this is completely impossible it becomes your responsibility to go back to your supervisors. If they still refuse to acknowledge the department's inability to meet

their demands it may be necessary, as a last resort, to consider resigning! This should only be a final option. Never use the threat of resignation as a bluff, it will be called quickly. There are, however, times when accountability requires offering your resignation. If it is accepted, you can sit back and watch your successor make a mess of things! If your successor thrives on the challenge and meets the expectations of your previous supervisors, you will have learned an important lesson: don't accept advice about what is or is not achievable without making sure the facts are accurate.

Executive summaries

Just as you will be held accountable for performance (outcome) and for providing correct and timely factual information to your supervisors, you should demand such information yourself. A large element of accountability relates to the way you present information, whether written or oral. Your supervisors are usually as busy as you are. They need easily digested information. Provide succinct answers to their questions in the form of executive summaries, no more than one to two pages long. Cover only the facts they need to know to make decisions. Don't preach when summarizing. Be prepared to provide back up material to the executive summaries. Present data as graphics whenever possible. If possible, delegate the bulk of the preparation of your presentations. The presentation developed for you shows how well the staff understand the department's goals and objectives, how well they research their material and how much additional training and guidance they need. This is another way to hold your staff accountable for meeting the department's goals and objectives.

Public Accountability.

Another concern for accountability at the policy level is credibility. Many organizations perform well in their chief executive's view, yet the public may not have great faith in the enterprise. This often happens with government programs, where people are served well but the policymakers don't consider the programs as being effective. This may be because the director and senior staff have been poor salesman. When public health does its job well, and often quietly, there are no disease outbreaks, no children disabled by mumps or measles meningitis, no-one affected by sewage overflow or made ill by E. Coli contaminated water, or foods containing large numbers of staphylococci. Part of public health's accountability is also for providing public education about improvements in the public's health from good programs. Departments of public health had their heyday before and around World War II. They concentrated on providing pure water, uncontaminated food, adequate sewage systems, and case management for pregnant women, and immunizations for children. We still do these things and do them well. We also work to control environmental hazards, to prevent developmental disabilities and, as a last resort, provide primary care. Due to the excessive claims by various activist groups about food safety (the "Alar scare"), about poisoning water (fluoridation), about weekly cancer scares (coffee one week, barbecued steak the next) it has been difficult to sell less glamorous programs such as family planning, immunization, lower fat in diets, or prenatal care. The hard sell by the TV media has been for vaguely useful tertiary care. Political Accountability The 1988 report of the Institute of Medicine, "The Future of Public Health" indicates clearly that one of the main problems of public health, since the end of World War II, has been its failure to promote the effectiveness of public health programs. We have also failed to take a "systems approach" to evaluating our effectiveness and thus have been seen as poorly accountable. A clear example is the failure of many public health departments to get funds for prenatal care and care of young children. We have used such slogans as "$1 invested saves $3.00 otherwise used for intensive perinatal care." This sounds good to us but fails to recognize the small cost of a statewide program for perinatal and prenatal care compared with the long-term future cost savings. In a state with 1000 infant deaths a year and several thousand premature infants, the cost of prenatal care may be several hundreds of thousands of dollars, and the savings may appear to be only $1-2 million. When state budgets run into billions of dollars, these sums seem irrelevant. However, the cost of prenatal care for a single individual, up to $1000, should be compared with the $100,000 or more spent on intensive neonatal for a very small desperately ill infant. The picture should include the costs

of caring for a retarded child in the mental health/mental retardation system, the costs of special education services, and the costs of support in a sheltered workshop or a special home for the retarded. Instead of talking about $1 vs. $3 dollars for intensive care when you fail to spend the funds for prenatal care and delivery, you should focus on the same small sum spent for prenatal care vs. the millions of dollars of potential savings over the lifetime of this same child. Another way of presenting the same data is to draw a map of your community by neighborhood or census tracts showing the distribution of potential problems and potential savings. This will show each elected official that these problems exist in his or her district. Rather than making it look as though you are picking on the politicians who fund your programs, identifying the costs and numbers of individuals still affected by lack of services can result in additional funds for your programs. Such a presentation can demonstrate accountability for the health problems in the community and involve elected officials in a constructive way that leads to additional resources. When planning such presentations it is helpful to involve the TV, radio and newspapers. Political accountability can be just as important as accountability for budgeting, planning and personnel. You should also look at the Local Public Health Performance Evaluation Instrument

Summary

Finally, accountability is a two way street. Just as health directors are accountable to their supervisors, they are also accountable to the staff that works for them, and the public they serve. Directors who value two-way accountability have staffs of high performers who excel in difficult times, and make the department shine at all times.

Recommended Reading:

1. Public Health Management. Chapter 21: Fallon and Zgodzinski. 3rd edn. Jones & Bartlett. 2012
2. Goldsmith S. & Eggers WD: Governing by Network, Chapter 6, Accountability.
3. Rowitz, Louis. Public Health Leadership. Jones & Bartlett 2009 (A little verbose but an excellent reference.
4. National Public Health Performance Standards - Review Chapter 9
5. The Future of Public Health, Future of Public Health Washington DC, National Academy Press, 1988 Review Chapter 2.
6. Public Health in the 21st Century, Washington DC, National Academy Press, 2003
7. Public Health Competencies - 2001, consider how these competencies can add to accountability.

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The Local Health Department
Chapter 6
PROGRAM MANAGEMENT

The local health director is always in the middle: on one side are the assorted government agencies issuing health objectives and political promises; on the other are the people to whom these services must be delivered. Typically, the scope of national proposals and objectives is larger than a single department can manage, while the community's need exceeds its budgetary resources. The director's job, then, is to translate the promises to a form relevant to the community and the department's capacity. Also, to use the budget for those programs that promise the greatest *measurable* benefit to the community.

The key here is "*measurable*." The elected officials who provide the resources to the department have to make choices among many worthwhile programs every year. Many of the programs city councils or boards of supervisors are asked to fund sound laudable. Immunization of children against measles (to prevent measles encephalitis or death) can be measured by a drop in new infections, and subsequent disease and death. On the other hand, a program to teach children about the consequences of tobacco use, while laudable may not have any useful measurement other than a survey that most communities cannot afford, although the state BRFSS (Behavioral Risk Factor Surveillance System) for children is now able to give reasonable indicators. There are few valid measurements of how many children experiment with tobacco use, or don't start its use, other than response to surveys such as BRFSS. Reduction in tooth decay following use of fluorides in public water supplies is measurable. Use of condoms among teenagers after sex education classes cannot be validated by objective measurements other than a reduction in reported STDs. Successful public health programs are usually associated with clear objectives and valid replicable measurements of results.

Similarly, nationally, it is one thing for a president to declare war on cancer and quite another for physicians and scientists to devise specific procedures and strategies to deal with the many different forms of malignancies that attack man, and to track the results of those efforts. Sweeping pronouncements are politically attractive. Voters enjoy hearing them and politicians enjoy making them, but that does not necessarily make them workable. It remains for the local health director to apply common sense in developing procedures and strategies that might work locally and then track their results.

Politics and health

The health director is not a pure scientist and somehow above politics. To function, he/she must be aware of political realities, of competing interests, programs and agendas in pursuit of approval, votes and appropriations. The health director's best ally in that competition, however, is science. When a health director can demonstrate positive results with precision, it is easier to win approval for programs.

As the person responsible for the care of individuals, a local health director is in the best position to measure the effects of programs on people: to do the data gathering and thus to know what is really going on in the community. Paradoxically, some measurable successes of public health make it more, not less, difficult to convince voters and governmental agencies to continue their support. Fluoridation and other programs aimed at protecting the teeth of children have been so successful in the United States that the bulk of dental care has shifted to the middle aged and older. Children, in general, no longer have great numbers of cavities, except for those overindulging in carbohydrates and getting caries, or living in communities without fluoridated water supplies. People under 50 have not seen 'iron lungs' used to treat poliomyelitis patients, mental retardation from mumps or measles encephalitis, post-measles

deafness and blindness or deaths from measles, diphtheria, and mumps. Most people do not realize that diseases which were common in the recent past are not "conquered" but merely held in check by routine public health measures, and that in the absence of these measures they can still be serious and life threatening.

Political challenges are by no means restricted to those of office holders; popular movements, with their penchant for confrontational tactics, can damage the credibility of any agency by simply capturing the attention of the media. A shouted slogan is a more dramatic "sound bite" than a reasoned response, as well as more memorable. Because many genuine public concerns are founded on poor science their value is often misunderstood. It is the health director's responsibility to provide a scientific base for public issues that will lead to a solution, if they are genuine, or to their dismissal if not. If politically astute, the director will work quietly to gather hard data and only then use the media to enlighten the public about issues engineered by others to fulfill some particular agenda. For example, there was a public outcry about the 'terrible side-effects of giving DTP vaccines' by small groups of vocal parents whose children had neurological problems temporally associated with use of the vaccine. It was only after the outcry, after lawsuits charging malpractice, and after congress had enacted laws to compensate parents that enough hard scientific data was accumulated to show that most, if not all, of these events did not have a genesis in administration of DTP vaccines. A current hot potato in 2012/13 is the requirement that girls and boys be required to accept HPV vaccination. Data from a national study suggests that about one in four U.S. females between the ages of 14 and 59 years may have the sexually transmitted infection HPV (JAMA. 2007;297:876-878) and that immunized young males have significantly less anal cancer and genital warts (NEJM 364;5 February 3, 2011)

Changing health and political realities

Standards that percolate down from the national level may be somewhat distant from local reality. *Promoting Health--Preventing Disease: Objectives for the Nation (Objectives)*, published by the U.S. Department of Health and Human Services first in 1980, proposed goals to be achieved by 1990. The next such set of objectives, published in the summer of 1990, set goals for the year 2000. This was succeeded by the next 10 year plan – Healthy People 2000, and then by Healthy People 2020, and now the current plan identifying outcomes for 2020. 10 years may be too long a period for such health planning and objective setting, even at the national level. Changes in medical care, disease incidence or new technologies, may modify perspectives or resource allocation. AIDS, for example, was not even mentioned in the 1980 objectives--it was then unknown. The political situation may also change. In Texas in 1980, for instance, no one could foresee the oil recession of the mid-decade that would hobble the state's programs. Recently we have had to deal with SARS and an expected H1N1 Flu Pandemic. It remains for the local health director not only to sort out and apply the objectives that work for his/her jurisdiction, but also to gather data to refine future sets of objectives. Though 10 years may be too long a unit of time for health planning, any planning is better than none at all, and as shared information improves, so will the goals themselves. Part of the cost of planning is that of carrying out surveys to measure health status, and people's behaviors and perceptions. The Public Health community must be more effective in helping legislators understand the value of such surveys, or health planning will continue to be out of step with the real world. Data is often out of date by the time it is published, due to poor methodology in aggregating data once gathered, but that is improving as computerized information networks across the health system had better linkage and coordination.

Adding to the complexity of dealing with various goals and the demands of various action groups (activists by cause) is the sheer number of responsibilities that have been imposed upon health departments. Besides gathering data and setting local objectives, the typical local health department is often charged with overseeing primary care clinical services to mothers, children and the indigent, and for intervention in genetic diseases and terminal illnesses. It is

expected to develop and implement programs of general health for the public and to guard against the spread of infectious diseases. Local health departments are also regulatory agencies, licensing food handlers and septic tank sites, monitoring air and water quality, and dealing with occupational hazards. They often operate programs for particular conditions, such as hypertension. While this list is far from complete, it gives some notion of the scope of health department programs to be conducted with finite resources.

Programs and Data.

If politics is the art of the possible, the local health director must be a consummate artist. Information is the medium of this art form. With good data, health directors know which national standards are applicable to their communities, what programs save their communities money and people disability, what issues need attention, and what their departments must do to stay ahead of demands.

Data come from many sources;-physicians, hospitals, staff inspectors, school nurses and other governmental agencies. The data need to be processed into a single, comprehensive body to be useful. Fortunately, computerized databases make it possible to receive and process a vast amount of information while potentially eliminating duplication of effort. Once a piece of data is captured into an electronic database, it should never be necessary to capture it again. This database should be accessible, through networks or through the Internet. (Bioterrorism concerns are driving database development in public health.) Staff at program sites should be able to enter new information about individuals and retrieve information about known patients already on file. The person registering a patient for an immunization program should be able to update a patient's clinical history electronically. Timely information helps prevent patients from being given an incorrect vaccine. As an additional benefit, the system can print out vaccination certificates during each clinic visit. Simultaneously, the system records such details as the vaccine manufacturer, date of production, lot number, and the name of the person administering the vaccine. Current data f0orm the American Academy of Family Physicians shows that less than 40% of physicians are using any electronic clinical database in their practices.

Families in most communities may have members living in the same household who visit more than one doctor, clinic or agency, and more than one family member may be visiting each agency, or participating in all the programs of one agency. As different agencies may also deliver services to a single household, the degree of overlap in both directions can be surprising. Not infrequently, the household members themselves get confused about who is looking after whom, and staff members can become entangled in the different eligibility requirements of the various programs, even within the same agency. Fortunately, nearly all agencies require similar financial data before determining the programs for which clients are eligible, and this, at least, may be shared between them all.

Information sharing

While public health information may not be made public, there is rarely any reason to withhold it from the various agencies with legitimate interests in the families they serve jointly. A community can and should decide which data, although confidential, should be available on a need-to-know basis to human service agencies funded and functioning within a single jurisdiction. Modern management techniques, using computerized databases, can provide information and restrict access to it, can ensure that essential services are provided with limited staffs and with far less paperwork. In this way, basic demographic data can be exchanged among health, welfare, mental health, education, rehabilitation and possibly charitable agencies. All agency staff needs to know such things as the names of family members, location of households and program identifiers such as departmental registration numbers. Whichever agency first contacts the eligible person should collect this data, and once that person is entered into the database by the first human service agency approached, there is no need to re-interview the person at the succeeding agencies. By developing a team of

human service eligibility supervisors who can work together to determine data needs, communities can further maximize the efficiencies computers make possible. Under their guidance, individual agencies can identify the types of data each needs and can work together to install a common human services database, with the agency requiring the greatest amount of data keeping the permanent record. When clients move from one agency to another for primary services, protocols for stripping out the information not needed about them by the new agency are applied and the data are shared electronically. The eligibility system supervisors make eligibility decisions automatically available to any other agency to which a client is referred within the system, or to which the client goes independently.

Automated procedures not only perform a system eligibility function, but act as a referral mechanism to other agencies. A woman bringing in small children to be immunized, for instance, would be tagged electronically as eligible for WIC (a program providing supplemental food to pregnant women and young children), food stamps, and additional social services. Procedures for developing such interdepartmental data systems are discussed in another lecture.

Because medical data should be kept indefinitely it is good practice, in today's litigious environment, to store it on a remote hard disk and make daily backup copies kept at 2-3 different sites simultaneously. Computers can make backups relatively easily, generating hard copy files required for audits while placing electronic copies of the records into permanent (archived) files. Data system improvements are among the most important advances to benefit public health in the past ten years. They allow us to track patients, analyze diseases, and evaluate the effectiveness and efficiency of our programs quickly and accurately. Congress has mandated that all health systems including doctor’s offices be computerized by 2014. The problem is that practice have been given the opportunity to access numerous different kinds of data systems that often fail to interact with each other so that the ability to analyze patient outcome among groups of physicians is still lacking. Further the medical records systems and doctor’ s offices currently fail to link with most hospital information systems all with local and state health agencies.

Health Education

If information is the medium of the health director's art, education is its message. Ordinary people who are well informed are quite capable of making intelligent decisions about their priorities while people who are ill informed tend to make poor ones. It is in everyone's best interest to be well informed, particularly in democratically governed communities.

It is seductively easy to rationalize the department's staff spending all their time in direct patient service rather than any in community education. Given the number of responsibilities a typical health department has, there is always a sense of urgency about getting on with the job or jobs at hand. Still, without community support a health department becomes moribund, and a department very busy doing things that are not well understood outside its offices can quickly lose community support. Particularly when the things it does are perceived as intrusive, painful and/or expensive, the health department may find itself cast in the role of adversary in times of confrontation by special interest groups.

On the other hand, when people generally understand what the department is doing and the principles underlying its programs, their support tends to be very strong indeed. Maintaining staff morale, funding continuing education, and obtaining additional staff all becomes much easier with such support, and the general health of the community improves. We should always devote a proportion of staff time to an effort to make people aware of programs and what they mean. Such activity pays off every time. The development of local health department web sites is of increasing importance.

Communities that understand their health departments do not see them as an adversary or "just another bureaucracy". When there is an outbreak of disease, the health department is

looked to for help rather than castigated for allowing it to happen. When infant death rates fail to drop, the community might ask what help it could give. During disagreements, especially when the federal or state government has made a policy announcement about health, the department's staff are often the nearest civil servants within reach. When trust and understanding have been built and maintained, channels of communication remain open.

It is hard to measure the impact of efforts to educate the public and governmental officials, yet health departments, which make such efforts, prosper. In bad times, they seem to have the fewest cuts in personnel and programs of all community departments, and in good times their proposals tend to receive support. Because they address chronic needs, health departments rarely have first claim on community funds. More visible problems, like crumbling sewer systems, potholed roads or overcrowded schools are often first in line. But when tendency for neglected chronic problems to fulminate into acute ones is properly understood, health departments are not placed at the end of the line, either. It takes constant care to keep the public informed, but such public relations are as much a function of a successful agency as the clinical or environmental programs it operates. If the health department's services benefit the public, then it will be expected to continue providing them.

Public relations efforts take many forms at many levels. As a local health director, I sat on infection control and utilization review committees of local hospitals and met at least annually with the boards of directors of those hospitals. Being known personally to the medical community and making my views known to them was a necessary step in building my department's credibility and increasing the community's receptivity to my ideas. For example, because my staff and I met with the cancer society and hospital medical staffs we could link evaluation and treatment of women together when we found positive pap smears in our clinics. We worked closely with the local children's hospitals and were able to refer poor children to their specialty services by facilitating reimbursement from the state as well as enhancing pediatric residency training with hospital medical staff and residents working in our child health programs.

When good data is available it is possible to be more active in community education as opposed to working quietly to gather data when little is available. For instance one can help the community to understand and accept immunization programs better by meeting with community groups such as PTA, junior league, and churches. Staff can write information releases for newspapers, radio and TV, and work to get them in print or on the air. When dealing with more emotionally charged issues such as family planning, it is possible to work closely with such diverse groups as ministers from various faiths as well as advocates like Planned Parenthood. Additionally, the department's staff--nursing, environmental and support, can make a personal effort to educate friends, neighbors, their church congregations, and social groups. Because the newspaper owner and the senior staff of the local television and radio stations understood and supported the family planning program, they ran frequent notices and public service announcements in both English and Spanish.

Most of the funding battles for maternal and child health and immunization programs are won by ad hoc boards, appointed by the city and county officials. These are often composed of people from the school superintendent's office, educators, ministers, physicians, dentists, hospital auxiliaries, and persons from charitable agencies. Such boards should meet with the department staff regularly, tour the facilities, review all plans, help develop and critique policy, review annual program achievements and present the results to the relevant city and county boards. Invariably, they push for additional resources.

Finally, as chronic disease has become epidemic health department web sites need to be proactively engaged in helping people live healthy lifestyles with links to information.

Dealing with sensitive topics

Sexually transmitted diseases (STDs) are certainly an area of public health concern, yet one that poses difficulties. Many health departments handle STD information poorly because directors are often afraid of offending elected officials. Yet it is the diseases, rather than their transmission, that ought to be the focus. It is possible, proper and necessary to discuss these diseases epidemiologically without steamy details. The long term effects of Syphilis, Gonorrhea, Chlamydia, AIDS, HPV and pelvic inflammatory disease upon the population most at risk--young men and women--as well as the community's share of the consequences are tied to the health department's role in preventing them, by providing information people need to know. STDs are probably spread more by ignorance than any other type of disease, and that ignorance can be fought in schools, churches, recreation centers and the media without offense so long as care is taken to confine the discussion to the disease and its transmission rather than focusing on issues such as homosexual rights.

Recently, many city and state public health departments have improved their credibility by dealing with the HIV epidemic as a disease, using prior models for controlling tuberculosis and syphilis, rather than focusing attention on political actions, or trying to change individual morals. Coming to understand the disease and the needs of the patients has given us a new opportunity to plan the use of scarce resources, to integrate programs and to tell the public health story. Health departments emphasize education of both the general public and the medical profession about the limited ways in which the disease could be transmitted as well as use of condoms to prevent transmission of the virus in seminal fluids. They have continued motivating the public to be calm when faced with a new disease, as well as helping the media to provide useful medical information to the public.

Formulating health standards

The local health director is charged with developing and implementing local health goals and objectives for the various programs under his control. These should not conflict with state and national ones. However, not all national or even all state goals may be applicable to the situation the director or program manager faces. Goals for black lung disease, for instance, are useful only in jurisdictions containing coal mines. Particular demographics often dictate focusing attention on selected segments of the population rather than others. Some goals are more appropriately addressed by other agencies, such as environment or housing.

Model Standards

National health guidelines were initiated as PL95-83, the Health Services Extension Act of 1977, which called for standards to "identify populations in need of preventive or protective health services," to "establish model standards with respect to preventive health services in communities," and to "maintain community-oriented preventive health programs." A work group composed of representatives from the Centers for Disease Control, the Association of State and Territorial Health Officials, the National Association of City and County Health Officials, and the American Public Health Association had seen the need for such standards, worked for the passage of the law and subsequently produced *Model Standards for Community Preventive Health Services* (Model Standards) in August, 1979 (Second Edition, 1985). Finally incorporated into the healthy people programs is HP 2020 which is the most recent publication.

The publication has a major set of prevention strategies:

Tobacco Control Strategic Action Plan

HHS Initiative on Multiple Chronic Conditions

Action Plan for the Prevention, Care and Treatment of Viral Hepatitis

Healthcare-Associated Infection (HAI)

Public Health System, Finance, and Quality Program

HHS Action Plan to Reduce Racial and Ethnic Health Disparities

National Prevention Strategy

National HIV/AIDS Strategy

National Drug Control Strategy

Let's Move Campaign

President's Food Safety Working Group

Global Health Initiative

U.S. National Vaccine Plan

National Action Plan to Improve Health Literacy

HHS Environmental Justice

Each of which has numerous objectives such as those that focus on the current epidemic of chronic diseases.

HHS Initiative on Multiple Chronic Conditions

Optimum Health and Quality of Life for Individuals with Multiple Chronic Conditions

Multiple chronic conditions (MCC) pose a significant and increasing burden on the health of Americans. As part of its efforts to reduce the burden and suffering from MCC, the US Department of Health and Human Services (HHS) supports a large number of programs to prevent and manage multiple chronic conditions MCC. HHS also provides leadership for improving the health of individuals with MCC.

The HHS material chronic diseases and other noninfectious diseases has been supplemented by the *"Guidelines for Community Preventive Services"* The new material focuses on evidence-based decisions. The HP 2020 document is further supported by recommended public health standards which can be used by state and local health departments and is available at the National Public Health Performance Standards web site.

2020 Objectives

Over the last 30 years the model standards have morphed into the healthy people objectives which have improved each year from the 1990 objectives met for all "pie-in-the-sky" to the 2020 objectives which are more realistic and have a reasonable opportunity of being achieved. The subject is can be found online and should be examined to look at "focus areas" which have been extended to a great number of objectives, which will look good on paper at the national level but there prescriptive value tends to fall apart except when state program directors tried to select from them to determine what is best to use at the community level. See Healthy People 2020. Further the CDC's Office of Public Health Practices has developed a whole set of model practices which are discussed in the planning chapter.

Applying the Objectives.

Texas, Virginia and other states and localities really started using the healthy people project with HP 2000 to derive state & local goals from these national agenda. The approaches used by two different two states such as Virginia and Texas are different from each related to the population makeup in the two states. In Texas, a steering council of 30 members, representing government, private health professionals and businesses, assisted by an advisory committee of program specialists from the state agency, used a modified version (one that better reflected the needs of Texas) of the national objectives to formulate their own set. In Virginia, a "Health Congress" was formed of members from state agencies, local health departments, voluntary non-profit agencies, health care providers, educators and the state legislature. After several days of intense effort, this group identified the major health priorities of concern within the state. Afterwards, local departments, with these priorities in mind, compiled their own objectives based on the HP 2000 recommendations and their own knowledge of local health needs, met and unmet. In a "bottom upwards" process, these local objectives were then consolidated into regional objectives and the regional objectives into objectives for the state.

Although the final Virginia objectives were developed four years later they were similar to those from Texas. They included all the areas covered by 2010 Objectives, plus additional programs important to Virginia. The outcomes from these two very different approaches were essentially the same, yet both plans contained state-specific elements, and the process of formulating them helped all the participants to improve their understanding of their respective states.

All have been updated to incorporate the Healthy People 2020.

The next three essays will demonstrate the mechanics of making local health programs work in the areas of disease control, disease prevention and clinical services. The specific topics are selected to provide the reader with examples of program goals and objectives selected from the Healthy People documents. The selected goals and objectives are used to describe methods to combine local health department resources with those of other public, private and non-profit health care and human service agencies to provide effective and efficient programs of service to the community. The selected objectives are ones that have been used in different places at different times, over the last twenty years. The techniques used to attain these objectives are aimed to help readers understand the value of the objectives. These techniques can be applied to the myriad other objectives found in 'Healthy People'.

When reading next three essays remember that goals reflect broad areas of national policy that may seem utopian for local health departments. This is emphasized to remind you that the local department must modify these goals to reflect local long-range goals. It will also be necessary to revise the objectives, which in both documents are national objectives, to reflect local conditions. In some communities the local objectives may already surpass national goals, but still not be satisfactory to that community. In others, the national objectives may be too ambitious for a locality. When reviewing the material in the next three chapters you will find it helps to keep the 'Healthy People' documents available.

Recommended Reading:

1. Goldsmith S and Eggers WD. Governing by Network, Chapter 7
2. Fallon LF & Zgodzinski EJ. Public Health Management, 2nd Edn. Chapter 8
3. Healthy People 2020
4. Healthy People 2010
5. Healthy People 2000
6. Public Health in the 21st Century, IOM 2003
7. NACCHO Model Practices Program

8. The Future of Public Health, Washington DC, National Academy Press, 1988
9. The 1990 Health Objectives for the Nation: Midcourse Review. US Dept of Health and Human Services, 1986.
10. Promoting Health, Preventing Disease-Objectives for the Nation. US Dept of Health, Education, and Welfare, 1980.
11. Model Standards-Guide to Community Preventive Health Services. Ed 2, American Public Health Association, 1986

2013
Chapter 7
COMMUNICABLE DISEASE CONTROL

A local health director must be thoroughly familiar with the history of infectious disease outbreaks in the community and must exercise active (require formal periodic reports) and passive (accept voluntary reports) surveillance from physicians, laboratories and hospitals. He needs to be aware of the community's demographics to prepare for the diseases most likely to strike. The director should know the community's level of "herd immunity" for the major infectious diseases. The department must have a plan to control epidemics. While communicable diseases may be so well-controlled that months pass without incidents, epidemics are marvelous opportunities to pull the staff together as a team and demonstrate the effectiveness of public health programs to the community. This has become even more important with all the anxiety over potential pandemics such as Avian swine derived Influenza. The H1N1 “epidemics” of 2010 and 2012 and a continued concern for bioterrorism.

The director must translate national objectives into effective local programs of communicable disease control. In smaller jurisdictions it makes sense to combine disease surveillance, immunization, and infectious disease control (of all types) into a single program, supervised by a staff member trained in epidemiology. The focus of diseases to be controlled are discrete categories in the *Healthy People 2020 recommendations;* with three Objectives HIV, Immunization and Infectious diseases, and Sexually Transmitted diseases.

While they are discussed separately here, in practice such compartmentalization strains the resources of smaller agencies. Managing childhood infections as a program separate from adult infections, or treating community surveillance as a program distinct from both, is organizationally inefficient at the state or local level. Infection control requires the use of geographic epidemiology and analysis of disease rates by age, sex, race, culture and socio-economic levels. Epidemiologic skills are similar for different diseases, whether they happen to be insect borne, by respiratory routes, skin contact or sexually transmitted. Treatment for tuberculosis or Hansen's disease, immunization for measles or diphtheria and surveillance for Hepatitis-A and B, or regional diseases such as encephalitis, dengue and malaria are all part of a sound infectious disease program. When developing your goals and plans look at the data and recommendations available on both the CDC and WHO websites. The CDC has four separate websites;

Office of Public Health Preparedness and Response
National Center for Immunization and Respiratory Diseases (NCIRD)
National Center for Emerging and Zoonotic Infectious Diseases
National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention

Healthy People 2020 goals for immunization and infectious diseases are rooted in evidence-based clinical and community activities and services for the prevention and treatment of infectious diseases. Objectives new to Healthy People 2020 focus on technological advancements and ensuring that States, local public health departments, and nongovernmental organizations are strong partners in the Nation’s attempt to control the spread of infectious diseases. Objectives for 2020 reflect a more mobile society and the fact that diseases do not stop at geopolitical borders. Awareness of disease and completing prevention and treatment courses remain essential components for reducing infectious disease transmission

The infectious disease public health infrastructure, which carries out disease surveillance at the Federal, State, and local levels, is an essential tool in the fight against newly emerging and re-emerging infectious diseases. Other important defenses against infectious diseases include:

- Proper use of vaccines
- Antibiotics
- Screening and testing guidelines
- Scientific improvements in the diagnosis of infectious disease-related health concerns

Past

CDC National Public Health Performance Standards Program (NPHPSP) NPHPSP is a National Partnership initiative that has developed National Public Health Performance Standards for state and local public health systems and for public health governing bodies. This site provides information on the NPHPSP, the National Partners, and the resources available to support performance assessment and systems improvement. NPHPSP and National Partner staffs offer technical assistance, performance assessment analysis reports, and systems planning services to users of our assessment instruments. NPHPSP performance assessments should provide system participants with an understanding of the gaps between their current performance and the optimal level of performance described by the standards. System partners can then determine where the largest or most crucial gaps in performance are; these are the areas on which the action plan should focus.

It has become increasingly clear during the last few years that the database for infectious disease control and reporting is a priority. This is accomplished through the public health informatics and technology program office whose mission is to support health and public health practices by encouraging better management and use of information and knowledge. This has been developed the public health information network (PHIN), which promoting the use of standards and defining functional and technical requirements. The PHIN strives to improve public health by enhancing research and practice through best practices related to efficient, effective, and interoperable public health information systems.

CDC's role in PHIN is:

- ***Supporting*** the exchange of critical health information between all levels of public health and healthcare,
- ***Developing and promulgating*** requirements, standards, specifications, and an overall architecture in a collaborative, transparent, and dynamic way,
- ***Monitoring*** the capability of state and local health departments to exchange information,
- ***Advancing*** supportive policy,
- ***Providing*** technical assistance to state and local health departments, and
- ***Facilitating*** communication and information sharing within the PHIN community.

The single most effective barrier to any communicable disease in the population is widespread immunity to that disease. Routine immunization of children against a host of potentially devastating illnesses is an inexpensive and effective way to build that barrier. In the U.S., immunization is required by law at entry into school in all 50 states and the District of Columbia.

Further, the 2020 objectives identify the Emerging Issues in Immunization and Infectious Diseases for the coming decade, the United States will continue to face new and emerging issues in the area of immunization and infectious diseases. The public health infrastructure must be capable of responding to emerging threats. State-of-the-art technology and highly skilled professionals need to be in place to provide rapid response to the threat of epidemics. A coordinated strategy is necessary to understand, detect, control, and prevent infectious diseases. Below are some specific emerging issues.

Providing culturally appropriate preventive health care is an immediate responsibility that will grow over the decade. As the demographics of the population continue to shift, public health and health care systems will need to expand their capacity to protect the growing needs of a diverse and aging population.

- New infectious agents and diseases continue to be detected. Infectious diseases must be looked at in a global context due to increasing:
    - International travel and trade

- Migration
- Importation of foods and agricultural practices
- Threats of bioterrorism

- Inappropriate use of antibiotics and environmental changes multiply the potential for worldwide epidemics of all types of infectious diseases.

Following the Terrorist attack on New York the federal government, through the CDC provided millions of dollars to provide as epidemiologists to most local heath departments to ensure better surveillance for both infectious and chemical agents. The CDC also proved funds to enhance electronic surveillance and reporting systems to provide rapid transmission of potential hazards to the CDC and national homeland security centers.

Following legislation in 2003 the State Department of Health, as well as other state agencies, has been required to complete and update a strategic plan. This can be viewed to look at current long range objectives by health objectives. Toward the end of each section you will find a description of the objectives and measurements accompanying them.

Local objectives

In a typical health department the long-range local goals will be similar to the state objectives. The short-term goal is based on the actual resources available for the next year. Therefore, a local short-term goal for Corpus Christi, Texas was:

1) *To increase the number of children immunized annually by 10%, an increase from 11,215 to 12,500 children immunized annually.*
2) *To increase the total number of individual doses of vaccines given from 45,690 to 46,300*

No additional local objectives were made because there was no way to measure them. When the local objectives were set for the 300,000 people in Corpus Christi and Nueces County *the incidence of preventable childhood infections* was too small to measure change in any useful way, compared to the whole state. Such measurements are only useful with much larger populations. For this reason more appropriate and measurable performance objectives were chosen

The second objective was used to prepare a budget for immunizing children that required a total of five DTP shots, three polio doses and one dose each of measles, mumps, and rubella vaccines before school entry. Birth certificates which describe how many children are born, and where, were used to set the second objective in Corpus Christi. Since this objective was stated more immunogens have been introduced which require more staff and better measurements of function.

To encourage parents to bring their children in for immunization and ensure the department met its goals pre-and post-natal education programs emphasized the need to vaccinate children, while visits by nurses and social workers to child & infant day care centers were used to reinforce the need for immunization. Records from clinic sessions in previous years show how much vaccine was used, and surveys of schools and day care centers measure the vaccination compliance level at time of entrance to school.

Currently with the expansion available vaccines and the complexity of the dosing, it is necessary for local and state agencies to have electronic records to evaluate the effectiveness of their programs. Until all physicians' offices also have such systems the surveillance will always by tentative, although federal law has mandated that such record systems be installed by 2014. While this is technically possible the funding is very difficult for small primary-care practices although the affordable care act providing funds to small practices to develop electronic data systems. The problem of will still exist is

that no single system has been mandated and many of the plan systems have no capability to interchange data with each other, such as sending data to and from the local practice to the local hospital and back.

Immunization tracking

Data systems should track a child's immunization by type, number, and interval to the next dose of vaccine. With appropriate tracking software, described in the section on data systems, computer generated reminders can be sent to parents prior to the child's next clinic appointment. If the child does not come in, the system sends a reminder to a nurse or immunization aide to make a home visit to check on the child and family. Good software ensures adaptability, allowing the system to extract data from birth records, and remind parents that their new baby needs to be immunized, by either the family physician or the health department. A data system may be modified to account for local behavior, provide information in different languages, send out interpreters, and provide pamphlets or other visual advice to persons who may be illiterate. One advantage of performing your own programming is the ability to build in locally useful data, such as census tracts, language needs, and educational levels. The program can generate messages most suitable to each particular neighborhood. Review the CDC's updates on immunization information systems webpages which were last updated in January of 2013.

A local department's immunization system should be linked to state and federal immunization programs. This allows remote evaluation of the program, without the need to produce additional data. The system should provide information about the number of individual children previously fully immunized, the number starting immunization, the number completing immunization, the number with delayed completion and actions planned to complete the required immunizations. Data on individual doses used should be passed to the department's supply system automatically to ensure that sufficient vaccine is always on hand. A small inventory, keeping only necessary stock, prevents vaccine from becoming outdated and saves money. In many states this was accomplished by 2009.

The data system keeps the local immunization manager abreast of the program's effectiveness (number of persons at risk who are completely immunized) and efficiency (the number completing immunization with minimal or no recalls, by census tracts). The health director may not appear to need such an elaborate data system in a small community, but where there is more than one clinic at one site a month, such a system has an enormous effect on the department's operations where records are completed by hand, the same data is often gathered in different formats and provides a major opportunity for errors in recording. It also prevents an accurate count of doses used, and persons immunized, unless the records are complex and redundant. Also, as adult immunization status becomes more important, with immunizations for hepatitis b, pneumonia, tetanus, and other diseases the data systems can easily be extended to include everyone in the community, if desired. A review of lessons learned about immunization tracking can be found at the Robert Wood Johnson Foundation (Richmond City Health Dept was one of the originals 12 recipients of A.K.C. grants, the Co-Investigator was Dr. Buttery) for the all kids count and other programs for immunization development and enhancement

Sexually Transmitted Diseases

Public health officials have known how to control STDs for at least 50 years, but eradication remains difficult. In the 1940s, the treatment for tertiary syphilis was by infection with malaria, in the hope that the high fever of a malarial crisis would kill the temperature sensitive syphilis bacterium but not the patient (host.) This treatment was abandoned in the latter part of that decade when penicillin was found to be effective against all forms of syphilis. It is unfortunate that HIV infection has not been treated as just another serious STD, and less time wasted in political battles. When developing plans to control HIV, local health department staff should remember lessons learned from controlling syphilis and tuberculosis infection, which included public education, screening for disease, contact tracing, compilation of confidential disease registers, development of State and regional objectives.

State objectives for STDs tend to follow the *2020 Objectives* in setting outcomes by disease. The

2020 plan now has 32 objectives, which while fine at the national level become overwhelming at the local and even at the state level. For STDs and the the HP 2020 goals and objectives had been considerably changed:
as seen in the from the HP 2000 and HP 2010 publications:

STDs refer to more than 25 infectious organisms that are transmitted primarily through sexual activity. STD prevention is an essential primary care strategy for improving reproductive health. Despite their burdens, costs, and complications, and the fact that they are largely preventable, STDs remain a significant public health problem in the United States. This problem is largely unrecognized by the public, policymakers, and health care professionals. STDs cause many harmful, often irreversible, and costly clinical complications, such as:

- Reproductive health problems
- Fetal and perinatal health problems
- Cancer
- Facilitation of the sexual transmission of HIV infection

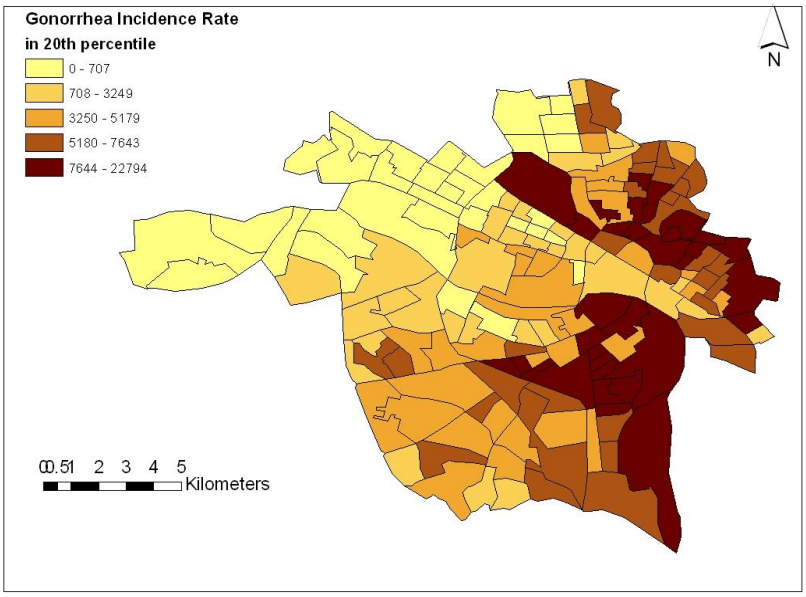
Local objectives.

Many local health departments start their plans with the most current ***Healthy People Objectives,*** but integrate them into the community's economy, health care and human service systems. Local advisory boards can help to set reasonable goals and objectives in relation to the community's problems and resources and with health departments reaching and exceeding those objectives, an annual review of plans is essential, while complete revision is advisable at least every four years. Each revision of the planning process (community health assessment) should try to improve its data, as well as the infrastructure necessary to deliver and measure services, and better acceptance of programs. One advantage of public health planning, over that of mental health, is that measurement of changes in physical health outcome is usually easier to define. Many mental health results are measured as behavioral changes. It is simpler to measure a blood sugar, blood pressure, or to culture a bacterium than to measure behavioral changes. Diabetics can be tracked with blood tests while changes of behavior by substance abusers may be difficult to validate.

When setting objectives for STDs the health director needs to take special care to examine the local organization, delivery, and program accountability. STDs although diagnosed by laboratory tests have a large behavioral health component. Different STDs may have different behaviors associated with them. Exposure to one STD is often accompanied by infection with a second. Objectives to decrease the incidence of STDs should include behavioral measurements. For instance gonorrhea is usually associated with heterosexuality, except that rectal gonorrhea is mainly a homosexual disease. Objectives for gonorrhea control should include processes to test patients for HIV and hepatitis-B infection as well as Chlamydia and syphilis. Objectives for counseling and contact tracing may require cooperation with mental health professionals as well as infectious disease experts to define all the objectives needed for community-wide control of STDs. Many public health programs are only successful when other agencies are included in both goal setting and program service.

Setting objectives and obtaining resources to reach the objectives is often more difficult outside urban centers where many legislators think of STDs as something you get for breaking community mores, and that catching the disease is a well deserved lesson. It may be difficult to get a city council to consider the need for additional funding of STD programs. If local health departments focus on low-income areas and on young people from puberty through 20 years of age, they find gonorrhea in 4,000-5,000/100,000 persons at risk rather than in the 200-300/100,000 range expected for the total population. Without epidemiologic studies to identify high-risk groups, and efforts to contact them and get their trust, the health director has little to discuss with city and county officials other than generalities. Personal testimony about what is

actually going on in their community has much greater impact.



For example the above map can have great impact on a city council which shows very clearly where resources should be placed to combat STDs in this city.

One local plan in a city-county health district of 300,000 people was developed after data showed that syphilis incidence increased from 227 to 271 cases, while gonorrhea decreased from 1278 to 1019 cases. Additionally an outbreak of hepatitis-A started from an index case as a sexually transmitted infection. These data led to an objective to:

> *Increase the number of STD patients seen from 1,850 to 2,200 and to continue development of the AIDS programs*

To do this, the department needed an additional STD investigator, one public health nurse, two community service aides, and three clerks.

In many local health departments immunization, tuberculosis, and STD programs are part of a combined infection control program. In the local department described in the preceding paragraph immunization accounted for 60% of the infection control program budget (including vaccine cost), tuberculosis 10%, and STDs 30%. The whole cost of the program was $226,877 or 5% of the department's total budget.

Communicating with the public.

The success of public health programs in controlling communicable disease makes it difficult to fund their continuation. Without community-wide education the general public, and government officials alike, are all too likely to assume a disease has been eradicated when it is only out of sight. Dramatic outbreaks of new

Infections like SARS or Legionnaire's disease, raise people's consciousness about these particular threats, but do not foster an overall understanding of the nature of infectious diseases and the need for continuing measures to control them.

Control of infectious diseases is the broadest possible public health activity. It includes nearly every other activity we undertake--childhood immunization, school health, clinical services, detection, screening, sanitation, insect spraying, water and wastewater management, sex education, food protection, etc. This breadth makes the topic difficult to grasp, as many of the results can only be expressed clearly with statistics. Public education, then, becomes a vital step in disease control. When the public understands how a disease works, how it is transmitted and what conditions promote its spread, they understand a rate reduction by 2 cases per 100,000, not as two individuals somehow receiving special treatment, but as an indicator of disease control that prevents them from being stricken themselves. If such understanding is widespread in the community, the health department will have little trouble getting support for its programs. More importantly, the citizens are actively involved in creating a healthier community.

Health education takes many forms: staff teams can be developed to talk about the nature of communicable diseases, in formal teaching sessions in schools and community agencies and as invited speakers at club meetings. The mechanics of the reservoir and vectors of, and host responses to, particular diseases can make excellent stories for the press; it may even be possible to produce a weekly column on these topics for a local newspaper or a short taped program for radio or TV. Whenever staffers deal with community members directly in immunization clinics, home visits or elsewhere, they should be encouraged to explain what they are doing and why it is important. Vector control, animal control, and sanitarian staff have hands-on knowledge of infection possibilities, and direct experience is more meaningful than statistics for all of us.

Because no one agency or group working in isolation can be effective, disease control requires some effort and attention from all of us. This can be made clear by describing, in detail, the accomplishments of everyone involved in communicable disease control including the private practicing physicians and hospital staff members who help prevent epidemics, the voluntary agencies that help make immunization programs work and the sixth grade class that spent a Saturday cleaning trash from a stream. The health department that attempts to take all the credit for good health is probably in trouble. The one that shares the spotlight and praises others will tend to get the cooperation it needs.

In the Corpus Christi the health department, school system, and private pediatricians worked closely together to raise immunization levels enough to produce herd immunity and prevent further disease when a measles outbreak occurred. After five years without a single reported case of the disease, the community was struck by four cases, reported on a single Monday morning, all by older pediatricians who knew what 'Koplik's' spots were. Because the health department knew the immunization efforts had produced a high immunity level in the school system, it expected the outbreak to be contained. With the close cooperation of the community, built up over the years, the department staff contacted the school principals for permission to draw blood from all students at the two schools initially reporting measles cases. The permission was given within 24 hours. Within 48 hours, blood was drawn from more than 75% (1400) of the students at the two schools. Blood was drawn again three weeks later, by which time more than 130 definitive cases of measles had occurred. Antibodies from the blood drawn before the infection became widespread showed measurable measles titers for more than 97% of the students sampled, confirming the accuracy of the immunization records in the schools. Out of a school population of almost 60,000, the disease was confined to 350 students. The community was given an excellent example of shoe leather epidemiology by a department seen as doing everything possible, by both the general population and the medical community. An open discussion with the media, of all the department's actions during the epidemic, did much to maintain its credibility. Don’t forget the teaching opportunities of the department’s web site with linkages to the CDC.

Recommended Reading:

1. Heymann DL , (Ed): Communicable Disease in Man. Ed 18th, Washington DC, American Public Health Association, 2004
2. Morbidity and Mortality Weekly Reports. Atlanta GA, Centers for Disease Control
3. Healthy People 2000, USPHS - GPO, 1990
4. Healthy People 2010, USPHS - GPO, 2000
5. Healthy People 2020
6. Immuniz.org Statement on Adult Immunization.
7. Immuniz.org Statement on Childhood Immunization

2013
Chapter 8
Health Promotion and Protection.

Under the general rubric of promoting and protecting the public's health, the health director and staff face a daunting array of programs designed to preserve and promote public health, from licensing septic tanks, monitoring the quality of air and water and minimizing accidents to conducting campaigns aimed at reducing blood pressure, intake of alcohol and tobacco and improving physical fitness. Wherever a law, regulation or ordinance has some impact on human health, it is the health department's job to promote, administer, or enforce it.

While their sheer variety may make these programs appear overwhelming, in practice they tend to sort themselves out rather tidily. The programs that protect health, as opposed to programs to promote it, have the virtue of being specific and concrete: licensing food handlers, for instance, involves testing for (or seeing the documentation of testing for) a finite set of conditions, and it becomes a simple pass/fail situation. Many of these programs also generate revenue for the local health department or reduce expenses for the local government. Most mandated licenses have a fee structure to cover their administration, and where the health department effort does not result in direct income it may perform services for other departments, saving money overall. Chronic disease control programs for the general public can, for instance, be woven into a city employee's wellness programs. The personal health services provided to city employees in an occupational health program and the savings to the city due to reduced sick leave and early return to work, thus improving overall productivity promote the health department's reputation and promote the case for additional resources at budget time.

The word "health" refers to the health and well being of the entire community from its broadest aspects, their general physical fitness, mental health and nutrition, with an emphasis on early intervention to prevent onset of chronic conditions like hypertension and dental problems, to quite narrow attempts to modify deleterious behaviors, like smoking and drinking alcohol. Surprisingly, there were no objectives or goals for physical fitness in the first iteration of the *Model Standards for Community Health Programs (Model Standards.)* The *1990 Health Objectives for the Nation (1990 Objectives)*, however, provided several outcome objectives designed to get people involved in enjoyable activities that stimulate cardio-respiratory function and are appropriate to their ages. These were further modified in the *Healthy People 2000, 2010, 2020* publications, which should be reviewed while reading this essay to compare the latest goals and objectives for each topic. They have since been modified further as seen in this PowerPoint slide set on Performance Standards by CDC's Office of Public Health Practice. Currently the prior "Model Standards" have been changed to the 10 essential services, in the National Public Health Performance Standards Program. The national program provides standards for

- State Public Health System Model Standards
- Local Public Health System Model Standards
- Local Public Health Governance Model Standards

At the state level, the goal is often one of making a compelling case for fitness benefits to the public. Texas collects a variety of data to measure effects of exercise on health costs, and school and job performance. The Virginia plan recognizes the responsibility of public health departments to work with other community agencies, profit and nonprofit, government and private to promote exercise and physical fitness. In the "*Future of Public Health*" this is the "*assurance*" function of the health department where the emphasis is on assisting other agencies to help the community, rather than expecting the health department to implement the services itself. The IOM's 2003 publication on the future of Public Health in Chapter 2 focuses on "Understanding Population Health and Its Determinants". Few local departments have specific objectives for exercise and fitness, though most can provide technical and

research information on the value of these activities. The local health department is expected is to support groups interested in exercise while providing a balance between those who would emulate Mainland China by requiring everyone to perform public exercise, and the "couch potato". The data on the protective effects of exercise against heart disease are fairly good (Look at Framingham Data). Data on many other health benefits of exercise are not so well documented, often being little more than anecdotal accounts supplied by health activists. While promoting exercise is clearly a role for the public health department, a problem goal setters face is that the resources for exercise belong to private clubs, professional sports groups, recreation departments and sometimes employers. By working with YMCAs, recreation departments, athletic clubs, schools, colleges and sports minded groups to promote options for exercise and physical fitness, the heath department can lead its community, with small cost, toward better health. Physical fitness and its accompanying benefits provide a wonderful opportunity for *role modeling* by all public health staff. Unsuccessful health programs tend to lack a key ingredient; direct participation of their promoters. There is too much data on models and standards for any single agency to manage. It is the health director's and program manager's job to select the recommended standard appropriate for the community's current health status and resources available to enhance this health status.

Nutrition

The *2020 Recommended Objectives* follow

Objectives Retained As Is From Healthy People 2010

NWS HP2020–1:	Increase the proportion of adults who are at a healthy weight.
NWS HP2020–2:	Reduce the proportion of adults who are obese.
NWS HP2020–3:	Reduce iron deficiency among young children and females of childbearing age.
NWS HP2020–4:	Reduce iron deficiency among pregnant females.

Objectives Retained But Modified From Healthy People 2010

NWS HP2020–5:	Reduce the proportion of children and adolescents who are overweight or obese.
NWS HP2020–6:	Increase the contribution of fruits to the diets of the population aged 2 years and older.
NWS HP2020–7:	Increase the variety and contribution of vegetables to the diets of the population aged 2 years and older.
NWS HP2020–8:	Increase the contribution of whole grains to the diets of the population aged 2 years and older.
NWS HP2020–9:	Reduce consumption of saturated fat in the population aged 2 years and older.
NWS HP2020–10:	Reduce consumption of sodium in the population aged 2 years and older.
NWS HP2020–11:	Increase consumption of calcium in the population aged 2 years and older.
NWS HP2020–12:	(Developmental) Increase the proportion of worksites that offer nutrition or weight management classes or counseling.

NWS HP2020–13:	Increase the proportion of physician offices visits that include counseling or education related to nutrition or weight.
NWS HP2020–14:	Eliminate very low food security among children in U.S. households.

Objectives New to Healthy People 2020

NWS HP2020–15:	(Developmental): Prevent inappropriate weight gain in youth and adults.
NWS HP2020–16:	Increase the proportion of primary care physicians who regularly measure the body mass index of their patients.
NWS HP2020–17:	Reduce consumption of calories from solid fats and added sugars in the population aged 2 years and older.
NWS HP2020–18:	Increase the number of States that have State-level policies that incentivize food retail outlets to provide foods that are encouraged by the Dietary Guidelines.
NWS HP2020–19:	Increase the number of States with nutrition standards for foods and beverages provided to preschool-aged children in childcare.
NWS HP2020–20:	Increase the percentage of schools that offer nutritious foods and beverages outside of school meals.

Even at the state level trying to meet all these goals with limited resources is problematical, at the local level it is necessary to take a more focused view. Besides setting general goals and promoting nutrition information, state and local programs usually aim to provide information on basic foods to segments of the population in need and, in the U.S., to actually provide special foods and food supplements to pregnant women, infants and young children. These programs are known as WIC programs. A detriment to focusing education on good nutrition to poor people is that these programs are managed by at least three different agencies. Pregnant women and infants found to have medical problems receive targeted food supplements from the WIC program, discussed later. Many of these same women are also eligible for food stamps, which they receive from social service departments. Poor school age children take part in school breakfast and lunch programs are managed by the Department of Agriculture. Some are also eligible for additional food through Community Action Programs. Lack of central coordination for these programs often makes them inefficient and vulnerable to abuse. Such abuse has been a major problem in many communities where the money vouchers intended for purchase of specific foods to combat medical problems, such as iron rich foods to combat iron deficiency anemia, are exchanged for cigarettes or alcohol, or even given to drug dealers to buy heroin!

Centralizing all food programs under the local health department or the local social services department may benefit the entire community. People suffering from poor nutrition can then receive medical intervention and nutritional counseling as well as food. Schools and public health departments, which often provide school nurses, can work together to focus on total nutritional education. Formal links can be developed between food purchasing, nutritional advice, health maintenance and treatment, and education using school children as change agents. There is an unexplored potential to change health status by linking the core curriculum for food and nutrition in kindergarten through 12th grade with food purchases in the various nutrition programs and the food provided at school meals.

A major issue in the first decade of the 21st Century is that of childhood and adult obesity, although the definition seems to change almost daily it is clear that morbid obesity is

associated with early mortality and much prior disability. Now look at the HP2010 and the HP2020 goals and objectives for nutrition to see how they have developed. Consider whether the objectives are clear, and whether they are likely to be met.

Fluoridation/dental health

Goal: Prevent and control oral and craniofacial diseases, conditions, and injuries and improve access to related services.

The above goal was the HP2000 goal. In the HP2020 there are 17 objectives for Oral Health. Oral health is an essential and integral component of health throughout life. No one can be truly healthy unless he or she is free from the burden of oral and craniofacial diseases and conditions. Millions of people in the United States experience dental caries, periodontal diseases, and cleft lip and cleft palate, resulting in needless pain and suffering; difficulty in speaking, chewing, and swallowing; increased costs of care; loss of self-esteem; decreased economic productivity through lost work and school days; and, in extreme cases, death. Further, oral and pharyngeal cancers, which primarily affect adults over age 55 years, result in significant illnesses and disfigurement associated with treatment, substantial cost, and more than 8,000 deaths annually. Poor oral health and untreated oral diseases and conditions can have a significant impact on quality of life. Millions of people in the United States are at high risk for oral health problems because of underlying medical or handicapping conditions, ranging from very rare genetic diseases to more common chronic diseases such as arthritis and diabetes. Oral and facial pain affects a substantial proportion of the general population.

Fluoridation has been so successful that the Georgetown University School of Dentistry shut its doors in the early 1990s. Because of fluoride compounds in water, toothpastes and topical applications, along with the use of sealants for the dental enamel few children have serious dental problems any more. The major dental problem seen in many communities today is periodontal disease in older citizens.

Ideally, a single site dental program has one dentist, one dental hygienist, one dental assistant, and three operatories. The dentist provides acute dental care (with additional care for the elderly), while the hygienist applies topical fluoride and sealants. The hygienist may also give dental instruction in the school systems.

High blood pressure.

The HP 2000 *Objectives* proposed: "*at least 60 percent of the estimated population having definite high blood pressure (160/95 or greater) should have attained successful long term blood pressure control, i.e., a blood pressure at or below 140/90 for two or more years*." This goal does not appear to consider the difficulty associated with changing the behavior of large numbers of people, particularly that of older people. Younger people, more likely to respond to education about lifestyle, will not experience health benefits from changes for 2030 years; this reduces the perception about the urgency of the message. The *2010 Objectives* also link adverse behaviors (smoking, salt ingestion, overeating) with development of a community infrastructure to control them.

The 2020 Objectives for hypertension control are:"

HDS HP2020–12:	Increase the proportion of adults aged 20 years and older who are aware of, and respond to, early warning symptoms and signs of a heart attack.

HDS HP2020–13:	Reduce the proportion of persons in the population with hypertension.
HDS HP2020–14:	Increase the proportion of adults with prehypertension who meet the recommended guidelines for:
HDS HP2020–15:	Increase the proportion of adults with hypertension who meet the recommended guidelines for:

Change is best made gradually, at the local level, by helping communities adapt gradually to necessary changes that support their standards and beliefs. Attempts to impose changes in behavior by authoritarian approaches rarely work

In Virginia, with the new emphasis by the State Board of Health on Chronic Disease, high blood pressure objectives are part of a chronic disease control program that ties health education and nutrition together. It focuses on risk factors related to lifestyle, all of which contribute significantly to the leading causes of death, such as:

Diet,
Smoking
high blood pressure
seat belt use
substance abuse
stress
exercise
use of weapons.

The current state budget restrictions for 2011 – 2012 this program has been cut back significantly. It is very hard to explain the value of future health status based on public policy, were the policies are attached to fiscal statements

Dealing with chronic disease locally

Chronic disease programs must have public credibility for a local health department to carry them out successfully. In the 1980s Corpus Christi included chronic disease within its General Nursing program. All nurses were assigned to census tracts as well as clinics. Health educators worked closely with the nurses and clinicians to identify risk factors which they shared with organizations such as the United Way; cancer, diabetes, lung, and heart associations; the hospitals, doctors, nurses, dentists, pharmacists, and health clubs to show how people could change their behaviors, and improve their health. Each organization's board and volunteers examined the behavioral changes that fit into their long range plans. All agreed on the value of changes in nutrition, knowledge about blood pressure, reduced smoking, increased exercise and reduced stress. The local health department staff, without much fanfare, did what public health agencies do well: they developed consensus for health standards within the community. After 5 years, using formal reports that linked the major causes of death and disability with community changes needed to combat them, the media started paying attention to the annual reports and maps that showed who died where, and from what major causes. Also, maps that showed locations of deaths from traffic accidents, identifying those associated with alcohol. These actions raised the community's awareness about personal behaviors leading to illness, injury and death. Ongoing surveys, using population samples by income and geography, found

that people felt they could change their behaviors to improve their health. The community's news media started to emphasize individual responsibility to avoid illness in news stories about new support groups for people with specific health problems, such as diabetes, Alzheimer's disease or cystic fibrosis. The media also gave publicity to statements by elected officials, which fostered community spirit among citizens to help one another avoid disease, disability and death. Look at the Virginia Department of Health Goals and Objectives to reduce Chronic disease in the early 21st century and consider the likelihood of meeting the goals.

Despite the five years of effort needed to develop a community infrastructure devoted to health you should know that the it takes less in financial resources, than in leadership.

The role of the health department: Smoking and health

The overwhelming majority of Americans believe that smoking affects health adversely. Besides proposing specific goals for the reduction of smoking the 2010 Overall Goal stated *Reduce illness, disability, and death related to tobacco use and exposure to secondhand smoke.*
The objectives for adult tobacco use was:

Target and baseline:

Objective	Reduction in Tobacco Use by Adults Aged 18 Years and Older	1998 Baseline*	2010 Target
		Percent	
27-1a.	Cigarette smoking	24	12
27-1b.	Spit tobacco	2.6	0.4
27-1c.	Cigars	2.5	1.2
27-1d.	Other products	Developmental	

Note that the 2000 Goal was utopian:
"by 2000 morbidity & mortality associated with tobacco use will be eliminated."

Not surprisingly, some southern states that are major tobacco producing states came to the table late with goals to eliminate tobacco use. While the existence of tobacco addiction and its relation to disease and death are supported by crystal clear data, public policy at the federal and state levels tended to be somewhat less clear until the late 1990s. The limited federal and state actions still leave room for an aggressive local health director to prevent additional disease, disability and death from a preventable cause. Local health departments exercised their unique working relationships with the cancer, lung and heart associations, and with the local restaurant associations, to develop strong clean air ordinances. They worked with coalitions to develop state and local ordina okay nces to prohibit smoking in public places. Local ordinances have been developed even in North Carolina and Virginia. In the 1990 session of the Virginia (the heartland of tobacco farming) legislature a statewide law against smoking in public places was passed with a specific prohibition against smoking in local health departments. Local departments kept the public informed about new research identifying and strengthening additional diseases caused by use of tobacco. They tried to influence insurance groups to offer lower rates to nonsmokers. In addition to the rising price of tobacco products themselves, the financial impact of related health problems can be a potent argument against smoking. Some local health departments tracked all smoking related deaths and morbidity

reported by hospitals, nursing homes, funeral homes, and physicians; then analyzed the reports by age, sex and race to provide the news media with information useful to influence current smokers to stop smoking and children to avoid starting. What can you find out about the VDH role in tobacco use reduction and disease prevention?

The 2020 objectives show how far we have come toward facing reality: Specially as local health departments have lost `12,000 employees over the last year and are facing further cuts in the current fiscally impoverished state systems. (see the NACHHO Report.)

Tobacco related Objectives for 2020 have been significantly amended:

Why Is Preventing Tobacco Use Important?

Tobacco use is the single most preventable cause of death and disease in the United States. Each year, approximately 443,000 Americans die from tobacco-related illnesses. For every person who dies from tobacco use, 20 more people suffer with at least 1 serious tobacco-related illness. 5, 6 In addition, tobacco use costs the U.S. $193 billion annually in direct medical expenses and lost productivity.

Healthy People 2020: A Framework for Ending the Tobacco Use Epidemic

Healthy People 2020 provides a framework for action to reduce tobacco use to the point that it is no longer a public health problem for the Nation. Research has identified a number of effective strategies that will contribute to ending the tobacco use epidemic. 7, 8, 9, 10, 11, 12 Based on more than 45 years of evidence, it is clear that the toll tobacco use takes on families and communities can be significantly reduced by:

Fully funding tobacco control programs.

Increasing the price of tobacco products.

Enacting comprehensive smoke-free policies.

Controlling access to tobacco products.

Reducing tobacco advertising and promotion.

Implementing anti-tobacco media campaigns.

Encouraging and assisting tobacco users to quit.

The Healthy People 2020 Tobacco Use objectives are organized into **3** key areas:

1. Tobacco Use Prevalence: Implementing policies to reduce tobacco use and initiation among youth and adults.
2. Health System Changes: Adopting policies and strategies to increase access, affordability, and use of smoking cessation services and treatments.

3. Social and Environmental Changes: Establishing policies to reduce exposure to secondhand smoke, increase the cost of tobacco, restrict tobacco advertising, and reduce illegal sales to minors.

The Abuse of alcohol and other drugs

A distinction is typically made between alcohol and other abused substances rather than using the "abuse of alcohol and other drugs". Clearly, nicotine addiction, alcohol addiction, prescription drug addiction and illegal drug addiction share much common ground and physiologically and behaviorally. From the behavioral point of view the only difference is the judicial danger associated with use of illegal drugs and the profit made from supplying them. When Many local health departments do not have addiction programs since these have become the responsibility of the mental health, social services, corrections, and police and disabilities departments. The health department staff can find many examples of addiction on home visits and in occupational health programs. Employees who abuse alcohol and other drugs are generally referred to employee assistance programs. In such situations, the local health department's role becomes one of evaluating demographic, disease, disability and mortality data. Then it gives safety, police and social agencies outcome data to measure the effectiveness of their efforts. While the Virginia Department of Behavioral Health has specific substance abuse policies can you find a role within the VDH for such policies or for cooperation with the VDBH programs?

Control of stress and violent behavior

The HP 2000 and 2010 *Objectives* set target levels for

Death by homicide among young black males
For parental abuse among children
For suicide among persons aged 15 to 24.

While the healthy people 2020 goal and objectives are:

Goal

Prevent unintentional injuries and violence, and reduce their consequences.

Overview

Injuries and violence are widespread in society. Both unintentional injuries and those caused by acts of violence are among the top 15 killers for Americans of all ages. [1] Many people accept them as “accidents,” “acts of fate,” or as “part of life.” However, most events resulting in injury, disability, or death are predictable and preventable. The Injury and Violence Prevention objectives for 2020 represent a broad range of issues which, if adequately addressed, will improve the health of the Nation.

Why Is Injury and Violence Prevention Important?

Injuries are the leading cause of death for Americans ages 1 to 44,[1] and a leading cause of disability for all ages, regardless of sex, race/ethnicity, or socioeconomic status. More than 180,000 people die from injuries each year, and approximately 1 in 10 sustains a nonfatal injury serious enough to be treated in a hospital emergency department. [1]

Beyond their immediate health consequences, injuries and violence have a significant impact on the well-being of Americans by contributing to:

Premature death

Disability

Poor mental health

High medical costs

Lost productivity

The effects of injuries and violence extend beyond the injured person or victim of violence to family members, friends, coworkers, employers, and communities.

By and itself Stress reduction is not an area where a health department can make changes primarily by its own efforts, as it does with immunizations. In some states this area is under the purview of departments of mental health; in others, it is related to abuse of alcohol, prescription and illegal drugs. Most of the hard data on the subject, however, are found in the medical examiner's files. Stress reduction, then, becomes another of the health department's functions identified *in The Future of Public Health* as an *assurance* function.

Health Protection

All the various programs designed to defend the public against hazards in their air, food, water and general environment come under the rubric of **health protection**. Many of these programs and associated goals have been part of public health since the Chadwick Report in the middle 1880s. They were similarly identified in England during the Cholera epidemic when Dr. Snow removed the handle of the community water supply pump near the Old Bailey, the Broad Street pump. Pollution of water by feces has long been known as a health hazard and its control was one of the first environmental movements. In developing countries provision of potable water has been a major contribution to reduced infant death rates. This has been particularly exemplified by the recent outbreaks of cholera in Haiti.

For at least fifty years major city and state health departments in the U.S. have placed a premium on clean and hygienic preparation, storage and serving of food to protect the public against diseases from typhoid, cholera, salmonella and hepatitis.

Since the Second World War there has been an increasing emphasis on protecting workers from harmful environments following studies of lung disease in mines and among shipyard workers exposed to asbestos. This has since been expanded to other chemicals in the factories and exposure to pesticides among farm workers. Since a record numbers of deaths in Donora, Pennsylvania in the mid fifties during an atmospheric inversion, and the exposure to smog on the west coast, protection from air pollutants has had increasing emphasis.

Control of Toxic Agents.

The HP 2000 proposed a goal that
"the country shall achieve and maintain appropriate management of environmental pollutants so that morbidity and mortality associated with toxic substances will be reduced and adverse effects on the environment will be minimized".

This general goal statement is followed by objectives similar to those in the *1990 Objectives* which set a blood lead level for young children and stated *that*
"By 2000 virtually no individual should suffer birth defects or miscarriage as a result of exposure to a toxic chemical, disposed after implementation of the Resource Conservation and Recovery Act."

The two major differences between the two documents are that the 1990 Objectives start each issue out with a general goal statement, followed by more specific objectives. the HP 2000 Objectives start out an issue with a clear measurable objective. They are aimed at a national audience while the original 'Standards' were aimed at states and localities, and followed goals with objectives that were adaptable to communities, in most cases. They are models of objectives, not legally enforceable standards, despite the name.

By the time of publication of HP 2020 toxic substances protection is stated as follows:

Toxic Substances and Hazardous Wastes

The health effects of toxic substances and hazardous wastes are not yet fully understood.

Research to better understand how these exposures may impact health is ongoing.

Meanwhile, efforts to reduce exposures continue. Reducing exposure to toxic substances

and hazardous wastes is fundamental to environmental health.

A problem for health directors is that it is by no means certain just what a toxic substance is. Many claims of human health hazards from "toxic" exposures are based on tenuous data and extrapolation from animal studies. Of the more than 10,000,000 chemical compounds that exist fewer than 100 have had adequate population studies. The WHO's International Agency for Cancer Research, located in France and globally recognized as the arbiter of carcinogenic standards, had classified less than 100 chemical compounds as carcinogenic. This agency also placed some 200+ into the two categories of 'possibly and probably carcinogenic.'

Our most definitive knowledge about these compounds comes from industrial exposure studies. Little is known about the human effects of more than 64,000 additional chemicals used yearly in industrial processes, and until they have been studied, the arena will remain rife with political activism rather than science. The scientific basis for most of the new laws regulating known or suspected environmental hazards is also poor. Exposures to ALAR and EDB, for instance, were unlikely to cause any harm to people, but the outcry against them was overwhelming. The purchase of apples declined so that a number of apple growers went out of business. Local residents in Triani, Alabama, claimed health problems from exposure to DDT, yet all that the Centers for Disease Control found in studies lasting several years was a difference of 23 mm. in systolic blood pressure. This may be a valid measurable statistical difference, but is certainly not a clinically significant one. The *1990 Objectives* were set shortly after the Love Canal reports and reflected those concerns, yet long term studies of Love Canal residents have been able to link any excess disease or death to the exposures.

Since October 2001 There has been a resurgence of interest against attack by biologic agents. See the VDH role in these programs.

Local reassurance and explanation.

People in the USA today want guarantees that nothing can harm them; they want a risk free world. Because national public health professionals appear to have failed to respond adequately to these issues, city councils and county boards expect local health departments to reassure them about health hazards and explain why environmental control costs so much. Local health directors and their staffs must support local water companies and explain that costs of managing public water supplies are increased to protect them against chemical hazards, for which the evidence is often scanty. Until recently the only requirement was that water have sufficient chlorine at the end of the supply system to control salmonella bacteria. Now the water companies have to test more frequently for eight chemicals in addition to chlorine, and for biologic hazards in addition to salmonella. The chemicals include fluorides. Fluorides are naturally occurring constituents of water found in many areas of the country, particular in southeast Virginia. Although citizens have been drinking this water for centuries, with little effect other than brown stains on their teeth, the water company must reduce the level of fluoride below that which many dentists and physicians believe are necessary to protect health. The cost of fluoride removal may double or triple water bills for little or no benefit. Water companies are required to test water for lead. The lead, if found, is produced in the pipes of people's homes not by actions of the water companies. The water companies are expected to provide information to home owners, rather than the people who built, sold or rented the homes. Many local health departments have been testing children in homes suspected of exposing children to lead for years. Some local health departments have failed to find any evidence of lead among the community's children but they still have to work with the water companies, under the new laws, to assist in notifying people of these potential hazards, even if they don't exist!

As the result of laws passed in 1989 people have pay more for visits to doctor's offices to pay for protection from "medical wastes" which should cause little or no hazard. Although people produce waste they don't want their waste put in landfills in their communities, the **NIMBY** or "not in my back yard" syndrome. Health department staff must work with elected officials to explain that properly constructed waste disposal sites have little likelihood of causing harm to people or fauna. They have to be able to explain why an engineered site is better than allowing random dumping, which will occur in the absence of an engineered and permitted site. Local health departments must keep good records on causes of death by socioeconomic level and census tract or other geographic area and must be able to analyze distribution of death and disability to provide the community with an expert opinion about presumed environmental health hazards. The data must be good enough to demonstrate the clear existence of a hazard. Frequently, a local health director is asked to PROVE that some agent does NOT cause harm. It is not possible to prove that something does not cause harm, even if infrequently, only that it does. Such assertions are favorites for lawyers, investigative reporters and environmental activists. Avoid being trapped by semantics. Failure to avoid such a trap may make it impossible to present data derived by good research.

The health department is the health authority for the community, and its time is often wasted by discussion of environmental threats that may have nothing to do with its primary concerns. A chemical that is a threat to fish larvae is a matter for the local fish and game department, not the health department. The health department must confine itself to human concerns. Any other approach affects the credibility of the entire department.

Occupational Health & Safety

The 2010 O*bjectives* list outcomes in terms of reduction in deaths, disabling injuries, lost workdays, skin and lung disease, hearing loss and heavy metal poisoning resulting from occupational hazards.
The original *Standards* proposed the goal that:
"Factors in occupational environments that cause, death, injury and disease or disability will be prevented or reduced; further personal damage from existing occupationally related illness will be minimized, and good health and well being among workers will be promoted."
In Texas in the 1980s the highest priority was the reduction of accidental deaths, disabling

illness and injuries, and lost workdays by 10% by 1990, while in Virginia there was no reference to occupational illness and injury as these programs were found in the department of labor.

The following discussion from the HP 2020 healthy people objectives identifies more sophistication a national level on the issues of occupational health and safety:

Understanding Occupational Safety and Health

Work is one of the most important determinants of a person's health. However, addressing occupational safety and health poses numerous challenges.

Related Topic Areas

- Educational and Community-Based Programs
- Hearing and Other Sensory or Communication Disorders
- Respiratory Diseases
- Tobacco Use
- Vision

The workforce, like the U.S. population at large, is becoming increasingly diverse. These demographic changes result in new safety and health issues. For example, some workers—such as racial and ethnic minorities, recent immigrants, younger and older workers, workers with genetic susceptibility, and workers with disabilities—are more likely to have increased risks of work-related diseases and injuries.

Of the Workplaces are rapidly evolving as jobs in the current economy continue to shift from manufacturing to services.

Major changes are also occurring in the way work is organized. Longer hours, compressed work weeks, shift work, reduced job security, and part-time and temporary work are realities of the modern workplace and are increasingly affecting the health and lives of workers.

Finally, the new chemicals, materials, processes, and equipment that are being developed at an ever-accelerating pace pose emerging risks to occupational health.

Despite these challenges, the Nation is poised to make significant improvements over the coming decade in the quality of life for all working people. Occupational safety and health research has led to many changes in workplaces and work processes that prevent injuries, illnesses, and deaths in workers. Ongoing research seeks to identify new and better ways to improve the health and safety of workers and to identify and address emerging hazards. In addition, scientists and partners are working together to translate and transfer research findings, technologies, and information into highly effective interventions and products that can be readily integrated into the workplace, resulting in more immediate improvements in the lives of workers.

Local programs

In some large cities and urban counties local health departments provide occupational health consultation and direction to the city manager, working closely with the personnel and safety departments.
In Corpus Christi, for example, the program's goal is to:
"Optimize the health and safety of the city work force and minimize occupational illness and injury".
This was translated into managing a "wellness" program for all city employees and acting as

occupational consultants to the city's school system. For 80% of its total cost of $189,920 the program provided a work force of approximately 3,600 persons with one occupational physician, one physician's assistant, one occupational health nurse and two clerks. The department recommended adding an additional occupational nurse to conduct the wellness programs and an industrial hygienist to monitor potentially hazardous exposures routinely, rather than waiting for the periodic examinations of hazards made by the city's insurance carrier.

Annual cost benefit studies showed that this program paid for itself. Its "early return to work program" offered counseling on the availability of light duty. The city's physician worked closely with the local physicians to make clear the availability of suitable light work for the city's employees, and the willingness of the occupational medical staff to monitor them for the treating physician. This was particularly important when employees were returned to physically hazardous programs in the public works and waste disposal areas. With a computerized database the staff was able to track city employees and record potential exposures of each one by employment site and activity and to conduct an epidemiologic study of back injuries. Data from this database led to supervision of employees who lifted heavy loads repeatedly; in both the public works and the sanitation departments.

Accident (unintentional injury) Prevention and Injury Control

The HP*2000* specified lower fatality rates for automobiles, homes accidents such as falls, fires, scalds, drowning and firearm incidents, by mandating passive restraints for autos and smoke alarms for homes. The initial goal was simply that "*Mortality and morbidity associated with unintentional injury will be reduced."*
In Virginia, accident prevention activities within several agencies were supervised by a prevention task force, chaired by the Secretary of Health and Human Resources. Many objectives encountered resistance and were unmet or changed. For instance, the public did not want automatic seat belts, though many were willing to use seat and shoulder belts once a state law made them mandatory. Prevention efforts aimed at drowning, falls, burns, childhood injuries and alcohol abuse were major initiatives of the departments of mental health and motor vehicles. The school system educated children to avoid injuries. The department of health ensured that emergency medical resources and a data tracking system was available.

In Healthy People 2020 the program recommends five areas important to injury prevention by focusing on:

Modifications of the environment
Improvements in product safety
Legislation and enforcement
Education and behavior change
Technology and engineering [7]

Emergency Medical Services (EMS).

In many cities, local health department staffs sit on emergency medical services advisory boards. With help from, and monitoring by, the state health department, these boards register emergency vehicles and set standards for those vehicles (including size, construction and contents) and for EMS staff training.
In Corpus Christi the board also included administrative and medical staff from two major tax supported hospitals (a general and a children's hospital), the fire chief (who actually ran the system) and citizen members appointed by the city and county. The health department

licensed and inspected all ambulances before they were put into service and annually thereafter, and the staff investigated all complaints and reported sanctions against providers (whether city or private) to the city council.

A local health director may receive complaints about response time. This can only be reduced if there is enough money to buy and strategically locate sufficient ambulances and crews to enable a response time of 10 minutes in many cities. Competition between agencies, particularly if one is private and one is public, is often difficult to resolve. Neither is potentially better than another, but local conditions may tip the balance. The best EMS programs are not just adjuncts to a fire or police department, but are supervised by persons with extensive training and experience, who have the authority and resources to manage them. Because EMS is often considered less glamorous than fire suppression and because more hazard pay is received for fighting fires than for attending to injuries, few firemen want to serve in an EMS position. The training for Advanced Life Support and Cardiac Technicians is extensive, and it is difficult to maintain such skills by rotating all firemen through the program for short periods. Thus private emergency medical services may be preferable.

Disaster Preparedness

Each health department should have a disaster plan as part of its EMS program. The plan should designate disaster shelters and secondary emergency rooms to back up the community hospitals and should include provisions for staffing the hospitals with sufficient surgeons during crises. Either the major hospital's administrator or the health director should be made responsible to route patients from the disaster site to the hospitals. The plan should also show a source of additional vehicles for use as temporary ambulances and identify a temporary morgue, to be staffed by local funeral homes. Health department staff must be provided with passes to cross police barricades during such emergencies. Nurses can help staff additional emergency rooms and assist in evacuating people or visiting nursing homes after a disaster to ensure that there is enough food, water and power. The plan must prepare for an interruption of water supplies by outlining the ways potable water and waste disposal facilities can be provided by sanitary workers and by naming alternative water supplies. Annual disaster exercises test communications and all participants including police, fire department, civil defense, social services, mental health departments, public works, public utilities, hospitals, Red Cross and animal control services. The ability of health departments to respond to disasters has been enhanced by the Antiterrorism programs developed since October 2001. Virginia is currently (2009) recognized as having one of the best Emergency Preparedness plans in the country, using an all hazards approach rather the just a biohazard approach.

The Healthy People 2020 has a new section devoted to **preparedness** which provides the following goals and objectives:

Goal

Improve the Nation's ability to prevent, prepare for, respond to, and recover from a major health incident.

Overview

Preparedness involves Government agencies, nongovernmental organizations, the private sector, communities, and individuals working together to improve the Nation's ability to prevent, prepare for, respond to, and recover from a major health incident. The Healthy People 2020 objectives for preparedness are based on a set of national priorities articulated in the *National Health Security Strategy of the United States of America (NHSS)*. The

overarching goals of NHSS are to build community resilience and to strengthen and sustain health and emergency response systems.

To reach these goals, NHSS identifies the following objectives for urgent, focused attention:

Foster informed, empowered individuals and communities. In
Develop and maintain the workforce needed for national health security.
Ensure situational awareness.
Foster integrated, scalable health care delivery systems.
Ensure timely and effective communications.
Promote an effective countermeasure enterprise.
Ensure prevention or mitigation of environmental and other emerging threats to health.
Incorporate post incident health recovery into planning and response.
Work with cross-border and global partners to enhance national, continental, and global health security.
Ensure that all systems that support national health security are based on the best available science, evaluation, and quality improvement.

ENVIRONMENTAL PROGRAMS

Food protection

The *1990 Objectives* were silent on this issue.
The original *Model Standards* proposed the goal that:
"the community will be protected against infectious and noninfectious foodborne illness," and an objective to measure the number of outbreaks associated with commercial establishments as an indicator of program effectiveness.
The *HP 2010 document* outlines a health code requiring inspections of restaurants and other food services and includes correction of deficiencies, identification of high risk foods, epidemiologic investigations when outbreaks occur, public information programs, instruction on personal hygiene in schools, and education programs for food service personnel. The code applies to institutional cafeterias in hospitals, schools, day care centers and jails, not just profit making restaurants.
For many years health departments wasted time performing physical examinations, fecal cultures, X-rays for tuberculosis or blood tests for syphilis as part of their food service programs. For the past two decades, the research has taught that foodborne illness is spread by a very few means: unwashed hands, improper cooking, improper storage, unclean utensils and contact between food and non food contact surfaces. Hopefully, no food service programs in the United States still require any of these activities as part of their food protection programs.
Model local health departments require all food services to have a certified food service manager on duty at all times. He or she must have passed a federally approved course of 16 hours of classroom instruction tested by written examination. The department must provide minimal classroom training (usually 24 hours) in basic food handling for all employees who come in direct contact with food. Qualified environmentalists who have passed federal standardization courses must inspect food service activities. Completion of these courses require that the student inspect the same place as the instructor under the same conditions, using the federal standardized reporting form, and that they arrive at the same conclusions within 5 percentage points of each other. Observation of food handlers at work discloses much about a food service operation, even before the sanitarian enters the kitchen. Those failing to wash their hands or keep their nails short and clean are likely to contaminate food. Such

lapses are the responsibility of the certified food manager in charge. His certification can be removed, and he can be required to have further training. Look at the VDH registry of food service inspections and find out the status of your favorite eating place.

The healthy people 2020 goal and objectives for food safety states:

Overview

Foodborne illnesses are a burden on public health and contribute significantly to the cost of health care. A foodborne outbreak occurs when 2 or more cases of a similar illness result from eating the same food. In 2006, the Centers for Disease Control and Prevention (CDC) received reports of a total of 1,270 foodborne disease outbreaks, which resulted in 27,634 cases of illness and 11 deaths.

A foodborne outbreak indicates that something in the food safety system needs to be improved. The food safety system includes food:

Production
Processing
Packing
Distribution/Transportation 's
Storage
Preparation

Public health scientists investigate outbreaks to control them and to learn how to prevent similar outbreaks in the future. Success is measured in part through the reduction in outbreaks of foodborne illnesses.

Why Is Food Safety Important?

Foodborne illness is a preventable and underreported public health problem. It presents a major challenge to both general and at-risk populations. Each year, millions of illnesses in the United States can be attributed to contaminated foods. Children younger than age 4 have the highest incidence of laboratory-confirmed infections from:

Campylobacter species
Cryptosporidium species
Salmonella species
Shiga toxin-producing *Escherichia coli* O157
Shigella species
Yersinia species

Local cooperation

Long experience confirms that the food service industry is more willing to cooperate with local government regulations when it is allowed to take part in developing the regulations. For example; in 1980 in Corpus Christi, a resort area community, the restaurant industry was nearly at war with the health department, there were no standardized staff, the food protection program was minimal and the health department was still giving food handlers physical examinations. On the street, one of the main perceived values of the program was

that prostitutes carrying a food handler's card were deemed safe from transmitting infection by both the police department and the general public!

The director attended a meeting of the local restaurant association. They were happy to have him on their "turf", listening to their problems. They did not believe physical examinations protected them from poor food practices. They wanted more frequent inspections. They actually wanted stronger enforcement, believing that a good reputation was vital for the tourist business. And, they most emphatically did not want the public to think that they only employed prostitutes or that everyone who carried a food handler's card was a prostitute. Listening to them revealed that there was no real cause for antagonism, their need for regulation coincided with the department's mandate to protect the public. It soon became clear that the restaurant association saw three particular benefits from a strong food code:

- **Ease in knowing and keeping up with community standards**
- **Reduced likelihood of a foodborne outbreak hurting all their businesses; and**
- **Elimination of poor operators from the business.**

Wanting to be part of the team, they formed a committee to consider such a code. An association member on the state restaurant board invited some owners of large restaurants with good reputations to join the committee. On the health department's side, the environmental supervisor asked outside sanitarians from health departments with excellent food service programs to visit the community and explain how their programs worked.

Together, the various groups revised the city code using models from other cities and recommendations from the USPHS and State Department of Health. The new code included; annual restaurant permit fees to cover the cost of training food handlers, provision for on the job training for food handlers; a requirement for a certified manager to be on duty during operating hours of all food service places; and a provision for food managers to supervise public food service programs at little league games, charity benefits, church suppers, etc., at no cost to the program or community, One year after the new codes became effective, the average inspection score increased 15 points to just over 90%. The health department agreed to teach sufficient courses in food handling so that public food events (very popular in South Texas) could be held without hazard to the community. After three years, more than 4000 persons had been trained as certified managers and more than 30,000 in a community of 300,000 trained as food handlers. This high proportion of the community trained in food handling testifies both to the high turnover in food service employees, the largest turnover in low paying industries, and to the large number of citizens involved in the voluntary food festivals, little leagues, and other public community events. Membership in the restaurant association increased, and the whole community became more interested in food hygiene.

What distinguished this community from others was the close working relationship between the health department and the food service industry. The health department was seen as an educator and quality controller rather than a bureaucracy. If a sanitarian found a certified manager performing poorly, the incident was discussed with the president of the food service advisory committee, who then called the offender. A public hearing was held to question whether the manager's certificate should be withdrawn. This was far more effective than going to court, food managers' performance, as measured by inspection scores, throughout the community rose rapidly after the first public hearing. Any suggestion of a food related incident resulted in rapid investigation by the department with a report to the advisory committee chairman.

The community's perception of the health department as a helping rather than controlling agency aided the department at budget time. Equal treatment for all providers, small and large, profit and nonprofit, was especially important. In second decade of the 20th century food service programs are based carrying out the FDA's Hazard Analysis and Critical Control Point Principles and Application Guidelines (HACCP)

Waste water disposal

The original *Standards* set the goal that "residents of the community will not experience disease or adverse health effects from the substances associated with the management of waste water" in a consideration of waste water from the perspective of the individual homeowner's and the community's needs as well as ecological balance. As with food handling, the proposed outcome indicators reflect the number of disease outbreaks from handling, storing, transporting, disposing and recycling of wastewater. Few measurable effects on health result from malfunctioning home systems, but the failure of municipal and industrial systems is a serious matter indeed. The health director must interpret the impact of state and national standards set by bodies such as the Environmental Protection Agency on community services, and their costs. He needs to understand the process of treating waste water and the solids or sludge. This requires knowledge in toxicology, mutagenesis, cytogenesis, fetotoxicity and an understanding of risk assessment methods. The director must be adept at interpreting findings to the news media and to groups of citizens untrained in environmental science, also. These issues are discussed in another lecture

Septic system politics

Local health departments are usually responsible for ensuring proper waste disposal at individual home sites, issuing permits for sewage lagoons in rural areas, and approving disposal of treated septage on land. For the latter, the local health department serves as an intermediary between the applicant and a state agency, interpreting rules and regulations and indicating potential health hazards associated with such disposal. This is the most complex and most political operation in a local health department. The main difficulty with septic tank and drainfield installation is determining whether a proposed site has soil suitable for the installation. Rural areas with no central sewage system generally lack central potable water systems, too. A new landowner usually needs a way to dispose of wastewater along with a well for drinking water and rarely considers the likelihood of his septic tank contaminating his or his neighbor's fresh water. Different land formations have different drainage patterns. Where there are only four to six inches of topsoil over a layer of rocky substrate, for instance, a drain field may discharge 12" to 18" below the surface directly into shale. From there the effluent can drop rapidly (percolate) into an aquifer to pollute the ground water used for everyone's drinking. Realtors, landowners with major acreage, and contractors frequently sit on boards of supervisors and city councils. These individuals become upset when they cannot develop their land because of such drainage problems. Explanation takes great tact and patience. Given the potential amounts of money involved, lawsuits over such matters are by no means unknown, and even if the department wins the law suit, the damage done to its community relations can be enormous. To avoid such wrangles, the health director and the department's environmental staff must educate city and county officials responsible for planning, zoning and issuing building permits about the problems caused by failing to check the septic system permit before issuing a building permit. They need to know that a percolation test alone rarely provides sufficient information on which to base issuance of an individual sewage system permit. Modern siting requires knowledge about soil profiles, water movement and retention in different soils, distance to water tables from the bottom of a septic system trench, amount of rock, sand or organic material in the soil and presence of aquifers or nearby surface water. When the planning, water and sewage disposal departments review land available for building, considering where potential new developments are likely to be placed, they must consult with the health department to determine whether the land is suitable for individual septic systems or requires extension of central sewage systems. Soil scientists and certified civil engineers can plan, site and install individual home septic systems with general supervision by the health department's environmentalists. The environmentalists can spend their time on quality control by selecting sample installations to visit. First they check on the soil scientist's work by reviewing the soil profile report for the intended installation and observe a percolation test being performed. These observations are used to validate the selected drain field site in relation to the location and proposed home and well, if any. Following this they can review the engineering plans to be sure the engineer designed an appropriate sewage disposal system for the size of the home. The environmentalist will also

need to observe sample sites to be sure the contractors install the systems according to the engineer's directions. Once the first few samples of either the soil scientist's or engineer's work have been found satisfactory fewer onsite inspections will be necessary to ensure good quality work.

Increasingly as land to build on becomes scarce more innovation is needed to develop alternative liquid waste disposal systems, as shown in these two tables from the University of Kentucky monologue on waste disposal:

Alternative System	Description	Advantages	Disadvantages
Rock Lateral System	Effluent flows from the septic tank through solid piping to a distribution box, or boxes, and then into perforated piping within gravel filled trenches where it seeps into the soil. Trenches are 2 feet wide and 100 feet in length.	- can be use on either level or moderately sloping lots - most common type of system (installers are very familiar with this system) - may be used with all types of distribution boxes	- typically uses the most space of any system (must allow 8 feet between trenches) - must be minimal soil depth of 18 inches below trenches - if the system is installed at a shallow trench depth, additional fill soil will be needed over the entire lateral field area
Leaching Bed System	Same design and function as rock lateral system; however, trenches can be 3-12 feet wide and 100 feet in length.	- uses less space than rock lateral system, although additional bottom area must be used - if additional soil is needed, the amount may be lessened by using beds	- minimum soil depth of 18 inches below trenches - slopes over 5% may be unacceptable - size limitations of bed due to equipment 'reach' since all excavation must done from sides to prevent bottom compaction
Leaching Chamber System	The liquids flow from the septic tank through solid piping to one or more distribution boxes, and then into open-bottom plastic chambers that create an underground cavern. The effluent floods the soil surface prior to seeping vertically through the soil, allowing bacteria and oxygen to purify it. Chambers are constructed in sections 6 feet long and 2 ½ to 3 feet wide.	- very space conservative compared to rock lateral system - requires less fill soil above the top of the chambers - easier to install and requires fewer trips over the area with heavy equipment	- limited to 5% slopes for bed configuration and 10% slopes for trench configuration - may not bend enough to follow the natural contours of the property - vehicle traffic over chambers both before and after installation is prohibited to prevent soil compaction and crushing of the chambers
Gravelless Pipe System	Liquid flows from the septic tank through solid piping into one or more distribution boxes then into trenches with corrugated polyethylene tubing. The tubing is 8-10 inches in diameter with specifically designed perforations encased in a protective wrap. The wrap prevents soil from blocking the tubing perforations, and acts as a wick to draw effluent out into contact with the surrounding soil.	- this system can be installed at a shallower depth without the need for additional fill soil - requires less labor and equipment – easier to install	- cannot be installed in Group IV soils (clay soils) - manufacturer-supplied tape must be used to fasten individual sections together

Alternative System	Description	Advantages	Disadvantages
Low Pressure Pipe System	Septic tank effluent is pumped through a supply line and into distribution laterals. The laterals contain small holes and are placed 3-8 feet apart. From the trenches, the effluent moves into the soil where it is treated. The dosing takes place 2-4 times a day depending on the input of sewage.	- requires less space than rock lateral system - can be used on irregular shaped lots - can be installed at shallower depths and requires less topsoil cover - provides alternating dosing and resting cycles - alarm system alerts homeowner of pump malfunction	- some low pressure pipe systems may gradually accumulate solids at the ends of the lateral lines, requiring regular maintenance - must have electrical components - design and installation can be difficult and more costly
Lagoon System	A lagoon is an evapotranspiration absorption system. Effluent is treated by exposure to air, sunlight and bacterial action. Effluent is collected into a septic tank and then carried through solid piping to the bottom of the lagoon where it is discharged. Overflow from the lagoon is carried into a small lateral field where it is treated further and absorbed into the soil	- space efficient compared to a rock lateral system sized for clay soils - cost efficient and easily installed - relatively low maintenance - no odor or mosquito problems	- 6 foot fence and locked gate required around the lagoon - duck week or other surface vegetation must be removed from the surface - difficult to install on rocky soils or on steep slopes - open water may not be attractive to some users
Mound Systems	A mound system is a soil absorption system that is elevated above the natural soil surface in suitable soil material (usually a sand mound). The effluent is pumped or siphoned into the absorption area through the distribution network located in the upper part of the coarse soil. The effluent passes through the soil, the fill material, and the unsaturated zone of the natural soil. The cap provides frost protection, sheds precipitation and retains moisture for good vegetative cover.	- may be used in areas with high groundwater, bedrock or clay soil near the surface - space efficient compared to rock lateral system - relatively low maintenance	- must be installed on relatively level lots - flushing of the distribution network is required - system may be difficult to design and more expensive - regular inspection of the pumps and controls is necessary to maintain proper working condition
Constructed Wetlands System	Constructed wetlands generally consist of a primary treatment unit with 2 compartments or special filters; and a lined-rock bed or cell containing approximately 12 inches of rock and an overflow lateral field. Aquatic plants are planted in the rock media and treat the effluent to a very high degree. Excess effluent is disposed of into the lateral field.	- can be placed on irregular or segmented lots - may be placed in areas with shallow water tables, high bedrock or restrictive horizons - requires less lateral field length	- requires a higher level of maintenance than conventional systems - may be more costly to install - unknown life-span of the system

**Source: Homeowner's Manual, On-site Sewage Disposal Systems, Kentucky Cabinet for Health Services, revised 9/97*

Polluted ground water

Health directors need assistance from epidemiologists, toxicologists, state biology and chemistry laboratories and state water resource staff to measure the effects of polluted aquifers on those who use them. When the aquifer supplies each home through its own well, each well owner has to deal with the problem individually. If the water is distributed through a public water system the water system owner is responsible for water quality. Unfortunately, in rural areas this is often an absentee owner living out of state and unresponsive to local actions. The problem may only be solved in court, and anything done there tends to cost a lot and take much time.
Meanwhile, the water users want instantaneous solutions. Before the polluting owner with a malfunctioning drain field or a business with faulty equipment can be placed under court order or disconnected, the health director is expected to be the expert keeping the public informed about potential ill effects. With many environmental activists ready to complain, but without authority to take action, the director has to develop strategies for education and crisis management in these situations. Another Lecture discusses crisis management in the health department.

Vector Control

The *original Standards* state that:
"Citizens should be at minimal risk of vector related diseases and conditions."
Goals for vector and animal control in the original Model Standards are identical to those in the 1990 Objectives, except for substitution of animal for vector.
HP2010 states: Vectors may be large farm or household animals but are commonly the insects found on these animals, in other words vectors are usually animals with exoskeleton (insects) as opposed to vertebrates. HP2020 no longer has a recommended objective for vector control, despite worldwide evidence of significant disease spread by insect vectors such as Ticks, mosquitoes and flies of various genera.

Animal control refers to actions taken mainly to prevent injury from animals rather than disease, with the exception of rabies. In the *Model Standards* animal and vector control are part of a single activity, yet the "animals" controlled by community animal and vector control programs are usually very different pets, on one hand, disease carrying insects, for the most part, on the other and the individual who does the controlling varies widely. The health department invariably deals with disease vectors. Animal control is a totally different function and should be separated from vector control. Unfortunately, when the original Community Model Standards and 1990 Objectives were developed they were developed generically at the national level, with little input from the few health departments that had responsibility for animal control. All have responsibility for vector control. Common vectors for diseases of public health importance are rats, bats, ticks and mosquitoes. Pigeons are often considered to be vectors by many members of the public who are concerned about the way they spoil public monuments by roosting and defecting. There is no evidence that pigeons are responsible for spreading any diseases to humans. A local health department should only be responsible for those creatures that become a public health problem by transmitting communicable diseases such as malaria, dengue, yellow fever, psittacosis and encephalitis, and not for those that are merely a nuisance, like pigeons and starlings.

Insect control

Vector control requires codes that reduce the insect population by reducing harborage for vectors and by destroying eggs, larvae or adults as necessary. Typically, such codes require inspection of backyards and industrial sites where waste such as tires and junked cars accumulate.

To write good codes for the locality, it is essential to know the life cycle of the various insects living there: where they lay eggs, how long the eggs take to hatch, what kills or disables them or prevents reproduction, how far they fly and what attracts them. The Aedes mosquitoes, the vector for malaria, usually have a range measured only in hundreds of yards. The Culex quinquifasciatus, which are good biters and can spread encephalitis, can fly miles even in a strong wind. Each type of mosquito (there are over 1000 varieties in the U.S. alone) has its own behavioral characteristics. Luckily, only a few pose a disease hazard to man. Most vector control programs use as little insecticide as possible, focusing their efforts on harborage. Ditches and yards must be kept clear of stagnant water, trash and debris so that rain drains quickly into storm sewers. A glass of water left outside the house for 10 days can brood an entire generation of mosquitoes. When on the wing, mosquitoes are best controlled with a micro droplet high intensity sprayer that disperses a very fine aerosol of malathion some 50 to 100 feet. Because this spray cannot be seen, crews are often accused of driving through the community without doing anything, and some departments add a small amount of diesel oil simply to make the spray visible. Health departments in communities harboring disease carrying mosquitoes need to keep close surveillance for importation of malaria, dengue and yellow fever. In subtropical areas endemic typhus is a problem.

On the Gulf Coast a rash with fever is considered to be typhus unless proven otherwise. There, the frequent vector reservoir is the opossum, which cannot preen like other animals. It stands on a tree branch and shakes off the ticks, which may fall onto a passing pet, or later climb onto a pet that then brings the tick into the house. Like typhus and Rocky Mountain spotted fever, Lyme disease requires tick control. It is caused by a spirochete, Borellia burgdorferi, most prevalent in the northeast but found elsewhere. It is borne by ticks (commonly the Ixodes dammini, but also lone star and dog ticks). The host is often, but not always, a member of the mouse family. In one survey, 50% of impounded dogs, but no other pound animals, had antibodies against the Borellia. Lyme disease has been recognized with increasing frequency since 1980. It is important that physicians report occurrence of Lyme disease to health departments so they can advise citizens about protective measures. Some state and local health departments take regular samples of ticks from animals known to harbor them. Others sweep fields and brush adjacent to woodlands where animals have been found with Lyme disease bearing ticks. These measures allow the local health department to warn the public about the potential for infection when they expose themselves to ticks. There is no way to eliminate ticks, but those going into areas inhabited by tick bearing animals can wear appropriate clothes, spray the clothing with tick repellant, check each other for ticks

after potential exposure, and go to a physician for diagnosis and treatment if symptoms suggestive of Lyme disease or other tick borne disease occur within one to two weeks of exposure.

Rat control

Rats are controlled because they also carry diseases. They serve as hosts for vectors such as fleas, ticks and mites, which carry diseases such as typhus, plague and leptospirosis. Many authorities consider it unlikely that small mammals like rats and mice will survive with rabies and be a hazard to humans, but unlikely is not the same as impossible. Citizen requests to test an animal any mammal for rabies need to be taken seriously. The best way to control rats, whether roof or ground dwelling, is to reduce their harborage, food and water. Compliance with building codes minimizes roosts/nests for pigeons, rats and bats alike. Besides unprotected human food and garbage, rats eat pet food and water. Even if these are brought into the house, birdbaths and flowerpots can provide water. Even dog feces can support rats. It is often not easy to convince a pet owner that his animal's wastes promote disease in this way. Codes requiring immediate gathering and disposal of animal wastes from streets and yards are essential for rat control. If rats have to be killed, it is advisable first to dust all their runways for fleas to reduce their escape when the rat nests are fumigated and dug up.

Bat control

Finally; a few words about bats, most are harmless and ecologically useful. The same building codes that protect homes from rats and pigeons, protect them from bats. While some insist that bats are not reservoirs of rabies, the local bat population should be sampled periodically for this disease (in Corpus Christi, for instance, 15% carried rabies). The vector control staff, in cooperation with the animal control section, can then use hard data in educating the community about bats. Because the rabies virus is present in the urine, saliva, and feces of infected bats people must be reminded repeatedly not to handle bats themselves or allow children or pets to play with dead, injured or ill bats. A live bat found lying on the ground is sick. A freeze in Corpus Christi killed several bats. A group of children found them and started playing with them, licking them, putting the heads in their mouths and throwing bats at each other. Because more than 10 children had played with more than 20 bats it was likely that one or more bats was rabid and one or more children infected. There was no way to identify which bat had come in contact with which child and in what way. It was important to know whether the child touched the bat, was covered with bat blood or urine, just touched the skin or whether the child had licked or mouthed the bat. All the children were immunized against rabies without, fortunately, having any reaction to the vaccine. In 2008 the major source of rabies among humans was bat bites.

Animal Control

In urban and dense suburban areas limited space increases the chance for contact between people and any free roaming animals that exist there. Pets frequently carry pests, contact stray (feral) animals, and can transmit at least 50 infectious diseases or infestations to their owners including rabies, Salmonellosis, tuberculosis, worm and amebic infestations, and all the tick and flea borne diseases. Dog feces, as noted earlier, attract rats, which live on their nutritional residuum. Pets can indeed be hazardous to our health. Dogs and cats are both territorial and will defend their homes. Male children are most likely to tease and be bitten by animals. There is more animal child contact when school is out, and animals are more likely to roam when the weather is good, so bites of boys peak in the summer. Both dog and cat bites can cause extensive tissue destruction, but dogs are generally larger and their bites can crush, break bones and often penetrate deeply.
In some communities animal control is a police function; in others it is delegated to a humane organization, and in others the health department is responsible. In some communities the police or health department round up strays and gives tickets while the animals are boarded,

killed, sold, or given away by a local humane society. Strict animal control is essential in urban areas not only to control stray animals but to reduce animal bites and the possibility of rabies transmission. Because there is a wide range in pet owners, from those who buy toy poodles as true pets to those who are antisocial and buy Doberman pinschers as guard dogs or pit bulls to fight other animals, animal control personnel need to be good judges of people as well as animals. The best workers dislike destroying animals of any kind and are good at public interaction, educating children and adults on the street and in classrooms. Their priority is to protect the public's health, not to issue citations. People are often much more protective of their pets than of their children, and animal control officers have been threatened, assaulted and shot at in the course of their work. They need the support of police and state game wardens. Keeping exotic animals such as snakes, ostriches, ocelots and even mountain lions, is a fad in some areas. Most people who own such animals do so to show off. After the glamour of ownership has worn off and the "pet" is no longer an infant and center of attraction, it is often abused. When the exotic pets reach puberty, their behavior changes and the cuddly animal may become dangerous. As none of these exotic animals can be immunized against rabies, they all pose a danger of carrying this disease, which has a long incubation period in most species. Such animals should be left in the wild. In the last 2-3 years many state legislative bodies have broadened the definition of animal control, dangerous animals, and owner responsibility.

Biting pets

Because of the increasing frequency of bites from animals running at large, many communities have increased animal code enforcement. Some codes allow only one non serious unprovoked bite before requiring an owner to show cause why the animal should not be either killed, or elsewhere. An individual whose pet has attacked people more than once can give the animal to someone in a rural area where the animal will not be a threat to the community. Law officers there are first told about the incident and given the opportunity to refuse relocation (which often happens). These codes state that when an animal bites twice, or once seriously, the owner must appear before the health director for a public hearing. The bitten party, all witnesses to the incident, and lawyers are allowed to be present. The hearing is usually conducted by a hearing officer (often a city or county attorney). The health director has the option (by code) to kill, banish the animal from the community, or to require additional safeguards to keep it, with instructions to all concerned to report any violation. If rabies is prevalent in the community and the pet has not been immunized according to the law the animal can be killed and its head sent to a laboratory to be examined for rabies. Additional information on prevention of bites and the importance of preventing bites is found at websites at the CDC and the HSUS.

Animal control advisory boards

I cannot urge too strongly the appointment of an animal control advisory board for any health director who works with animals. Such a board provides an important link between the health department and a large segment of the community with common interests. Some kind of advisory board or community consultant should be developed for each major program area within the health department. This board reviews statistics on loose animals by type and location, and on bites by number and location. It acts as a public forum for people incensed about too many animals, failure of pickup of animals, behavior of animal owners and animal feces in the streets. The board reports periodically to the city/county council and discusses either loosening or tightening up laws, rules and regulations. It considers animal welfare and is concerned with prevention of unneeded animal/people contact, but also with acceptable behavior of pet owners, including the lodging and feeding of their animals. It can investigate animal abuse, develop standards for animal capture and disposal, and set conditions for the use of a capture loop or dart gun. The latter is used only when there is no danger to humans from shooting the gun, and the animal is likely to be rabid. The animal control advisory board acts as a buffer between the various elements of the community, the department and other

governmental agencies, and the animals themselves. Just as important as dogs are cats which bite more frequently than dogs and are more likely to transmit rabies.

Housing Standards

The *Model Standards* state that:
"Residents will live in homes which are properly heated, cooled, clean and free from vectors, and have adequate space, light, water and sanitary facilities and proper food storage and preparation capabilities."
The outcome measures indicate incidence of childhood lead poisoning, accidents, fires, burns and presence of smoke alarms and fire extinguisher, while the process measures relate to presence of housing codes, inspection results, and follow up.
Few state health plans embrace housing programs, which are usually local. The local health department is ordinarily interested to see that housing codes are upheld to assure the health of inhabitants of low income rental housing. Building officials, using Housing Codes manage engineering and safety standards, not health standards. The housing standards of the American Public Health Association emphasize health issues such as available potable water, adequate heating and cooling, available refrigeration to store food, and working toilets. These APHA standards emphasize joint training of nurses and sanitarians to observe these standards and report substandard conditions to the building officials for enforcement if the health department is not responsible for code enforcement.
Experienced city health directors confirm the value of having rental housing standards enforced by the health department. Rental housing standard programs require strong management, careful public education and, like other programs, should have their own advisory board. Twenty years ago Portsmouth, Virginia, became a leader in ensuring availability of good quality rental housing for its lower income citizens. Prior to this time, because of illness associated with poor housing, the city council decided improvement of rental housing stock for the poor was a task for the health department and directed it to improve enforcement and reduce the prevalence of substandard housing. Since most of the problems were with rented, not owned homes, citations often resulted simply in poor tenants being evicted and left with nowhere to go. These houses were in terrible condition; all areas of the housing standards were being violated. Electrical systems were overloaded, lighting poor, lead based paint prevalent, water supplies absent, toilets nonfunctioning (often due to improper use by tenants), heating appliances unsafe and refrigeration lacking.
The temporary nature of tenant occupancy made it difficult to focus on individual complaints (rental units typically turned over every 15 to 18 months), and the department found that the ongoing block by block survey funded by a federal grant would take 20 years to complete. Homes were deteriorating faster than they could be brought up to standard. The housing advisory board was, to put it mildly, unhappy.
The board of housing appeals, the health department's advisory board for the housing program, decided to focus on active surveillance of rental property and doubled the housing staff for this effort. Homeowners would be subject to passive surveillance. Neighbors, realtors, city staff on routine inspections, and public utilities would recommend owned homes for spot inspections. A new ordinance required that any rental unit from which the tenant moved could not be occupied again until it had been inspected by the health department and brought up to standard by the owner. If the owner refused, the unit would be condemned and sold or acquired by the city, subject to court action by the owner to prevent such action.
Each block in the community elected a block captain to report substandard housing to the health department. If the unit was occupied, every effort was made to find alternative housing for the tenant before citing the owner. The block captains in each neighborhood met quarterly with health department staff to discuss the quality of life in the neighborhood and ask the department, for example, to help clear weeds and debris. Where trash accumulations were a problem, the health department could cite the owner and require clearing by court order, this allowed contracting for the clean up, and billing the owner directly.
Many of the public health nurses worked with families in the low income rental areas and could refer substandard housing to the environmental section for inspection and correction orders. The environmentalists, during a housing inspection, might see a potential problem requiring a nurse. Also, the block captains would call either the nursing or environmental staff for help

when needed.
This one program probably did more to weld nurses, environmentalists and residents into a team than any other in the department. As with other health department efforts, an effective public and media education program was necessary. As it became aware of the actual conditions and the efforts made to correct them, the public saw the department as equitably enforcing standards beneficial to the entire community. Over a three year period this program, alone, lowered the rate of substandard rental housing in the community from 46% to fewer than 3%.

Solid Waste Management

For all practical purposes this is a state function, as the EPA has delegated it to most states. Household and industrial wastes are usually deposited in controlled waste disposal sites designed to prevent decomposed products leaching into aquifers. These have clay bottoms and sides and nonporous liners. When the system is full, it is covered with a clay cap and vented to allow decomposition gases (mostly methane) to escape. Perimeter wells are placed around the site to monitor any leaching.
Municipal landfills used by cities and counties, mainly for household waste, are operated under a state license. Many are filling up because communities didn't make the long term and often expensive commitment to develop additional sites. Elected officials or citizen groups may call upon the health director to condemn landfill sites due to the Not In My Back Yard syndrome. As the official with the science expertise, the director can work with local and state planners to find alternatives and help select the best one, and he can assure the people that waste is being properly dealt with.

Drinking Water

The Model Standards posit that,
"Residents will have access to drinking water that is free from harmful contaminants."
This should be a simple task given the recovery and purification technology of the 1990s. We can drill for ground water or treat surface water from lakes and rivers; we can use reverse osmosis to filter brackish or seawater; and we can filter water to remove cysts and kill the remaining microorganisms by contact with ultraviolet light, chlorine or bromine.
Yet, despite all this, in many rural areas there is little accessible potable water. Residents may place their wells too near drain fields and they may fail to grout the upper 50 feet of well casing properly to stop effluent and surface water from contaminating their wells. In U.S. urban areas the public water supplies meet state standards required by the EPA. The EPA adds additional standards almost annually and the states have to comply with them or loose the ability to set state standards. Until recently, the only test was to be sure there were no coliform organisms in the water. Now eight additional tests apply in all 50 states, and water costs more.
The EPA now requires that all public water supplies reduce their fluoride levels to 4 parts per million. In areas where fluoride levels are naturally high, private water supplies can easily exceed this standard. Other than tooth staining, there is no evidence that high fluoride affects health, but it is the health director's responsibility to tell the community why the federal standards are imposed so they can make informed decisions about how much they will spend to meet those standards and what the potential health and legal risks are for failure to do so.
In rural areas most houses are so dispersed that there is no cost effective way to provide public water supplies. Many small suppliers are stretched to their financial limit by current standards. In Virginia, estimates prior to the development of the recent EPA standards put the cost of providing drinking water, public and private, to everyone at more than $2 billion, a sum more than twice the cost of Virginia's state and federal Medicaid funds together. A further $23 billion will be needed for wastewater treatment, and a like amount for solid waste disposal. This $2 billion is only for the 500,000 and more residents scattered across the countryside, not for the 5,500,000 already on the public water supply. The remaining $5 billion plus is to bring solid and liquid waste disposal systems up to current standards.

Communities are increasingly faced with water shortages from a combination of population growth and depleted aquifers and sometimes they have to ration water. This can mean no watering of gardens, except with heavily chlorinated sewage effluent, a shift from home laundries to group laundries. In some case, even, the health department may be called on to determine how long a person can retain reasonable hygiene without changing underclothes. After such calculation water restrictions can be tightened further. Reverse osmosis methods can be used to increase supplies when brackish water is available, but has not been used previously as a community wide resource in the U.S. In the mid 1980s small amounts of water were produced for the first time by reverse osmosis. Reverse osmosis has been used for some time in Israel. Trucking water is a very temporary solution. Water planning is rudimentary in most communities but will become more and more important with the continued increase of population.

Air Quality

This is usually a state concern because air crosses county and city boundaries. Like standards for water and solid waste, the EPA delegates air quality standards and enforcement to the states. Such delegation is known as **primacy**. The local health director, however, is the medical specialist who interprets pollution hazards to the public and local officials. He must describe acute and chronic effects and the different hazards of each type of pollution, and must stay informed about the community's health status. The department's staff should know which local industry has the largest smoke stacks, with the heaviest discharges and know what is emitted, how much, and how this affects overall air quality. The director should be knowledgeable about automobile and power plant contributions to air pollution and about passive smoking effects as well. People will have questions about their role in disability and death from such conditions as coronary heart disease, stroke, and chronic bronchitis, emphysema, and lung cancers.

Recommended Reading:

1. Living Old. The Modern Realities of Aging in America. BS Video, Fall 2006
2. Meeting the Challenge of Chronic Illness; Kane m, et al Johns Hopkins Press, 2005
3. Guide to Community Preventive Services, Zaza S et Al, Oxford University Press, 2005.
4. Beck A: The Ecology of Stray Dogs. Baltimore MD, York Press, 1972
5. The 1990 Health Objectives for the Nation: Midcourse Review. US Dept of Health and Human Services, 1986.

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Chapter 9
Clinical programs

Wherever there is a significant population in poverty, without health insurance, or distant from medical facilities--or all three situations--the local health department should accept responsibility for ensuring access to a variety of programs to provide basic health and medical services. Most, but not all, of these services are directed toward infants and young children, who are seen not only as worthy objects of public support but also as a sensible investment of the public health dollar. It takes far less time and money to correct or eliminate a condition in childhood than it does to treat the later disability that the condition, if ignored, will produce.

The Institute of Medicine has encouraged enhanced funding of the National Health Service Corps (NHSC) scholarship program, to prevent a shift of family physicians away from rural communities, and to re-examine the role of local health departments and their access to primary care. Many local health departments already provide well child and prenatal care, family planning, home health care, immunization, STD services, follow-up care for chronic diseases, and other specialty services. It is relatively simple, in theory, to change from a system that focuses on clinics limited to treating federally funded conditions, the way most health department services are organized, to an integrated primary care system that focuses on people in family units. Internally, the greatest obstacle lies in redesigning the clinical database to secure an audit trail both to support federal and state funds and also to allow billing of third party payers. The director must enlist a wide base of support through partnerships. The most recent interest in coordination of clinical services, particularly in urban areas is known as a Health Care Safety Net. This report although 10 years old has not been followed up by Congress or the AMA with any significant action. Before starting a primary care delivery program to ensure that all citizens have access to primary care, the director must search for the stakeholders among advisory boards of health professionals, elected officials and social agencies, as well as community activists to assist in developing a plan, to determine limitations, and whom the community's future plan should cover. In rural and central city health departments' primary care partnerships may be the wave of the future for delivering clinical public health services, particularly its new focus on chronic disease prevention.

Primary care

The *Original Model Standards* proposed that:

"Residents of the community will have access primary health care services to promote achieving & maintaining optimal health status." It specifies that health departments *shall "promote, encourage, and arrange primary care funding and service delivery from all appropriate providers. To the extent primary care services in the community are not adequate [the department] will provide such services directly or through purchase and cooperative agreements."* The assurance function. The HP2010 objective is:

Increase the proportion of persons with a usual primary care provider.
Target: 85 percent.
Baseline: 77 percent of the population had a usual primary care provider in 1996

The HP2020 plan adds the following new objectives for Health Access:

AHS-1 Increase the proportion of persons with health insurance and

AHS-3 Increase the proportion of persons with a usual primary care provider is

AHS-4 (Developmental) Increase the number of practicing primary care providers.

AHS-7 (Developmental) Increase the proportion of persons who receive appropriate evidence-based clinical preventive services

Few states have developed long-range plans that include primary care, though many plans cite the need for citizens to have access to health care. Several states are revamping their indigent care programs to provide funds to reimburse hospitals and other providers for both institutional and primary care, as in Massachusetts, California and Oregon.

Many urban counties and cities as well as rural areas have large numbers of underserved, underinsured indigent populations for which the health departments provide primary care services (in Virginia in 2006 the percentage of the population without access to primary care was estimated to be 14%). Primary care has usually been delivered by agreements between the local medical society, the local community (tax supported) hospital and the health department. This is less costly than allowing people to wander into emergency rooms and usually has proven acceptable to the community. Primary care clinics (as opposed to private practices) are also an excellent way to bring adolescents into the health care system, to obtain their trust, and to help them understand and follow advice on healthy life styles. Health Departments might set school based health centers either on or next to high school campuses for maximum access.

In Portsmouth, Alexandria, and Newport News Virginia, the local health departments run the outpatient clinics of the community hospital. To make maximum use of limited resources and ensure that public health prevention programs, with their case management and health education components, did not lose visibility, they developed a system of general medical clinics, maternity clinics, pediatric clinics, and specialty clinics.

Tracking primary care programs

Data systems allow fiscal analysis of care and billing of third-party payers, whether the state's indigency fund (usually Medicaid), Medicare or occasionally, private insurance. Coding systems include CPT (current procedural terminology), ICHPPC codes (International Classification of Health Problems for Primary Care) developed by the North American Primary Care Research Group (known as NAPCRG) and DRG (Diagnostic Related Group) codes. Both the former codes were included to allow research that could compare both U.S. and international primary care research. Only CPT codes (currently CPT2000) are necessary for most U.S. primary care data systems. Data from surveys of the National Ambulatory Care Evaluation Survey (NAMCS) of the National Center for Health Statistics30 years ago show 24 common problems make up about half of primary care.

A study of the most recent NAMCS survey (2008) shows little change in the prevalence of these conditions in family doctors offices in the last 30 years. The top twenty reasons to visit a primary care physician account for more than 50% of all visits. Ninety five percent of primary care is directed at 150 different problems, most of which are fairly easy to treat. Increasingly, primary care also deals with life style issues, where changes may prevent certain diseases.

These data satisfied auditing standards of state and federal programs, tracked public health programs and patients, and were used to ensure maximum efficiency, acceptability and availability to the clients. Because the clinic site in Portsmouth was near the hospital, the latter had access to patient charts when the clinics were closed--an ability to transfer records

from the health department to the hospital is missing from most publicly supported primary care programs, one major reason for instituting electronic records systems. Access to the clinics was limited for some indigent patients due to lack of transportation. This became less of a problem as clients and transportation were linked together by timing clinics to start and finish in relation to available bus services, or to use transportation from other human service agencies to pick up and return patients, or in some cases to set up clinics in a facility near large numbers of patients. This model worked well for the development of the Hayes Willis Health Center in South Richmond 1992, as part of the health care safety net for central Virginia. The federal requirement that all medical care data be collected through Electronic Health Records Systems (EHRs) by 2014 should spur data systems that will allow fiscal, epidemiologic and quality analyses of medical care within the next 5 to 10 years.

As older primary care physicians have died or retired from practice they have been hard to replace. Nurse practitioners and physician's assistants, when available, have been well received by patients, and the quality of care they provide has been excellent.

Genetic diseases

HP 2020 sets the following Goal and overview:

Goal

Improve health and prevent harm through valid and useful genomic tools in clinical and public health practices.

Overview

The new Genomics topic area and objectives for 2020 reflect the increasing scientific evidence supporting the health benefits of using genetic tests and family health history to guide clinical and public health interventions. This decade begins with recommendations from independent panels on genetic testing based on thorough reviews of scientific evidence.

The 1st recommendation is from the U.S. Preventive Services Task Force (USPSTF):

Women with certain high-risk family health history patterns for breast and ovarian cancer could benefit from receiving genetic counseling to learn about genetic testing for BRCA1/2. For women with BRCA1/2 mutations, surgery could potentially reduce the risk of breast and ovarian cancer by 85 percent or more.additional [1]

The 2nd recommendation is from the Evaluation of Genomic Applications in Practice and Prevention Working Group:

All people who are newly diagnosed with colorectal cancer should receive counseling and educational materials about genetic testing. Family members could benefit from knowing whether the colorectal cancer in their family is a hereditary form called Lynch syndrome.[2] Screening interventions could potentially reduce the risk of colorectal cancer among men and women with Lynch syndrome by 60 percent.[3]

Why Is Genomics Important?

Genomics plays a role in 9 of the 10 leading causes of death, including:

- Heart disease
- Cancer
- Stroke
- Diabetes
- Alzheimer's disease

Most states have genetic services in their maternal health programs that include testing for phenylketonuria (PKU), hypothyroidism, and sickle cell disease, among other genetic disorders. Positive test results are referred to the local health director who ensures that the affected child receives prompt final evaluation to decide the validity of the screening test. Depending on the genetic abnormality, special foods or counseling or both with be provided the parents. The local health department serves mainly to assure the availability and accessibility of these services. In the 2005 General Assembly, Virginia voted to increase testing from 17 conditions to 39. With the many current advances in genetic analyses coming on line we can expect more conditions to be covered, and hopefully more genetic screening and consultations prior to conception.

Laboratory services

The outcome objectives are tests that include clinical microbiology (bacteriology, mycobacteriology, mycology, parasitology and clinical microscopy), virology, clinical chemistry, urinalyses, hematology, immunology, cytology, cytogenetics, blood banking and serology services. These laboratory tests support both clinical and environmental programs. For environmental health, ambient air analyses, water and wastewater analyses, analytic food chemistry, microbiology, clinical toxicology, virology, toxic substance analyses, and industrial hygiene testing are necessary to support services necessary to meet local, state and national objectives.

The local health department has to be concerned with quality as well as quantity of tests, and available manpower. Thus, the local health director must be concerned that specific tests can be performed only if there is sufficient demand for them and only by properly trained staff who meet all the standards required in federal regulations (42 CFR part 74) which have put all the laboratory quality standards required by Medicare and Medicaid into a single document. Many tests (such as HIV antibody or measles antibody) require special skills found only in large laboratories. The complexity of waste water effluent testing, as well as the increased range and limits of testing contents of ground water which requires such equipment as atomic absorption spectrophotometers and gas chromatographs limit this kind of testing to the largest commercial or state laboratories. Because of the concern for quality laboratory services only the largest city public health laboratories still perform clinical bacteriology in support of tuberculosis and Hansen's disease clinics. Due to increased screening for asymptomatic hypercholesterolemia, early onset of type-2 diabetes, and examination of children for Medicaid's early periodic screening, diagnosis and treatment programs (EPSDT) more local health departments are expanding their clinical testing using commercial equipment for which no standards have been developed. Before embarking on such endeavors the local director should ensure that he has a quality control program in place, supported by the state laboratory system.

Home care financial problems

Since the late 1970s most health departments in the U.S. eliminated their home health services due to competition from private profit making agencies. In Virginia for example, home health services started out as a state program to support social service agency clients. As home health service effectiveness became better understood, and as reimbursement was increased to move patients from hospitals and keep them out of nursing homes, a far more expensive placement for care, new profit-making agencies sprung up. However, "they skimmed the cream" by only taking care of paying patients, leaving the local health department in a "catch-22" situation. Many of those needing home health care were elderly or disabled people living on small fixed incomes, often without any insurance. Patients without insurance could not afford care from a private agency and looked to local health department home health care programs as a last resort, particularly in rural areas. The health department lost money delivering home health care to patients without ability to pay for care. Thus, the department first had to find out whether state or local government would be made up this loss, if not, it then had to decide whether to continue providing such services if the only alternative was to cut maternity or child health services or reduce immunizations. We can only hope that much of this lack of access can be cured as the "affordable care act" becomes active.

Most local health departments find it impossible to compete effectively with private organizations. When income did not match expenses it was often because of a failure to ensure that all patients were enrolled in programs such as Medicaid, Medicare, TRICARE (the armed services third party payer system) or to take advantage of retirement programs offered by their employers. Because of superior case management programs, and the public health nurse's knowledge of the community, some local health departments are coordinating care between many different social and medical agencies to maximize benefits to patients. Private home health agencies usually provide only the specific technical service ordered by the doctor. Physicians who used services from both agencies have, mostly, preferred the case management approach provided by the local health departments. Home health services must have good data and financial systems. Many a good effort collapsed because a program extended itself further than its resources would stretch. As for other health department programs, audits are necessary to ensure accountability.

School health services

HP 2020 focuses on youth and adolescence:

Goal

Improve the healthy development, health, safety, and well-being of adolescents and young adults.

Overview

Adolescents (ages 10 to 19) and young adults (ages 20 to 24) make up 21 percent of the population of the United States.[1] The behavioral patterns established during these developmental periods help determine young people's current health status and their risk for developing chronic diseases in adulthood.[2]

Although adolescence and young adulthood are generally healthy times of life, several important public health and social problems either peak or start during these years. Examples include:

- Homicide
- Suicide
- Motor vehicle crashes, including those caused by drinking and driving

Substance use and abuse
Smoking
Sexually transmitted infections, including human immunodeficiency virus (HIV)
Teen and unplanned pregnancies
Homelessness

Because they are in developmental transition, adolescents and young adults are particularly sensitive to environmental—that is, contextual or surrounding—influences. [3] Environmental factors, including family, peer group, school, neighborhood, policies, and societal cues, can both support or challenge young people's health and well-being [4]. Addressing the positive development of young people facilitates their adoption of healthy behaviors and helps to ensure a healthy and productive future adult population. [5]

Why Is Adolescent Health Important?

Adolescence is a critical transitional period that includes the biological changes of puberty and the need to negotiate key developmental tasks, such as increasing independence and normative experimentation. There are many examples of effective policies and programs that address adolescent health issues. They include:

State graduated driver licensing programs[7]

Teen pregnancy prevention programs[8,9]

Violence prevention programs

Delinquency prevention programs

Mental health and substance abuse interventions

HIV prevention interventions

the new approach in healthy people 2020 is to focus on the total environment which young children and adolescents develop, not just on school health.

Local health departments screen many children in the community from birth until school entry, to ensure that their growth is adequate, or if not that they receive expert attention. They also monitor the child's hearing, vision, and general health. Many poor children are followed either by the health department or private practitioners in compliance with Medicaid's EPSDT program. Some schools have excellent health services, most have none, a few are somewhere in the middle. The local health department's role in school health is often one of assuring the community that the services are effective, which it can best perform by seeing that HP 2020 goals are incorporated into the community's health service delivery system. Once children are admitted to school a school nurse should be available to work with the children's homeroom teachers to perform periodic screening of growth, vision and hearing, evaluation of weight in relation to height, and straightness of spine. The nurse has the responsibility to contact a child's parents when an evaluation shows an abnormality, and to make recommendations for referral.

The school nurse (in those communities that employ them) may be a public health nurse assigned to the school system by the local health department, using a memorandum of understanding, or may be a staff member of a school system that runs its own student health program. Just as in Virginia, the relationship of school health programs to the departments of education and health may be unclear. In some states the programs are assigned to departments of education, which obtain advice from local physicians. In others, the health

departments provide them to the schools, using school premises to conduct the program, but setting the standards by agreement with the school systems. In most the issue is strictly a local issue and depends on whether the state or locality funds the program. There are a number of models for school health programs, but no consistent model has been developed across the country. This has occurred because schools have focused on educating children, and most health services are delivered to children by family doctors or pediatricians upon request of parents. It is only in the last decade that the medical profession, departments of public health, nursing associations, and parent's groups have started to unite to request standards of performance and state funding to meet those standards for school health services. This is probably the result of the increasing number of households with two working-parents and children getting sick when there are no medical services in schools. Another factor promoting increased school health services is the increased visibility of prevention and the link between prevention and education. Process goals alone (e.g. Are children and staff exposed to programs?) do little to validate a program. Local health departments should have three aims for school health services:

- First, children are screened for those health related factors which affect performance in school.
- Second, that students are protected against exposure to epidemics such as measles or mumps; and
- Third, that emergency services and routine heath care are available to school children.

Adolescents often find the school nurse one of the few persons they can trust to talk about problems of growth and development or about possible illness. Classroom teachers often ask school nurses to come to the classroom to provide additional information on health-related subjects, when the teacher does have enough knowledge. For both teachers and students the school nurse is an important authority on health matters.

Many school clinics are staffed with full time nurse practitioners and part time pediatricians or ephebiatricians (pediatricians who specialize in problems of adolescents). Comfortable waiting rooms and soundproof examining rooms to ensure confidentiality in the clinic help the staff to develop rapport with the students.

The local medical community, particularly pediatricians, has an important support role. Depending on the community's size, the pediatrician or family doctor has a major interest in children's health. With fluoridation of water supplies, and more recently application of sealants to enamel fissures, it is increasingly rare to see school children with cavities. The school dental programs supplement the activities of the privately practicing dentists by caring for children referred to them by the school nurse.

Family planning

Citing unintended pregnancy and infertility as both a personal and social burden, the *1990 Objectives* called for:

"a reduction of unwanted pregnancies and of medications with a permanent effect upon fertility and for increased knowledge of contraception among the young."

Over the years study has resulted in a more complex answer approach resulting in the HP2020 set of Family Planning objectives:

Goal

Improve pregnancy planning and spacing, and prevent unintended pregnancy.

Overview

Family planning is one of the 10 great public health achievements of the 20th century.[1] The availability of family planning services allows individuals to achieve desired birth spacing and family size and contributes to improved health outcomes for infants, children, and women. [1]

Family planning services include:

Contraceptive and broader reproductive health services, including patient education and counseling

Breast and pelvic examinations

Breast and cervical cancer screening

Sexually transmitted infection (STI) and human immunodeficiency virus (HIV) prevention education, counseling, testing, and referral

Pregnancy diagnosis and counseling

Abstinence from sexual activity is the only 100 percent effective way to avoid unintended pregnancy. For individuals who are sexually active, correct and consistent contraceptive use during every act of sexual intercourse is effective at preventing unintended pregnancy. Condom use is the only contraceptive method that protects against both unintended pregnancy and STIs; men and women should be encouraged to use condoms in addition to a long-acting, reversible contraceptive method at every act of sexual intercourse.

Why Is Family Planning Important?

For many women, a family planning clinic is their entry point into the health care system and is considered to be their usual source of care. This is especially true for women with incomes below 100 percent of the poverty level, women who are uninsured, Hispanic women, and black women. Each year, publicly funded family planning services prevent 1.94 million unintended pregnancies, including 400,000 teen pregnancies. These services are highly cost-effective, saving $4 for every $1 spent.

Unintended pregnancies are associated with many negative health and economic outcomes. Unintended pregnancies include pregnancies that are reported by women as being mistimed or unwanted. In 2001, almost half of all pregnancies in the United States were unintended. The rate of unintended pregnancies declined significantly between 1987 and 1994; however, since then, the rate has remained stable. The direct medical costs associated with unintended pregnancies in 2002 were $5 billion, or an average of $1,609 for each unintended pregnancy

Both Texas and Virginia set goals of reducing teenage pregnancies. Texas made education a priority: *"all students in grades 4 through 12 will receive age appropriate education about reproductive health (including contraception instruction) in school on regular basis. In addition, at least 100 hours of quality prime time radio and TV announcements, commercials, and programs to improve reproductive health will be provided in Texas annually"*.

Virginia, when developing its six year plans benefited from the Texas plan, the most recently

developed, also from experiences at the national level and in other states, and relied heavily on local recommendations.

At the local level, in the city Corpus Christi and surrounding Nueces County, Texas, set as its goal:
"To ensure that each child born in Corpus Christi and Nueces County is a wanted child born to a mother able to care for that child."
The fertility rate in that county was 30% higher than the national average and significantly higher than other large urban communities with similar levels of indigence. Specific objectives included increasing the number of low-income fertile women coming to health department clinics by 33%, continuing Planned Parenthood services for children under 18 and improving data systems to help set better staffing ratios and perform general planning.

This program met 84% of the community's current needs and 60% of the needs identified in its long range plan. This required the supplemental staffing of 16 public health nurses, one health educator, six clerks and four community service aides. The original program cost $947,040 or 16.6% of the total departmental budget--an indication of the priority the department placed on the need for family planning services in the community.

When presented to the city and county managers, the plan was accompanied by a memorandum explaining that family planning services cost $87 per person per year versus at least $2,500 paid to the hospital district for each delivery, plus an additional $2,500 per year in support by the welfare department for each unplanned child. Ninety percent of those who dropped out of family planning programs became pregnant the following year. Seventy five percent of these become pregnant and were likely to have a high risk pregnancy if the program was cut. Between 20%-30% of the pregnancies of those denied family planning services had babies that were too small to survive unassisted, were delivered too soon, and consequently needed long term care in neonatal intensive care units costing $50,000-100,000 each. Data from state health department programs such as those in Virginia demonstrate that many infants surviving the neonatal intensive care units require support for developmental disabilities from schools and mental health programs.

Maternal and Child Health (MCH)

Like immunization, maternal and child health services are a basic health department program, available from many health departments since the beginning of the century. The *1990 Objectives* set goals of lowered mortality rates for infants and pregnant women by racial group and region, also for a lower incidence of various congenital diseases/conditions of newborns. The *Model Standards* contain five pages of MCH objectives to reduce maternal and infant mortality. These will only be achieved by modifying national, state and local programs. These objectives contain three and a half pages of cross-references to the *1990 Objectives* for MCH. The MCH objectives from the *Model Standards* also have four pages of references to objectives for school health programs and a further page of cross references to school health programs in the *1990 Objectives*, all of which illustrate that national concern for children's health. Before proceeding further look at the HP2020 MCH Objectives.

Goal

Improve the health and well-being of women, infants, children, and families.

Overview

Improving the well-being of mothers, infants, and children is an important public health goal for the United States. Their well-being determines the health of the next generation and can help predict future public health challenges for families, communities, and the health care

system. The objectives of the Maternal, Infant, and Child Health topic area address a wide range of conditions, health behaviors, and health systems indicators that affect the health, wellness, and quality of life of women, children, and families.

Why Are Maternal, Infant, and Child Health Important?

Pregnancy can provide an opportunity to identify existing health risks in women and to prevent future health problems for women and their children. These health risks may include:

Hypertension and heart disease

Diabetes

Depression

Genetic conditions

Sexually transmitted diseases (STDs)

Tobacco use and alcohol abuse

Inadequate nutrition

Unhealthy weight

The risk of maternal and infant mortality and pregnancy-related complications can be reduced by increasing access to quality preconception (before pregnancy) and interconceptional (between pregnancies) care. Moreover, healthy birth outcomes and early identification and treatment of health conditions among infants can prevent death or disability and enable children to reach their full potential

These objectives are helpful in providing some idea of the vast range of services and options for ensuring the health of mothers and children, the scope is so wide as to be impractical to cover for any local health departments. At the local level it is best to group several of these objectives together to make a single objective at the community level, for example it is possible to combine national concern for weight, hemoglobin levels, and meeting minimal vitamin intake into a single nutritional objective locally. Managers of local health departments must take the responsibility to examine the national models and select objectives that are applicable in their community. Each selection must be explained in clear and acceptable terms to the community otherwise the objectives may look like bureaucratic games. In a very few communities all the federal programs on nutrition from the MHC Bureau, Department of Agriculture and HHS have been integrated. However due to the technical oversight required by the various federal agencies this becomes extremely difficult.

Statistical problems

Many of the initial model standards were not measurable or attainable on the basis of current knowledge and resources. The goal that
"no community should have mortality greater than 10% above the national level"
is useful. Locally, it may need to be restated as:
"No neighborhood/census tract should have infant mortality rate more than 10% above the community or state average".

In the healthy people 2020 document the whole issue of standards and data management group under the public health infrastructure objectives and codified in the data and information systems:

PHI-7 (Developmental) Increase the proportion of population-based Healthy People 2020 objectives for which national data are available for all major population groups

PHI-8 Increase the proportion of Healthy People 2020 objectives that are tracked regularly at the national level
is it

PHI-9 (Developmental) Increase the proportion of Healthy People 2020 objectives for which national data are released within 1 year of the end of data collection

This lets the department focus resources where infant death rates are highest. When particular census tracts or neighborhoods do not have enough births or deaths to permit useful measurements, they can be aggregated into groups large enough to ensure that year to year trends and changes will be meaningful, not just deviations from the norm. Only meaningful changes can be related to changes in service. A census tract with about 100 births a year may have averaged one infant death a year for five years (a rate of 10 infant deaths per 1000 live births) but that five-year period could easily be composed of individual years ranging from 0 to 3 deaths per year (ranging between 0/1000 and 30/1000). Such chance fluctuations, resulting from small numbers, make the figures meaningless. It may be necessary to aggregate enough census tracts to measure a trend over the previous 5-10 years for comparison with the current year, and even this can be difficult for departments or communities with few births. In the last resort, surrogate indicators such as low birth weights or late attendance for first visit to prenatal clinic, can pinpoint need in the community.

State objectives

Both Texas and Virginia first followed the *Model Standards* and the "Healthy People" objectives in formulating their state goals for maternal and child health. Unfortunately, the Texas objectives were set just before the 'oil bust' that affected several gulf coast and mid-west oil states so badly, preventing planned increases in staff. In addition Texas has perennial high unemployment along the Rio Grande and a continual influx of Mexican and South American immigrants, problems that continue to strain its resources.

A time limit of six years was chosen for objectives in Virginia because there would be two years left in the current Governor's term, plus four years for the next Governor's term. Nothing planned further in the future would have any chance of political acceptance. The initial goals and objectives in Virginia were developed locally, where the services were actually given. The planning committee hoped this bottom-up approach would be more realistic and attainable.

Local objectives

Over the short range the Corpus Christi, Texas, health department resolved to see more pregnant women earlier in their pregnancies. Specifically, they proposed an increase of 20% in their patient load of women at or below 150% of the poverty level, and a 15% increase (to 75%) of women entering the clinic by the end of their first trimester. The department decided that although many national objectives were useful, it would focus on two main measurable goals for a single year: these were: *to increase total attendance at the maternity clinics, and*

to reduce waiting time to enter clinics so that more women started maternity care during their first trimester of pregnancy. These objectives were easy to explain to the community and conformed to the state plan.

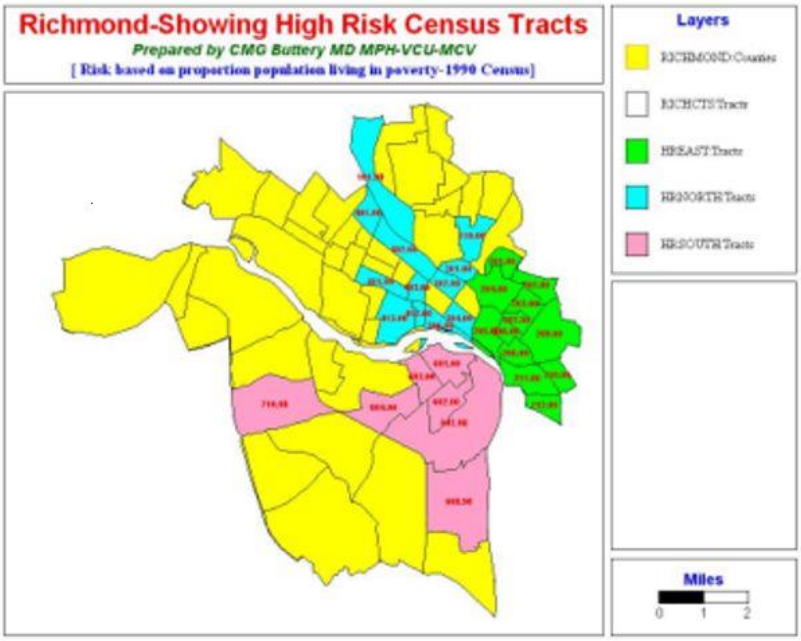
When the Corpus Christi health department developed its five-year maternity goals, the staff realized that they should define the local need, whether or not they were to be fully funded. This enabled them to budget for staff and decide strategies to meet the goals. Criteria used to develop these objectives included a total population of 300,000 people, no maternal deaths the preceding year, approximately 5,600 births, a fertility rate 32% higher than the state or nation, and 19,315 families with incomes less than the poverty level. Infant deaths in 1984 had risen to 65, compared to 54 in 1983 and 48 in 1982. Two of the pregnant women in the clinic during the year were only 12 years of age at time of delivery, which confirmed that the average age of conception was lower than for the state as a whole. Of the 74,479 fertile women in the county, 16.5% were at or below the poverty level and 28% were at or below 150% of the poverty level.

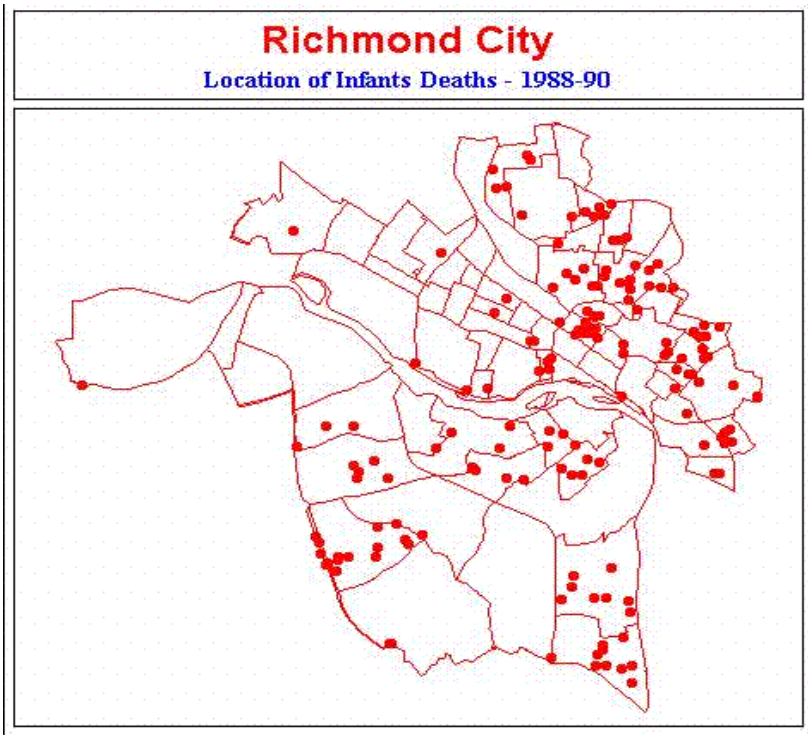
In Richmond VA, the health department found, as the result of a series of community wide focus groups, that too many citizens were falling through the gaps. In particular women attending MCH clinics has no resources when they had medical problems, other than going to emergency rooms. Over a period of ten years the local teaching hospital, the health department and local primary care physicians, banded together to develop an integrated community access system for primary care, a basic "health safety net". The clinics were moved from the health department to a new Primary care center, a community health center, to physicians' offices and to specialty clinics at the teaching hospital. During the development of the system it was found that 40 per cent of patients previously treated free had a source of payment for care. Many patients were being seen at several different sites and care duplicated. A pavement resource is developed if the patient does not have one. Care is coordinated. Cost has dropped significantly. ER room visits have dropped. The process was complex and supported by grants from the Robert Wood Johnson Foundation and by the Virginia Health Care Foundation. The role of the public health nurses has changed from clinical care to case management.

Malpractice problems

Increases in malpractice coverage premiums and in legal actions were reducing the number of physicians willing to deliver poor women. A perception by physicians that poor women were more likely to be at high risk and have adverse outcomes and that lawyers were more likely to talk these women into suing the delivering physician whether or not there was any real cause for action, underlay their reluctance. Data maps show the distribution of the economic groups

and infant deaths in the community. Census tracts other than yellow are high risk.





Poor women without adequate prenatal care are even more likely to have poor outcomes due to lack of good nutrition or abuse of tobacco, alcohol and other drugs. With several pockets of poverty in the city it would not have been surprising to see as many as 80 infant deaths per year, rather than 64. This leads to a liability problem for OB-Gyns. Rural states with sparse populations and distant major medical centers were hardest hit. This problem is described well in the Institute of Medicine's review of the effects of liability issues on maternity care. One potential solution being studied by many states is that taken by Virginia. The Virginia legislature developed a no-fault system for adjudicating damages to those infants

neurologically damaged during birth. The definition of such damage was defined further during the 1990 legislative session. Analysis of its effect on lawsuits in 1998 showed that few claims had been filed, that those that were filed were legitimate and received compensation. The only concerns expressed were those of trial lawyers. Malpractice problems will continue to be a challenge but the newborn neurologically impaired infant law has halted the increase in premiums. Since the development of the neurologically damaged program liability rates stabilized the year of enactment and have dropped significantly over the last 10 years.

Seeking other alternatives

Local health departments are becoming the last line of defense against bad maternal outcome, and many departments are exploring alternative approaches such as contracting with local hospitals to deliver their patients. Under this plan, the local health department pays part of the salary of a hospital based obstetrician or nurse midwife, who then spends part of his or her time in the department's clinics and delivers the department's clients. In at least one state (North Carolina) rural physicians were coaxed into remaining in their communities when the state paid part of their liability insurance premiums in proportion to the number of health department or uninsured patients they deliver. Other local health departments contract for services with federally funded primary health care centers or migrant health care centers. Some states have provided funds to support primary practice directly. Others encourage physicians to stay in rural communities by providing continuing training and specialty-faculty support at nearby community hospitals through an area health education system (AHEC). Hopefully, a combination of these incentives, will not only ensure an adequate supply of primary care physicians, eventually, but will also help local health departments provide maternal and child health services.

State funding

Some states have increased the funds available for maternal and child health by moving dollars from the general fund supporting the health department to the Medicaid program. This matches state with federal dollars, providing twice the funding otherwise available. This increase either permitted an increase in the eligibility level, for pregnant women and their children less than 12 years of age, from less than fifty percent of poverty to one hundred and fifty percent. Also this increase allowed reimbursement to be increased ensuring improved access to available services. In many states, the Medicaid reimbursement for maternity and other primary health care services was at or below 25 cents on the dollar of the actual cost to the physician or health department. Until the reimbursement, particularly in rural areas, was increased Medicaid coverage was of little value. By 1992 in Virginia Medicaid started paying more than Blue Cross. Physician acceptance of Medicaid enrollees increased quickly.

Staffing

As an example, four contract physicians, one nurse director, one nurse-midwife, one pediatric nurse practitioner, five nurse supervisors, 17 public health nurses, one community service aide, two and a half clinic aides, four clerks and one lab worker staffed the MCH program in Corpus Christi. These people were distributed over eight sites at various times of the week. To meet the department's long term goal of providing care to all women below 150% of poverty and their children, additional staff of a second nurse-midwife, ten public health nurses, two nutritionists, one community service aide, one clinic aide and two clerks would have been needed.
Since a single program covering both maternity and child health makes effective use of a small staff, it did not make administrative sense to separates these services. The same nurses provided care to both, making home visits to mothers and children in the same household. Nurses were assigned to care for patients in specific census tracts and staffed the clinic sites that covered those census tracts. In the community there were 86,934 children under 18

years of age. Of this number, the state regional handicapped/developmental disability program served 442. The local department looked after another 108. Of the 8,474 Aid to Families with Dependent Children (AFDC) recipients in the county, 5,739 were children. From this analysis of potential workload, the following objectives were set for the next year:

- Increase genetic screening of newborns from 1890 to 2260 children (half the children at risk, hoping that the other half would be followed by private pediatricians).
- Increase number of children given well child check-ups from 2762 to 3315.
- Increase follow-up of reported infectious diseases from 293 to 352.

The Corpus Christi health department, like 99% of its peers, was understaffed; yet felt it was their responsibility to ensure that all citizens received care even if it was not possible to deliver this care within the department. Toward this end, the department developed links to residency training programs at two of the three general hospitals in the city and with the nursing staff at two smaller county hospitals. The nursing supervisory staff and health director were on the medical or nursing staff of the community hospitals where they taught preventive medicine, worked out plans for community coverage of emergencies affecting health department clients, and kept the health care-personnel in the community knowledgeable about the department's capacities and limitations. This resulted in full support by the health care community for the department's efforts.

Case managers

It is possible to train individuals in each agency to act as ombudsmen or "case managers" to help clients through the government agency maze. Once efficiency is placed second to effectiveness, clients can be served with relative ease by multiple agencies. Few institutions are as complicated as hospitals. One hospital in Japan set a standard that any service requested should be available within 60 seconds. In Virginia it is now possible to go to a Department of Motor Vehicles office anywhere in the state and get a new license, or a registration renewed, within two minutes, on most days, and within seconds on the internet. Similar goals should be possible for human services. The health department's multiple programs lend themselves to electronic linkage to track performance data. Health agencies can and should be leaders of effective and efficient government programs. In 2009 in Virginia (and most states) linkage between social and health programs with a move to case management systems is still an untested future, despite a 15 year demonstration of its effectiveness in Arlington County, Virginia

Budgeting and garnering support

When budgeting to meet the objectives discussed above, the Corpus Christi health department decided to state the danger of reducing--rather than the benefit of increasing--resources. Any reduction would increase not only infant deaths but also the number of developmentally disabled children requiring additional mental health, education and social support services. The cost of these additional services would by far exceed the prenatal care cost of $700 each per year for the additional women. A grant of $100,000 had become available from the Texas state health department for early identification of women at high risk, who could be referred early in their pregnancy to the community hospital for evaluation and specialized care. The staff calculated the expected increase in infant deaths and handicapped children per 1000 births that did not occur because of this $100,000 grant, based on trend data, and used these projections to justify additional staff. The department also used data comparing the cost of neonatal intensive care units with the several hundred thousand dollars worth of community services to care for a child with cerebral palsy (as a representative developmental/birth injury outcome) through 18 years of age. Had the costs been extrapolated for life, even though this might be less than the average life span for developmentally disabled children the costs of

care would increase even further as the current guardians became older and unable to care for the child.

Local health departments must look for financial help from many sources: state, special federal projects, local government, United Way and other health care organizations. Some private foundations such as W.K. Kellogg or Robert Wood Johnson foundations provide grants for certain goals that are reflected in health department programs. The alert health director works closely with Community Action Programs, community and migrant health centers, free clinics, local hospitals, residency programs, and allied health training programs to plan services to avoid duplication. Moreover the director will not ignore the possibilities of revenue from Medicaid, state funded hospitalization programs, local welfare, and even private insurance.

Women, Infant and Children's (WIC) nutrition programs.

In a typical urban health department the WIC program absorbs 6% of the total budget. The program goal is to
"identify pregnant and nursing women, infants and preschool children at nutritional risk and provide supplementary food."
Corpus Christi had a potential of 12,000 pregnant women and young children at nutritional risk each month (those living below 150% of poverty). Thirty-four percent were served each month through the use of funds provided by the state, all but two percent of those certified eligible receiving service. This service was integrated into the maternal and child health program because it was so intimately related to the MCH clients. This is the pattern for most local health departments. One of the best outcomes is that WIC programs have encouraged an increasing number of pregnant women to enter MCH programs as soon as they become pregnant, to receive the food benefits. Thus, WIC serves as a portal to the public health system for many who otherwise might never have come to the prenatal clinics.
Research has provided little evidence that children who enter WIC programs are significantly different from children who go to health department prenatal clinics without a WIC program. Most evaluations have been directed at the question of whether the mother learned how to answer questions after each nutrition session, not whether she actually changed her diet. It may not be a good assumption that being able to answer questions correctly means that nutrition changes.

Tracking mothers and children

The WIC program requires accurate counts of patients and of families (or households) served, as well as all relevant medical information on them. A complete record of the treatment provided and the outcomes is the basis for a statistical measure of program effectiveness and efficiency; from this, the likely results of care can be estimated with some precision. It is also valuable to track the department's cost to deliver care. Comparing this cost with that of a private system, public hospitals or other providers such as primary care centers indicates whether WIC services are cost effective and cost efficient, or whether it would be cheaper to contract with other providers. Different communities use different options.

The HP 2020 goals on nutrition and weight control include the WIC program and state:

Goal

Promote health and reduce chronic disease risk through the consumption of healthful diets and achievement and maintenance of healthy body weights.

Overview

The Nutrition and Weight Status objectives for Healthy People 2020 reflect strong science supporting the health benefits of eating a healthful diet and maintaining a healthy body weight. The objectives also emphasize that efforts to change diet and weight should address individual behaviors, as well as the policies and environments that support these behaviors in settings such as schools, worksites, health care organizations, and communities.

The goal of promoting healthful diets and healthy weight encompasses increasing household food security and eliminating hunger.

Americans with a healthful diet:

Consume a variety of nutrient-dense foods within and across the food groups, especially whole grains, fruits, vegetables, low-fat or fat-free milk or milk products, and lean meats and other protein sources.
Limit the intake of saturated and *trans* fats, cholesterol, added sugars, sodium (salt), and alcohol.
Limit caloric intake to meet caloric needs. [1]

All Americans should avoid unhealthy weight gain, and those whose weight is too high may also need to lose weight.

Why Are Nutrition and Weight Status Important?

Diet and body weight are related to health status. Good nutrition is important to the growth and development of children. A healthful diet also helps Americans reduce their risks for many health conditions, [1] including:

Overweight and obesity
Malnutrition
Iron-deficiency anemia
Heart disease
High blood pressure
Dyslipidemia (poor lipid profiles)
Type 2 diabetes
Osteoporosis
Oral disease
Constipation
Diverticular disease
Some cancers

Linking maternity, family planning and child health programs in a central data system insures proper follow-up after delivery of an infant, and the connection with the community's vital data system permits a direct evaluation of outcomes. With complete data, it is possible to compare outcomes for patients in the program with those who go to private physicians, or who get no care. Data on how many maternity clients and their children use the WIC program and whether birth weights differed depending on their use of these special nutrition programs have medical value. The data system is optimal if it permits referral of children to any school lunch and breakfast program. The linkage for such an integrated public health data system is described in more detail in the chapter on data systems.

Recommended Reading:

1. Medical Informatics Goldstein s et Al, Jones & Bartlett, 2007
2. Remaking of American medicine (Health Care in the 21st Century) PBS Video, Fall 2006
3. Health Care USA, understanding its organization and delivery. Sultz and Young. Seventh edition. Jones & Bartlett. 2011.
4. Fleming L. & Zgodzinski EJ. Public Health Management. Second edition, Chapter 16. Jones and Bartlett. 2010.
5. Guide to Clinical Preventive Services, 2006
6. Zaza S et Al: Community Preventive Services; Oxford Un9iversity Press, 3rd Ed. 2005
7. Who will Keep the Public Healthy, IOM publication, NAP 2003
8. Buttery CMG: The South Richmond Health Status Survey. VMQ:1994;121:218-219
9. America's Health care Safety Net: Intact but endangered. NAP 2000

2013
Chapter 10
Public Health Informatics

One of the most pressing issues for public health departments is keeping accurate, detailed, accessible records, reducing record duplication among human service agencies and making better use of computerized databases for financial management, benefit eligibility, developing patient data, tracking clients across clinics and within human service systems, and for epidemiologic studies of their communities. No health department activity is too small to benefit from Informatics, use and training. Data systems can be used to make patient appointments, keep patient histories, link eligibility data in the health department with the social service, Medicaid, and mental health systems, and to send bills. Data on clients can be aggregated to build activity summaries, or to plot maps showing the distribution of services within the community. An ideal public health informatics system will start with the first citizen contact.

The electronic examination room.

In a "state-of-the-art" clinic examining room, you walk in to see a patient and carrying a wireless linked laptop to review the patient's current clinical record. All examination and interview rooms are connected by a wireless network so that all patient and family information is at your fingertips. A list of the patient's current problems will appear on the screen in SOAP format. When you ask to review the first problem, a summary of the patient's problem history to date, and results of recent laboratory tests or x-rays will appear (all this currently occurs in my family doctor's Health Information System (HIS)). Before you examine the patient the computer can display an outline of the patient's body on the screen. A touch of the light pen to the appropriate part of the body image on the terminal will provide an enlarged view of the area to be examined. While examining the patient you will enter data on the electronic chart communicating with the computer using a touch stylus, or microphone. As the information is entered, it will appear on the screen (the current HIS in my doctor's office). The information system will be programmed to compare the data entered with a database to abstract expected clinical patterns for comparison. The system will suggest additional physical examinations, laboratory tests, or request more history. It also will suggest options for diagnosis and treatment. After the appropriate diagnosis is entered into the system, you will select a course of treatment, or consider one suggested. If you need to order drugs, the computer will check your order against an pharmacopeia to ensure the dose is correct for age, weight, sex, and concurrent conditions (such as pregnancy), at which time it will forward the prescription to the pharmacy to be filled (available but my pharmacy requires faxes!). The system will scan the clinic appointment subsystem to make the next appointment and will also arrange the patient's transportation if necessary (while a potential, because my doctor is part of a residency site with residents coming and going the appointments are still set at the front desk). A message can be sent to the district public health nurse (case manager) responsible for the patient's care to request a home visit. The medication will be waiting for the patient at the pharmacy. A few clinics, hospitals in the U.S. (about 15% at the last survey) and many in Japan and Europe can do all this today. Public health departments can be expected to show that funds provided for clinical services are in fact used for those services and peers can review clinical services. State of the art electronics makes all this possible today. State government and many medical institutions in 2010 are still 10 or more years behind the state of the art in use of informatics. See Chapter 3 (page 131 [toward the bottom of the page] and following pages through page 136) of the Future of Public Health in the 21st Century. The Federal Government expects all medical care providers to have automated system in place by 2014. See the HHS Health Information Technology web site which provides and excellent update on the recommended development and standards.

Audit Trails.

The medical record will provide an audit trail of a patient's attendance and the service provided. The patient records are stored on a network server. For security purposes, copies of the medical records should be stored for at least ten years after a patient becomes inactive. All records systems should have multiple backups performed daily. One copy of records should always be stored at a site

remote from the active network while a second copy should be stored on a separate storage site within the active network. The medical network should provide record access for staff in the clinic or doctor's office, a hospital nursing station, and the patient's bedside, as well as the laboratory, pharmacy, admissions office, radiology center and other related sites. The hospital/clinic nursing staff should be allowed access to the department's database after the department has closed. Then, when a patient appears in a hospital emergency room their records are available to the physician treating the patient. The next major step in use of data systems will require extensive education of health personnel as well as the public at large. There is great concern about security. Most of the security issues that concern the public, as well as doctors and nurses, are the results of misperception and the visibility given to hackers. As security improves and the health care users, both patients and professionals, understand and believe that records are secure and cannot be viewed without a patient's agreement, we can move forward. The ability to produce a flash card that contains a patient's history, carried by the patient, would be invaluable in emergencies. Such cards could improve access to, and improve the quality of emergency care, especially when the patient is unable to respond to questions. Such information is in its infancy with the Medic-alert bracelets worn by some with chronic diseases. The ability to develop a lifetime medical history starting at birth is possible today, but will never occur until security issues are resolved. This becomes even more important with the rapid increase in genetic evaluation of an individual's disease and personalizing it with medication shown as specific for that genetic scan. Such a historical record could remind parents when to obtain periodic check-ups for children and when to return for immunizations. Such a record could interact with home computer systems and health institutions to ensure that individuals are reminded of appropriate preventive interventions and need for checkups for conditions such as PKU, or diabetes. While conceptually and practically simple the concerns about 'big brother' and invasion of privacy are delaying institutionalization of systems that can save life, promote health, reduce disability, delay premature death, and minimize costs of care. Microsoft and Google are starting to provide repositories for electronic health records which patients can have medical personnel access. Federal law requires that all health records systems are to be converted to electronic systems by 2014, an unlikely event!

Little discussed is the ability of a practice electronic information system to provide periodic updates of the problems seen in a practice, the outcomes achieved and the associated procedures. While such data is seen in the NAMCS databases this is a national database and tells physicians nothing about the constituents and processes in their practice which need tweaking to minimize adverse outcomes and improve efficiency and effectiveness.

An issue with use of electronic records is a fear by many individuals that someone will hack into their records and blackmail them, or distribute information about them on the Internet. Another concern is that employers will use such data to deny them jobs or to remove them from a current job as posing an unacceptable hazard/expense to the company. There are also concerns that insurance companies will gain access to medical information and deny them insurance. While these fears are real there is little evidence to show that such actions have taken place. There has been increased action by federal and state legislators to restrict access to personal records and disallow exchange of information without permission of the individual whose information is requested.

There is increasing evidence that the best historical data results in the best diagnoses and best treatments. There is enhanced software available today that allows a doctor or pharmacist to improve medication use, to avoid adverse effects between medications when more than one medication is used. Pharmacy programs will match the best and least expensive medication to the history and results of laboratory tests found in electronic records.

As more diagnosis and treatment becomes 'evidence based', accurate patient records will ensure more rapid diagnosis and treatment, particularly for chronic diseases.

Another problem remaining is the agreement on language for health related databases. While a human knows that male and man are similar, computer systems do not, Just as we have an ICD(A) code for diagnoses we must have common terminology for health and human services. This is lacking today and may cause as much difficulty as security.

Communications.

Local health departments need to exchange information with regional, state and federal health agencies. The Public Health Foundation (PHF), a non-profit arm of the Association of State and Territorial Health Officers (ASTHO), has developed an electronic bulletin board. The PHF gives a health department that applies an identification code that allows it to receive and return messages from other local and state health departments and ASTHO. This bulletin board can act as a gateway to the CDC, EPA, FDA and other health related agencies in the federal government. All you need is a modem, and communications software and a local Internet Service Provider. The CDC has developed multiple data systems linking the agency to state & local health agencies for tracking data from local to state to federal centers:

Public Health Surveillance and Informatics Program Office (PHSIPO)

Mission: advance the science and practice of public health surveillance and informatics.
Strategic goals were designed to help sustain and improve public health surveillance and informatics. The goals are outlined below, with supporting detail provided in the following pages.

- Strengthen the quality and utility of public health surveillance.
- Strengthen the ability of public health departments to benefit from and manage advances in electronic health information.
- Foster innovation, identify best practices, share knowledge, and serve as the primary resource for cross-cutting issues in public health surveillance and informatics.
- Improve PHSIPO's organizational capability to enhance efficiency and effectiveness.
- .

Activities include:

- Helping public health programs benefit from major changes in health informatics created by the HITECH Act.
- Exploring the use of electronic health records, electronic personal health records and health information exchange for prevention and public health.
- Increasing workforce competence in public health informatics through training, technical assistance and conferences.
- Improving interoperability and reducing cost of public health information systems through shared planning, standards, policies and services (like messaging and directory systems).
- Focusing public health informatics funding, design and acquisition practices on users and their public health objectives
- Applied research and evaluation of public health information technologies.

Local health departments can obtain the CDC's MMWR weekly by email rather than waiting for paper copies. They can also have access the JAMA, BMJ and other medical periodicals over the internet through local hospital and university libraries. Increasingly the articles in these journals have hyperlinks to references on the Internet saving the reader time searching for references. There are also CME programs available using streaming video and Power Point from schools of public health such as UNC at Chapel Hill, GWU and UCLA, as well as from the CDC. These programs are particularly useful to rural health departments that do not have access to satellite TV services.

Local Health Department Computerization

In Loudon County, Virginia, the environmental staff tracks septic tank locations and problems electronically. Each lot can be located on a county or city-planning department plat map. After the septic tank and drain field site has been approved, the environmentalist uses a network connection to

obtain a picture of the lot from the planning department's computer, and then draws the location of the drainfield with a light pen. The planning department uses this data to decide when to provide central sewer or water services, rather than installing additional septic tanks. Such systems are now being developed by cities and counties as part of their Geographic Information System (GIS) infrastructure.

In Henrico County, Virginia, the county manager bought portable PCs and printers for all the environmentalists. Each one records the results of a restaurant inspection on the portable PC and prints out a copy for the restaurant. At the end of the day the portable unit's data is downloaded to the office PC and from there to the state's restaurant inspection database. The department's software programs provide monthly reports of environmental activities by environmental district and census tract. The individual inspections are recorded by name of place and type of food service. The food service program, using the standard federal food inspection point system, automatically calculates the inspection score. This stimulates competition among the environmentalists, and embarrasses business places that do not want to see their name show up on a public list with a low score. A similar program in Corpus Christi, Texas also enables the department to bill more than 1400 food service places each December and to send permits automatically, once the fee has been received and entered into the database. An activity that used to take two people three weeks now takes one person an hour. In return for the fee, the department agreed to inspect each food service place at least four times a year and report results quarterly to the restaurant association. More recently the Virginia Department of Health developed the first statewide consolidated food service reporting system that is open to the public.

In Richmond, VA immunization records were ideal for computerized databases. This freed up floor space previously used for filing cabinets. Record retrieval is simpler and faster. When personal information is entered and validated, the program calculates when patients should return, and can print out messages when appointments are missed. The program was linked to interactive mapping software and could follow annual cohorts of infants to determine how well they were immunized prior to two years of age. The program can print reminder cards for patients and messages for immunization aides to make a home visit, when a patient misses an appointment. It prints a new immunization certificate after a visit, and provides monthly summaries of activities, fees collected, and clinic costs. Also, it can be programmed to track the vaccine inventory and print an order for a new supply of vaccine each month. This program was developed as part of the Robert Wood Johnson Foundation's All Kids Count immunization tracking grant. Now all states are developing or have developed immunization registries in cooperation with the CDC. Nurses can use laptop computers when making home visits. With the advent of cellular phone systems and wireless cards nurses visiting homes with children can link to the local or state registry and determine if an immunization is necessary. There are many ways to use new technology to improve efficiency and effectiveness. Software is improving rapidly. The cost of hardware, particularly memory, is dropping rapidly.

Software

Some staff needs to be able to use programs such as Power Point to develop a training and information programs for other staff and the public. One or two should also be trained in the use of Geographic Information Systems (GIS) for epidemiologic analysis and enhancing community information. Today each department should have a set of Web-pages for community information. The most used graphic (mapping) information systems (GIS) are marketed by ESRI of California. ATLAS, which can manage all the needs of 98% of public health departments (local and state.) is the simplest effective GIS systems and is the system of choice by the WHO and many European countries. The most complex, with the highest learning cure is 'ARCVIEW' by ESRI and is now in use by many cities and counties that need the ability of overlay photographic maps with geographic information, and integrate the pictures with large databases.

Data Exchange between programs

As the health and medical systems move to comply with the DHHS regulations so they can continue to receive payments from Medicare and Medicaid the exchange of data from clinical, epidemiologic, quality

assurance and payment subsystems becomes critical. Further, there is great concern about maintenance or privacy of health records. There is not agreement yet on the terminology that will be used by various systems so that data can be transferred between doctor's offices, hospitals, laboratories, health agencies, and third party payers. At present the thousands of involved health systems, both multi-institutional and single are each developing their own systems while their representatives sit on national committees trying to make sense of the data structures necessary. Other countries have solved many of these problems but we seem destined to repeat all their errors rather than learning from them.

Back-Ups.

Despite everyone's best efforts Murphy's Law is still with us. Things still go wrong. **Back up everything** you do **often.** Always attach backup power supplies that allow the computers to shut down without losing data, if there is a power failure. When you want permanent storage of data consider using tape backups. There is nothing more infuriating than losing all your data to a power failure or surge during a thunderstorm, let alone the time and effort needed to recreate it.

Reading List:

1. Goldstein D, et Al: Medical Informatics 20/20, Jones & Bartlett, 2007
2. HRQ National Resource Center Evaluation Toolkit
3. *JAMIA* 2009;**16**:167-168 doi:10.1197/jamia.M3094 RWJ Informationlinks Grants for Public Health Agencies To Explore Use of Information Technology To Improve Health
4. CDC The National Center for Public Health Informatics (NCPHI)
5. Office of the National Coordinator for Health Information Technology
   This area of the Department of Health and Human Services focuses on the widespread implementation of electronic health records (EHRs).
6. "Change In Challenging Times: A Plan For Extending And Improving Health Coverage"
   This report proposes a way to improve America's health care crisis by bringing together employer-sponsored insurance and Medicaid; promoting prevention, research and information technology; and financing health care investments through a dedicated value-added tax.
   Health Affairs, March 23, 2005
7. Webcast: Using Information Technology to Improve Healthcare Quality
   This Alliance for Health Reform event addresses the problems associated with the use of information technology in healthcare.
   kaisernetwork.org, May 7, 2004

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Chapter 12
Health Care System

Driving forces for change in the U.S. health care system include the continually rising cost of individual health insurance and the proportion of the gross national product (GNP) used to provide what is loosely called "health care". About sixteen percent of the GNP was spent on medical care in 2009. This percentage has doubled from just under 6% over the forty years since Medicaid and Medicare began. Most of the money is spent on diagnosis and treatment of disease by specialists (medical care), less than 2 percent is spent on health care (promotion or protection of health). An article in Health Affairs, Mar 2006, projects that by 2015 the "Health" spending by the US will be 20% of the GDP!(we are about 17.5% at the beginning of 2013.) A 2008 study by the G20 countries shows that the US spends twice as much as any of the other developed countries to achieve a lower level of health outcomes. The issue of the cost of healthcare United States has become even more important since the passage of the "Affordable Care Act" in 2010.

When comparing health status in the United States with other industrialized countries by most measurements of morbidity and mortality, the United States fares poorly. The most recent analysis (2000) by the WHO places Japan as first, with the best health system, and the US as 37th (see page 13)! Yet the U.S. spends 50 - 100% more of its gross national product on medical care than the other industrialized nations. Changing patterns of disease and aging of the population contribute most to the increased costs of health care. A more recent study by the European Union emphasizes this. The January 2013 publication from the IOM "US Health in International Perspective: Shorter Lives Poorer Health" continues the information about the poor outcome of the US health system despite its numerous bright spots

Changes in disease patterns.

Over the years since World War II, morbidity and mortality rates have improved dramatically in the U.S. as has longevity. The major causes of childhood illness at the close of the Second World War were infections. Adults died of tuberculosis, pneumonia, diabetes, heart disease, and cancer. Deaths from infectious diseases in children are rare today, thanks to vaccines and antibiotics. The leading cause of death among children today is violence, with automobile accidents the common cause in young children but homicide and suicide the common causes in teenagers. Among adults, deaths from tuberculosis are rare. The Tuberculosis sanatoria have been shut down and even brief hospitalization is rare, except among ghetto residents

Table B. Deaths and death rates for 2010 and age-adjusted death rates and percent changes in age-adjusted rates from 2009 to 2010 for the 15 leading causes of death in 2010: United States, final 2009 and preliminary 2010

[Data are based on a continuous file of records received from the states. Rates are per 100,000 population. Rates are based on populations enumerated in the 2010 census as of April 1 for 2010 and estimated as of July 1 for 2009. Age-adjusted rates per 100,000 U.S. standard population based on the year 2000 standard; see "Technical Notes." For explanation of asterisks (*) preceding cause-of-death codes, see "Technical Notes." Figures for 2010 are based on weighted data rounded to the nearest individual, so categories may not add to totals]

Rank[1]	Cause of death (Based on the *International Classification of Diseases, Tenth Revision,* Second Edition, 2004)	Number	Death rate	Age-adjusted death rate 2010	Age-adjusted death rate 2009[2]	Percent change
...	All causes	2,465,932	798.7	746.2	749.6	-0.5
1	Diseases of heart (I00-I09,I11,I13,I20-I51)	595,444	192.9	178.5	182.8	-2.4
2	Malignant neoplasms (C00-C97)	573,855	185.9	172.5	173.5	-0.6
3	Chronic lower respiratory diseases (J40-J47)	137,789	44.6	42.1	42.7	-1.4
4	Cerebrovascular diseases (I60-I69)	129,180	41.8	39.0	39.6	-1.5
5	Accidents (unintentional injuries) (V01-X59,Y85-Y86)[3]	118,043	38.2	37.1	37.5	-1.1
6	Alzheimer's disease (G30)	83,308	27.0	25.0	24.2	3.3
7	Diabetes mellitus (E10-E14)	68,905	22.3	20.8	21.0	-1.0
8	Nephritis, nephrotic syndrome and nephrosis (N00-N07,N17-N19,N25-N27)	50,472	16.3	15.3	15.1	1.3
9	Influenza and pneumonia (J09-J18)[4]	50,003	16.2	15.1	16.5	-8.5
10	Intentional self-harm (suicide) (X60-X84,Y87.0)[3]	37,793	12.2	11.9	11.8	0.8
11	Septicemia (A40-A41)	34,843	11.3	10.6	11.0	-3.6
12	Chronic liver disease and cirrhosis (K70,K73-K74)	31,802	10.3	9.4	9.1	3.3
13	Essential hypertension and hypertensive renal disease (I10,I12,I15)	26,577	8.6	7.9	7.8	1.3
14	Parkinson's disease (G20-G21)	21,963	7.1	6.8	6.5	4.6
15	Pneumonitis due to solids and liquids (J69)	17,001	5.5	5.1	4.9	4.1
...	All other causes (Residual)	488,954	158.5	...	...	....

Source NCHS Mortality Data

Looking at death data from 2010 we find that pneumonia, which used to be called the "old person's friend" has become rare, now ranking 15th, and is usually associated with influenza which is further reduced through use of vaccines against influenza and pneumonia. Death from stroke has declined as much as 60% in the U.S. in the last 30 years, while deaths from coronary heart disease, although still common, have declined at least 35%. Among adults less than 55 years of age the main cause of death, as for children, is violence including automobile accidents. For people over 55 the major causes of death are coronary heart disease, cancer, strokes, and diabetes while morbidity from mental diseases such as Alzheimer's disease increases. Further, with delay of death many of the over-60 population are now beset with chronic preventable diseases resulting from unhealthy behaviors such as alcohol use, lack of exercise, weight gain, and lack of sleep and poor diet which is inflating the cost of medical care with a particular emphasis on Medicare. Except for influenza we really see epidemics of infectious diseases in the United States we do have a current epidemic of non-communicable disease [chronic diseases]

The decrease in deaths from infectious and cardiovascular disease has changed the patterns of morbidity, disability, and death requiring a new spectrum of health services with new (or newly defined) and emerging diseases contribute to the problem. Lyme disease, erlichiosis, Hanta Virus, and Legionnaire's diseases have been identified and treatment is available. Acquired Immune Deficiency Syndrome (AIDS), caused by the human immunodeficiency virus (HIV-I) has been the greatest challenge. Even for this disease new pharmacological interventions are delaying the onset of the disease process, after infection, just as INH prophylaxis brought TB to a relative standstill. We have an epidemic of drug abuse and addiction. Despite the difficulty in finding effective treatment and rehabilitation programs for addictions the average length of life is greater, so that more people are living long enough to become disabled and need long-term care. Advanced technology allows more people to survive, but often with poor quality of life. The high cost of new technology is changing the medical care equation of who needs care for what, at what cost. Despite claims to the contrary, medical care is and always has been rationed. In the U.S. rationing has been by use of financial and sometimes geographic barriers to obtaining care.

Medical indigency.

Forty to forty two million U.S. citizens (depending whose data one uses have no medical insurance. They are not covered by their employers, by personal insurance, by Medicaid or Medicare, or by state or city indigent care plans. Of the uninsured, 40% are working poor who have a part or full time jobs, usually in small businesses that cannot afford to pay insurance for the employees and continue to operate at a profit. Changes in the minimum wage have never improved access to health care. A low wage earner will not take a 50-cent an hour increase and use it to buy health insurance. The following data from the US Census Bureau's shows the current state on health insurance coverage.

Highlights: 2009

- The percentage of people without health insurance in 2009 was not statistically different from 2007 at 15.4 percent. The number of uninsured increased to 46.3 million in 2009, from 45.7 million in 2007.
- The number of people with health insurance increased to 255.1 million in 2009 -- up from 253.4 million in 2007. The number of people covered by private health insurance decreased to 201.0 million in 2009 -- down from 202.0 million in 2007. The number of people covered by government health insurance increased to 87.4 million -- up from 83.0 million in 2007.
- The percentage of people covered by private health insurance was 66.7 percent in 2009 -- down from 67.5 percent in 2007. The percentage of people covered by employment-based health insurance decreased to 58.5 percent in 2009, from 59.3 percent in 2007. The number of people covered by employment-based health insurance decreased to 176.3 million in 2009, from 177.4 million in 2007.
- The percentage of people covered by government health insurance programs increased to 29.0 percent in 2009, from 27.8 percent in 2007. The percentage and the number of people covered by Medicaid increased to 14.1 percent and 42.6 million in 2009, from 13.2 percent and 39.6 million in 2007. The percentage and number of people covered by Medicare increased to 14.3 percent and 43.0 million in 2009, from 13.8 percent and 41.4 million in 2007.
- In 2009, the percentage and number of children under 18 without health insurance were 9.9 percent and 7.3 million, lower than they were in 2007 at 11.0 percent and 8.1 million. The uninsured rate and the number of uninsured for children are the lowest since 1987, the first year that comparable health insurance data were collected. Although the uninsured rate for children in poverty decreased to 15.7 percent in 2009, from 17.6 percent in 2007, children in poverty were more likely to be uninsured than all children.
- The uninsured rate and number of uninsured for non-Hispanic Whites increased in 2009 to 10.8 percent and 21.3 million, from 10.4 percent and 20.5 million in 2007. The uninsured rate and number of uninsured for Blacks in 2009 were not statistically different from 2007, at 19.1 percent and 7.3 million.
- The percentage of uninsured Hispanics decreased to 30.7 percent in 2009, from 32.1 percent in 2007. The number of uninsured Hispanics was not statistically different in 2009, at 14.6 million.

Medicaid, thought by many people to provide insurance coverage for the poor only covers the poorest people who are either pregnant or recently pregnant women or their minor children. Or those eligible for Supplemental Security Income (SSI) for the aged, Aid to the Blind (AB) and Aid for the Permanently and Totally Disabled (APTD). Thus, a single, non-pregnant, poor woman or man cannot obtain health care under any of these programs. In states with ADC rather than AFDC, a married couple with children cannot obtain assistance, although a single mother can. Unfortunately, when the federal government planned health and medical services, few private practice physicians will asked to take part. Public health physicians and local health departments have become the providers of last resort, accepting the responsibility to make up for failures in

development of the health care system with limited resources. We can hope this will change once all the challenges to Affordable Care Act have been met and Congress can clarify the core issues.

Medicaid and the poor.

Medicaid, intended to provide health care to the poor, has been a success for the elderly poor and for children under 18 years of age. For poor people between 18 and 64 eligibility is limited to pregnant women. As a health director in Portsmouth, Virginia in the late 1960s, I analyzed illegitimate births (as a surrogate for children born to broken families) and found that in the ten years before Medicaid became available illegitimacy was never above 13% of births. Within eighteen months of the enactment of Medicaid, illegitimacy had risen to 30% and it has not dropped below that level (in Portsmouth.) but is now starting to respond to intensive national, state and local interventions. Medicaid, intended to help the poor, has instead helped prevent the start of nuclear families, the base of a civil population. Had careful planning gone into the development of Medicaid, this should not have occurred. One of the issues with our political system is the sudden 'all or none' development of programs with little testing before initiation. To some extent the testing is now being performed by national private philanthropic organizations such as the Robert Wood Johnson, Kellogg, Kaiser, and Gates Foundations and the Commonwealth Fund among others, (see their web sites for further data.)

Medicaid eligibility has expanded to include medically indigent women and children under eighteen with income below180% of the federal poverty level, in addition to the other four groups eligible for Medicaid: the permanently and totally disabled APTD), the blind (AB), those receiving federal supplementary security income (SSI.) The Medicaid program is run by the states, which decide the financial eligibility level for participants for the four categorical programs, those mandated to receive Medicaid, and those eligible for expanded programs developed as federal options for states. In most states AFDC income levels are so low (for families with incomes less than 20% of the federal poverty level in Alabama) that few people become eligible for Medicaid. This program has had little impact on the vast majority of the uninsured, except pregnant women, infants and children; or paupers by virtue of being in a nursing home. For several years Congress enacted a series of amendments each allowing, but not requiring, states to increase the percentage of the federal poverty level below which pregnant women and children might be enrolled in the Medicaid program. By 1989 this optional level had risen to 180 % of the federal poverty level. In 1990 Congress mandated coverage of pregnant women and children up to six years of age living in households where income was up to 133% of the federal poverty level. In 1998 the Congress enacted a "Children's' Health Insurance Program" (SCHIP) allowing states to enroll children in families whose income was up to 200 percent of the federal poverty level into a comprehensive medical and health care program. This program has been enacted in Virginia but far fewer families than expected are enrolling their children into the program. States buy into the Medicare program by using Medicaid funds to pay the premiums for poor elderly recipients. Most of the elderly in nursing homes are poor, either when they enter or within 6 months of entering, or as the result of families divesting themselves of all property and resources to their children, so they can apply to Medicaid as now indigent.

As already indicated, Medicaid, as opposed to Medicare, is a state program for which the federal government matches the state contributions based on a state's ability to tax its citizens. For Virginia the match is 50 state dollars to 50 federal dollars. Other states may match as little as 18 state dollars to 82 federal (E.G. Mississippi). Finding money for the Medicaid match is made more difficult by requirements for the buy-in for the elderly, which adds considerably to the state cost for the Medicaid program. When the program started, more than forty years ago, the proportion of the program used to cover nursing home care for the elderly was less than 10% of the Medicaid budget. Now the proportion of the Medicaid budget used for nursing home care is over 30% in Virginia and rising each year. The Medicaid program pays more than 80 percent of the cost of caring for patients occupying more than 26,000 nursing home beds in Virginia. The Medicaid

budget is approaching the cost of the two other major state programs, road building, and education, with an increase greater than any program other than the highway program. It is this increasing cost of the Medicaid budget that has prompted legislators across the U.S. to look for alternate methods to provide financial access to health care, also because the increases in the Medicaid program have helped so few of the uninsured.

Other federal mandates and state budgets.

This federal mandate to provide medical services for certain indigent persons is one of many that states are required to carry out. Other mandates, for example, require public buildings to be tested for asbestos and to ensure its removal, if friable. Still others include removal of lead, excess fluoride and other chemicals from public water systems, while others require rebuilding of public sewage systems in many older cities. In Virginia alone, the cost to ensure that drinking water, sewage systems, and solid waste disposal meet federal standards will cost at least $8 billion. All these federal mandates make it difficult for states to find the money needed to implement public health programs to provide medical care for all the indigent, let alone just those eligible for Medicaid assistance.

States attempts to pay for indigent care.

Studies by various state legislatures that have identified the value of providing medical care to the indigent, have given rise to several plans to assure affordable health care for the under and the uninsured. This change in political behavior at the state and community level has been triggered by hospitals that refuse to take care of indigent persons because the cost is bankrupting them. The hospitals claim they cannot survive since Diagnostic Related Group (DRG) payments have been reduced. Since 1989 eighty-eight rural hospitals closed their doors. Several central city hospitals in New York and St Louis, Missouri closed, putting indigent persons at greater risk of poor health. Medicaid reimbursement for physician's services has been so low that many physicians have refused to enroll as providers, or have stopped taking Medicaid clients. This has been most prevalent among rural family physicians and obstetricians.

Limited access to health care for the indigent.

In many states Medicaid pays only 30-40 cents on the dollar of primary care physician's costs of delivering services. This policy has caused physicians practicing in rural areas, where Medicaid eligible indigent persons may comprise up to thirty percent of their practice, to stop taking additional Medicaid patients. Some physicians have left rural areas because they couldn't make enough money to continue their practices. Physicians just completing medical school choose specialties other than family medicine, general internal medicine, pediatrics, or obstetrics-gynecology - the primary care specialties. Those who do opt for primary care specialty training plan to practice in suburbia. Besides inequitable reimbursement, the cost of malpractice premiums and fear of litigation continues to drive physicians from obstetrics. Because poor women are more likely to have a high risk of bad perinatal outcome doctors fear taking them on as patients. In many rural areas no women are able to find obstetric care without traveling 75 to 100 miles to a tertiary care medical center with an obstetric teaching program. This is an increasing problem for local health departments that rely on local doctors to help deliver care to indigent patients. As a final deterrent to keeping health care providers in rural areas, Medicare has reimbursed rural hospitals less than urban hospitals, even for the same category of care. Because many local health directors didn't join their local and state medical societies, or the staffs of their community hospitals, they have missed an opportunity to provide the leadership needed to combat these problems.

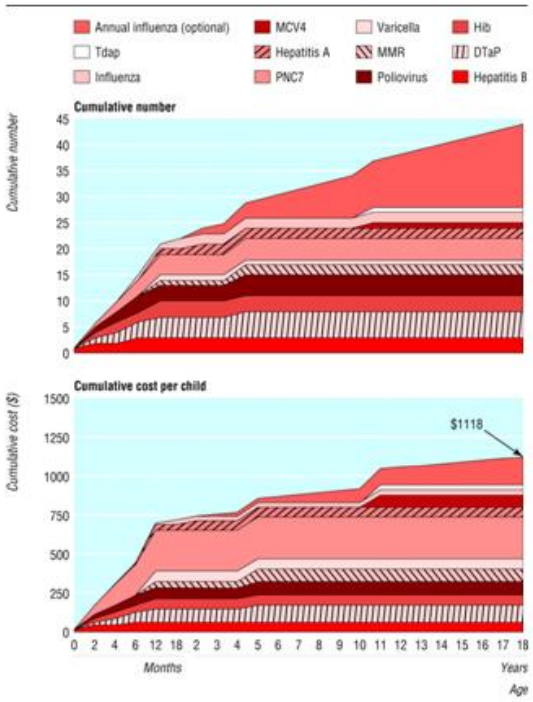
Contributing to the shortage of primary care physicians, and the lack of care for the uninsured, is the increased cost of going to medical school. Scholarships are harder to find, and often small in

amount. Many students complete medical school and head for a residency with => $200-250,000 debt. These debts require monthly payments of $1000 or more just to cover the interest. When they enter practice many physicians owe more than $300,000. Interest payments raise the ultimate cost much higher. Students learn quickly that selecting a primary care practice in a rural or central city area is not likely to bring a salary of more than $100,000 to $130,000 a year, with long hours and little time off for themselves and their families. A surgical specialty, on the other hand, means a salary of $200,000 or more in the first year of practice.

The incentives to go into primary care practice rather than a more technical specialty are very few. Hopefully, some recommended changes in reimbursement will reduce the difference between the primary care and surgical specialties. One of these changes is a plan developed between the American Medical Association and the federal government to change the way physicians are paid for their services. A complex formula has been developed that considers the accumulated knowledge, technical skills, and time needed to care for patients. This could increase the payment to primary care physicians while reducing, but not equalizing the reimbursement given to most surgical specialties. This will give better recognition, for instance, of the time and effort needed to care for a patient with an acute coronary occlusion treated medically, compared to the care needed to remove a gallbladder from a patient not acutely ill. The federal government is also considering changing its payment system for rural and central city hospitals. A part of the core of the Affordable Care Act is promote further development and extension of primary care with an emphasis on formation of medical homes for all enrollees.

A final example of a problem in obtaining health care is that facing young couples planning to immunize a child. Several years ago, before litigation about the perceived dangers from routine immunizations, a diphtheria-tetanus-whooping cough (DPT) shot cost less than a dollar, now it costs $15 or more. A dose of polio vaccine has risen from a few cents to more than $5.00 while a dose of measles; rubella, and mumps vaccines have each risen from $7.00 to more than $25.00. Thus the cost of four DPT shots, three doses of polio vaccine, a measles, rubella and mumps shot plus immunization against Haemophilus influenza-B and chickenpox can cost a young couple more than $400. This may be more than they feel they can afford, especially when they hear about so few cases of disease. As new vaccines are developed each year the costs continue to increase, with the recent addition of Hib, Chicken pox, Hepatitis-B, and Hepatitis A immunization costs have risen to $1200 per child which is beyond the means of many young families.

Fig 1 Recommended immunisations up to age 18 in the United States.10 Vaccine costs from Centers for Disease Control vaccine price list (www.cdc.gov/nip/vfc/cdc_vac_price_list.htm). See box for abbreviations



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State planning for health care.

Because of the increasing cost to states to care for the un- and under-insured, the loss of rural and central city primary care physicians, and the problems of elderly persons, pregnant women and children unable to obtain basic health care many states are suddenly learning that health care is as important as new roads, schools, and sewers. The increasing cost of providing the local share of Medicaid dollars in addition to other federal mandates has woken up state legislatures. The issues, coming to the surface simultaneously with a need to provide money to care for people with AIDs has sensitized elected officials in cities, counties, and state legislatures. States are finding that their failure to continue to fund health planning, when the federal government ceased supporting it, has left many of them with few options to deal with the health care crisis. Few have any health policy planning mechanism. Now, legislatures are asking consultants, who may know little about state needs but a lot about federal policy, for help. Since local health departments have become providers of last resort to many poor and rural inhabitants they must become planners for health care besides public health services. Though many state and local health departments do an excellent job of long range planning for public health services, few have developed plans to provide medical care, where the crises exist now. In Richmond, as an example of one city, over the last ten years a group has developed to form a Richmond Healthcare Safety Net Consortium, REACH.

Public health departments have staff trained to make epidemiologic surveys. Such surveys can be used to plan medical care services for a community. Instead of collecting data on infectious disease they can collect data about hospital discharge diagnoses, home visits by number and reason, and ambulatory care services provided in emergency rooms and doctor's offices. Such data can be used to plan access to primary care early rather than using hospital and high technology care after people become acutely or chronically sick. Reports published by the federal

government and in medical journals provide guidance for effective screening services. Medicaid and Medicare data can be used to estimate comprehensive costs of medical care while health department data provides a guide to the cost of preventive services.

States such as Hawaii and Massachusetts and Oregon have started programs to care for all their uninsured citizens. Other states such as Washington and Ohio are planning implementation of services. Yet other states, such as Connecticut and Virginia are planning options to cover the uninsured and entice health care providers to areas lacking primary care physicians.

Massachusetts put a plan into action in 2006 to ensure that access to health services would be available to all its residents. California and Oregon are also developing similar plans. The Massachusetts plan has run into major problems as the costs have escalates past its estimations and many covered individuals have no access to promised care because of the shortage of primary care practitioners,

Local health planning.

Despite the new Affordable Care Act passed by Congress in 2010, there remains an emphasis on containing rising health care costs while the federal government seems unable to put more net resources into health care because the increased population it plans to admit to care will further deplete resources. Local governments still have opportunities to help their states develop plans to assure health services for all citizens. Although the states are the only entities, other than the federal government, with the legal and financial ability to care for all their citizens, local health departments can help their communities to organize physicians, hospitals, and nursing homes to deliver care.

The local health departments may have to change their missions. If the state is to provide an insurance mechanism to pay for medical care the local health department may change its role to coordinating delivery of services, rather than running clinics. It may supplement the care provided by physicians with educational programs for patients to show them how to use medical services efficiently and effectively. Local departments may act as catalysts to sustain rural hospitals on their last legs by obtaining grants from the state government to use excess capacity for primary care programs or services for the aged. The health department can become a primary and preventive care manager for the community.

State Health Commissioners should delegate planning and assurance for community health services to local health department directors who should take a leadership role in this arena, whether or not it is assigned to them. The second decade of the twenty first century continues to be a challenge as reimbursement systems, resources, and the organization of health care are changing dramatically.

The Affordable Care Act.

In 2010 the federal government passed a new law intended to cover 95 % plus of the American population. This act which is controversial and currently about to be studied by the Supreme Court has almost 2000 pages which are so detailed that the tens of thousands of pages of rules that will inevitably be passed by the Department of Health and Human Services I like to make it unworkable. One can only hope that before the rest gets to bed and national debt gets even worse that steps were taken to straighten out this well-intentioned but poorly legislated act. This site provides evidence about some the important phases of the Affordable Care Act.

As we move into 2013 there are signs that the concern about the unbalanced federal budget may finally move Congress to focus on primary care and prevention as the base for individual care. But don't hold your breath!

Recommended Reading:

1. Fallon LF Jr and Zgodzinski EJ Pubic Health Management 2006. Chapter 34 Access to services.
2. Shi & Singh; Essentials of the U.S. Health Care System. 7th Ed. Jones & Bartlett 2007
3. Nicola Lurie: Health Disparities – Less Talk, More Action. NEJM 353:7 727-729, Aug 2005
4. Fein R: Medical Care, Medical Costs. Cambridge, Harvard University Press, 1986
5. Guide to Clinical Preventive Services 3rd edition, Report of the U.S. Preventive Services Task Force. International Medical Publishing Inc., 2005
6. Web sites
   Kaiser Family Foundation
   Robert Wood Johnson Foundation
   Gates Foundation
   Commonwealth Fund
   King's Fund

2013
Chapter 13
Laws, Rules and Regulations

Before reading this material read the following set of 3 articles from JAMA's 2004 publications, written by Larry Gostin J D: Public Health Law in a New Century
Part I: Law as a Tool to Advance the Community's Health
Part II: Public Health Powers and Limits
Part III: Public Health Regulation: A Systematic Evaluation

Larry Gostin's book on Public Health Law, Edn. 2 is also recommended reading.

Many good ideas to improve public health have failed or proved difficult to carry out because the local director and staff neglected to consider laws and regulations already enacted. State legislators enact most laws and regulations that affect health department programs but, sometimes, local laws (or ordinances) and regulations act as roadblocks to new programs. Laws are the result of legislative action. When the laws are placed into the appropriate section of the written and published books of laws they are known as codes. They provide an agency like the health department with the authority to perform an activity or control someone else performing an activity. Rules or regulations tell people affected by a law how an agency will carry out the intent of the law.

Regulations that affect local health departments may describe how to manage health care programs, or how to protect property or the environment. Federal regulations are the basis of local and state laws that control dispensing of controlled drugs, regulate financial accountability required when using grants of money provided by federal agencies, or set standards such as those for hygienic food preparation and storage. Federal codes have usually been enacted because certain practices need to be uniform among the states.

State codes may be enacted to ensure that state and local agencies have the authority to write regulations allowing them to enforce federal laws. Typically, states set standards for operation of public utilities such as water and sewage plants. To receive money from the federal government states are required to enact laws that allow agencies such as health departments to set operating standards for the public utilities and ensure they operate in general conformity with federal regulations. Certain rights, known as police powers, are reserved to the states unless specifically preempted by the federal government. Authority to set standards regarding quarantine for people capable of transmitting diseases that are a hazard to the public, such as plague, tuberculosis or syphilis are set by state codes.

Local government, in most states, can only enact local laws or ordinances when state law has delegated agencies with the power to do. Such examples are the ability of local government to set their own standards for operations of restaurants or installing septic tanks, or to enact laws requiring pets to be immunized against rabies. In states such as Virginia, local government can set standards for maintenance of rental housing, including the ability to inspect housing before it is rented. Other states, such as Texas, have a constitution that confers an absolute right to use personal property thus a local government cannot control rental of individual dwellings but can charge fees for people who attend public health clinics.

To plan health and environmental programs, local health directors need to understand what laws and regulations they operate under in their states and what delegated authority they have. In Virginia a local health director may think an individual should be quarantined. The state legislature, being concerned about removing individual's rights to move freely around the state without conviction by a court, have restricted specific authority to impose a quarantine to the state health director. A state may enact laws enabling localities to pass environmental laws that are more restrictive than the state, but allow the state to set up a mechanism to allow waivers to state regulations. This may cause a conflict for a local health director charged

with enforcing both local and state law. It is important therefore to understand which laws supersede the other.

Many laws are enacted because citizens convince legislators about the need for change. If health directors do not monitor state legislatures, and city and county elected officials, laws that might appeal to the public, but have no scientific validity may be enacted. For example, in the 1980s, with the discovery of AIDS, and the mass of information and misinformation provided in the various media some school superintendents tried to pressure city councils and state legislators to require health departments to provide names of children infected with the human immunodeficiency virus (HIV) to them. Although such requests were made to state legislators for several years, few succumbed to public pressure, usually due to testimony from state & local health officers. Most, as did the legislature in Virginia, accepted the scientific advice of health professionals and refused to pass such laws, although the discussion was bitter at times, and votes were close. Michigan actually enacted a law, against the advice of public health officials and medical society members, to require persons applying for marriage licenses to be tested for HIV. Fortunately this law was repealed at a future legislative session.

Many state and local laws are enacted in the wake of those made by the Congress. Federal agencies have to develop rules and regulations to carry out these laws, just as state and local governments do. Government has developed procedures on writing regulations, known as "administrative process" acts. The purpose of these acts is to give as many people as possible, including organizations and institutions directly affected by the laws, also interested members of the public and advocacy groups, the chance to take part in the development of the regulations, a process known as "rule-making." The federal and state governments have publications used specifically to advertise new regulations known as federal and state registers. Local government and some state agencies also publish their intent to make new regulations in the major newspapers, to give as widespread notice of new regulations as possible. All interested persons are given a set time to reply to the notice of new regulations. The agency producing the regulations then has to review the suggestions and state why they will or will not change the preliminary regulations to comply with the suggestions made during public hearings or in writing prior to the hearings. After this final notice the regulations are published in final form and if not challenged in court become law. Different states allow different time periods between the various steps and may require policy boards such as state boards of health to give the health department approval to adopt the regulations in final form. All the various steps are intended to ensure that regulations are not adopted in haste, and not put into action without an opportunity for the public to challenge them.

One would think, that once a law was passed none of this activity should be necessary, that the law should speak for itself. Unfortunately many laws are passed hurriedly, without dotting all the 'i's and crossing all the 't's. Some people, who will not agree with or want to keep these laws, will challenge them in court for many reasons. Some of the reasons given will be that the law conflicts with a previous one, that the law is unconstitutional, that the body enacting the law does not have the power to do so, or that a law made for one agency conflicts with one drawn up for another. The period used to develop the regulations, and the advertising and comment period provided for the preliminary regulations, allow agencies to clarify the intent of laws that are often vague, to explain the boundaries within which the agency will act, and clarify when other agencies have the right to intervene. Any misspelling or failure to clarify a law can result in a successful challenge in court.

Once the regulations have passed through each of the administrative steps required by federal and state law they have the force of law and must be followed. It is important to provide flexibility for administration of regulations by responding to testimony given to an agency during the rule-making period. Failure to challenge the regulations during the period when the rules are being drawn up leaves no option except court action, which is expensive and may take months or years to reach resolution. For these reasons it is important that health directors and their staffs learn the basic elements of rule making and learn how to raise a successful challenge to clarify the intent of a law during the development of the regulations. A law that came back to haunt many health departments is the Delaney Amendment to the Food

and Drug Administration Act passed more than forty years ago. This amendment to FDA law states, simply, that the FDA may not approve any item for interstate sale that cause mutation in any living system. This law was put in by a lawmaker who read about research performed by Dr. Bruce Ames on toxic products and ways of detecting them. The law was made with good intent but with little understanding of the underlying science. The law was not based on the major principles of toxicology, or with a complete understanding of biologic systems and their abilities to repair themselves. Dr. Ames has stated categorically that his research was not conducted for that purpose, and was taken out of context and applied improperly. Despite these facts the law took on a life of its own and efforts to repeal it failed. The Environmental Protection Agency has used the Delaney Amendment to ban many products from commerce stating that these products were dangerous to people and likely to cause cancer. To this point few challenges to the EPA have been successful, although people are starting to understand some of the scientific judgment that should go into toxicological decision-making. Many scientists believed the Delaney Act should be amended. After almost 50 years, Congress removed the rule in 1998

Planning changes to laws:

For example:

- Judgment in application of rules and regulations.
- Specific Health Regulations.
- Vital data codes.
- Prostitution.
- Administrative Hearings.

As an alternative to using the courts one can write regulations that require hearings before a local policy board or a health director. For example, a local health director may be given the power to banish an animal from the community, or order it killed subject to court action stopping him from enforcing the order. Administrative hearings move faster than court hearings. If you choose this route always have a member of the city or county attorney's staff present as a facilitator and legal advisor. Allow the other parties to bring lawyers if they wish. Administrative hearings are effective methods of problem solving. Strict rules of evidence don't apply, but everyone involved needs to learn how to present and interpret evidence, and how to explain compliance standards. I have had to dismiss actions against suspected violators when new staff members had not learned to present evidence clearly, consistently and without hesitating or stumbling or giving the impression of acting arbitrarily and without due process. Staff should not say "I think" or "I heard." They must have seen the incident themselves, or bring in someone who saw it. There is nothing more detrimental to credibility than having staff forget what they saw, and when. Refer to written notes if necessary. As standard operating procedures require staff to write down violations when seen, recommend actions and explain follow-up steps taken. Good staff work leads to good decisions.

Most local public health policies are developed for environmental control rather than for health services. Health department staff is often asked to help develop standards for rental housing, installation of personal sewage disposal systems, restaurants, and water wells. The most controversial are usually animal control laws.

Denial of Permits.

Besides violation of laws, there are potential violations that are appealed to the health director. An example is the denial of a permit to install a septic tank or open a restaurant for business. Such denials normally provide an opportunity to appeal the decision to the health director. This appeal requires a technical decision, but does not need the formality of an administrative hearing. One rarely has a legal problem when giving people what they want, unless they think you are showing favoritism. You are more likely to get into trouble when

turning down a request, when denying people something they think they have a right to, such as a septic system on their property. Take the time to explain exactly why, in simple terms, the permit is not being given. Repeat it again if necessary. Explain why their request is different from someone else's, and make sure they know if there is a further appeal mechanism. Don't wait for someone to find out, after denying a permit, that it was possible to appeal the decision. The health director should always be prepared to discuss a permit denial by a staff member. This is one way of backing the staff. It is also a learning experience for staff on the (hopefully) rare occasions you over-rule them.
They won't like it, but will accept your reasons with grace if you take the time to explain your reasons for overturning their decisions. When such occasional reversals of denial occur it improves the department's credibility in the community. Depending on the complexity of the issue, there are times when the department's attorney should chair a hearing on a permit denial, allowing the health director to sit only as the judge.

Local health directors carry out their activities in a fishbowl. They work in an environment bound by laws and regulations. Learn them, understand them, be able to explain them, administer them fairly, and you will make many friends for your agency.

Reading List:

1. Fallon LF JR. and Zgodzinski EJ 2nd Edn.– Essentials of Public Health Management, Chapter 29, Legal Basis for health departments.
2. Turnock B.J.: Essentials of Public Health 2nd Edn.– Chap 4.Law, Government & Public Health; Jones & Bartlett, 2007
3. Gostin, Lawrence O. Public Health Law - Power, Duty, Restraint. (California/Milbank series on health and the public) 2000.
4. Virginia State Health Codes.
5. National Model Codes available through city and county attorneys.
6. County & City Ordinances.

2013
Chapter 14
Hazard Communication - Managing Crises

Local health directors often face crises within their communities. Some are common, such as a report of two or more children with meningitis, or an outbreak of as hepatitis-A. Most health directors can handle public reaction to such issues with little difficulty. Other less common problems, occurring more frequently are crises related to fear of dread diseases caused by environmental exposures. The common problems rarely cause a crisis, because they occur often enough that they don't raise much media curiosity, although it can happen. For example, several cases of hepatitis-A may occur during peak vacation periods in communities where tourism and eating out are major industries. Travelers, not knowing the community can react in panic. Appropriate intervention, such as that which occurred during such an incident in Virginia Beach, Virginia in the mid 1990s is a model of prevention.

One of Virginia Beach's major industries is tourism. It is important economically. An outbreak occurred after several people ate in the same fast food restaurant, and some 10 days later all went to the same emergency room feeling sick. The physician on duty correctly identified hepatitis and notified the health department. A health department epidemiologist obtained information from the victims and identified a possible common source of infection. She arranged for sanitarians to inspect the restaurant. A food handler had been sick and probably transmitted the disease. The news media were alerted, given the facts, and asked to help alert patrons who used the restaurant and ate suspect food when the disease might have been transmissible. The restaurant management helped provide information about the outbreak and was willing to pay for treatment with gamma-globulin injections for those at risk. The elected officials were concerned about a possible adverse effect on the community during the tourist season. There were some scare stories in several northern and Midwestern newspapers.

The restaurant chain affected, the restaurant industry in the state, the local and state health department, local officials, and other interested individuals were all briefed within twenty-four hours of identifying the problem. The local news media helped feed correct stories to their counterparts in those areas of the country where most of the tourists came from. All restaurants made concerted efforts to enforce good food handling procedures. Stories on the transmission and prevention of hepatitis-A and other fecally distributed diseases were given front-page treatment by the local TV, radio, and the newspapers. It was made clear this was a single incident. The hospitals and doctors kept track of new cases of the disease. A daily tabulation of cases and their probable origin was provided. No one tried to cover up the incident. All were open and free with information. Good relations between the health department and the media ensured that the information about the outbreak and other information available from restaurant inspection sheets confirmed that food sanitation in the community was excellent, that occasional incidents could occur and that if they did prompt action could and would be taken to control them.

Since this incident, the community has been more sensitive to the need for widespread personal hygiene and careful food handling in public places. In retrospect, the food handler probably became sick due to transmission of hepatitis-A from a child infected at a day care center. As further epidemiologic data was uncovered additional emphasis was placed on the need for good hygiene in day care centers and restaurants. Openness, trust, quick action, and good communications prevented a panic and potential damage to the community's economy

Love Canal

In contrast to the previous example of successful management of a potential public health crisis has been the management of many environmental crises where good epidemiology and scientific data were lacking, and the media were not given a chance to develop trust. Because of lack of information the news stories dealt with the public's feelings and perceptions rather than possible

scientific explanations. Public officials exhorted the community to believe there was no problem, without a basis for such belief having been prepared. The Love Canal crisis was an example of poor management. In this incident several young women, comparing notes, found they had all suffered stillbirths. While they were looking for a reason, television news broke a story about their homes having been built on an old landfill, containing waste chemicals. When the issue was first raised, rather than listening carefully to the complaints, making an investigation and holding carefully managed meetings to provide information about the frequency of stillbirths among the population at large, or in the local households, these women were given the impression they were imagining problems that didn't exist, and that public officials didn't care about them. The city of Niagara Falls was seen as trying to cover up its action in buying the land from the chemical company and allowing its use for a housing development. Twenty plus years later, after many studies, and millions of dollars, incusing a comprehensive study by the CDC no links have been found between perceived health effects and any evidence of disease.

The Love Canal crisis occurred at a time when people were starting to hear about the ill effects of chemical contamination of the environment. The detrimental effects of DDT on pelicans and eagles had been exposed shortly before. Because the disposal area was literally covered up it became a "cover-up" issue in the media. The wastes had been "dumped" into an unprepared site many years before, when knowledge about leaching and proper preparation of disposal sites was minimal. Those affected still believe, many years later, that they were injured, in spite of the millions of dollars spent to investigate the possibility of disease and inability to find any firm evidence of disease due to the chemical exposures. In contrast to the outbreak of hepatitis in Virginia Beach; a real outbreak, with real sickness, and a clear chain of transmission this episode was one where the individuals believing themselves affected were not provided good scientific data to tell them that their experience was not different to that of many young women around the country, where there was no exposure to potentially toxic chemicals. No one bothered to tell these ladies that just because a chemical can be measured in the soil it has to get into the individual's system in amounts large enough, and stay there long enough, to cause harm. The acute toxicology of most chemicals is well known from animal experiments. Long-term toxicology of workers in chemical plants has identified by many prolonged occupational health studies.

One difference between the Virginia Beach outbreak and the Love Canal exposure, not appreciated at the time, was the unwillingness of many people to believe state and federal officials knew anything about possible exposures to toxic chemicals. Another problem was the strident call for proof that very small doses of chemicals over long enough periods could not, under any circumstances, be responsible for the stillbirths. Being the first major confrontation of this type the local officials were not prepared to point out that you could only prove a compound causes a problem; you cannot prove it does not. First, there is the ethical problem of exposing people to a compound that might cause such harm as a stillbirth. Secondly, there is the problem of ever finding enough people (often thousands or tens of thousands) to take part in a project that could measure a small but significant effect, if it occurred. None of the staff of the local, state or federal agencies were prepared to argue that the effects of a compound, on cells in a Petri dish (salmonella mutations) or on mice or rats could not be simply extrapolated into human effects.

Triani, Alabama

Subsequent to the Love Canal incident there have been many other “toxic exposures”; such as those to DDT in Triani, Alabama, or to Dioxins in the soil at Times Beach Missouri. At Triani, a small village on the bank of the Tennessee River, near Redstone Arsenal, most of the people worked in an old military building leased to a company to make DDT. This occurred after the World War II, when there were few restrictions on the disposal of waste chemicals. The DDT escaped into the Tennessee River in large quantities and settled in lumps. The game fish, passing the contaminated water through their gills, had their fatty tissues loaded with DDT. Many townspeople used these fish for a third or more of their diet. Concurrently workers in the factory took many pounds of the chemicals home to use in their gardens. Familiarity with potential hazards breeds contempt for them. Between the fish and the gardens many people ate

foods containing the DDT for years. Because a town official had some chronic problems he selected himself, and several relatives for testing to detect DDT in their tissues, by the Centers for Disease Control (CDC). The tissues came back with levels higher than any found in previous occupational health studies. The mayor gave this information to the townspeople and the Army was immediately accused of poisoning the community - although their only role was to lease a building to the producers of the DDT many years before. Every illness in the inhabitants was blamed on the DDT. No one was prepared to listen to information that the DDT was possibly not the cause of the illnesses. As at Love Canal, lack of quick action to show interest and belief, or to show willingness to investigate, or to call on local and state officials to provide an epidemiologic analysis of deaths and illness in the community, or to call for an independent investigation led to the issue being blown out of proportion. The CDC agreed to test the entire community for DDT and attempted, through a series of physical and chemical tests to figure out if the community had a different health status from communities similar by age, race, and sex except the exposure to the DDT. The results, when finally published, described no physical findings other than a very slight rise in systolic blood pressure (2mms.).

Times Beach, Missouri.

At Times Beach Missouri, company collecting used oil, including oil mixed with dioxin used as a cooling agent for transformers, disposed of the oil by spraying it on earth roads to control dust. After some vague illnesses, and seeing the oil laid down, and having heard about the high toxicity of dioxin, some citizens called the EPA. The first action of the EPA was to tell the community about the toxicity of dioxin. Neither the spreader of the oil, nor local or state health officials, provided any of the information known by occupational health specialists about dioxin. Although dioxin is harmful to certain animals and aquatic life, other than liver poisoning if exposed acutely, dioxin has not been shown to cause danger to humans except for severe acne. When the citizens heard from EPA they called the news media and pressured the state to ask the EPA's help. Based on an assessment of political necessity rather than science the state agreed to buy the housing and move the people. The EPA brought people in "moon suits" to remove the contaminated earth and send it to a hazardous waste disposal site, adding fuel to the perceptions about the dangers of dioxin. Since then, studies have been made that failed to show any ill effects among the people exposed to the oil. The problem occurred in a small community where immediate epidemiological evaluation was unavailable, and where human toxicological data was not provided in terms the local people could understand. When data was available, because of the media circus, the citizens would not have believed anything other than how dangerous their living conditions were. This was a situation that in retrospect could have been defused, and could have used a less expensive way to manage the environmental hazard. Huge sums have been spent to deal with a situation that probably could have been controlled by using available epidemiological information about the effects of dioxin on people as opposed to fish.

National crises.

Since the local incidents at Love Canal, Triani and Times Beach, national anxiety about contamination of food with EDB and ALAR have caused increased concern about our "chemical environment" A current 'Crisis' is that of the use of Bisphenol-A in plastic baby bottles.. Many chemicals have acute toxic effects, some only in high doses of parts per thousand, others with a much smaller dose. The effects of chronic exposure are very different. The best long-term epidemiologic studies on humans are from occupational health exposures of workers, or from accidents such as the large release of dioxins at Seveso, Italy. Excellent protocols for Health Hazard Analyses (HHAs) have been developed from occupational health studies. Although workers are considered to be exposed for only 40 hours a week, many of these HHAs have been extrapolated to estimate the effects on the non-working population, assuming people are exposed to chemicals twenty four hours a day, three hundred and sixty five days of the year.

Environmental policy making

Many chemicals have been branded as dangerous to health and removed from the market, despite scant scientific evidence. Under political pressure, the EPA has often made claims about hazards of chemicals to people, not supported by subsequent studies. Part of the difficulty in assessing the likelihood of chemicals causing public harm has been the expectation of many in Congress, and among their supporters, that no one should be placed at harm by any compound to which the public might be unwittingly exposed. Many claims about health hazards are based on studies of the way compounds affect cells growing in a Petri dish, or from studies of animals exposed to huge doses of chemicals that are often thousands of times higher than any dose to which people would be exposed.

Claims of carcinogenicity are based on a federal law known as the Delaney amendment to the FDA Act. Congress had demanded that EPA use the standards promulgated by FDA for controlling food additives and drug standards, despite lack of scientific evidence that people exposed to many of these non-drug and non-food compounds have ever been harmed. The Delaney amendment was repealed in 1989.

The health hazard assessment of chemicals requires the knowledge and application of the principles of toxicology, cytology, pharmacology, mutagenicity, fetotoxicity, biostatistics and epidemiology of humans, as opposed to animals. The epidemiologic analysis is usually based on occupational or accidental exposures. People, in their homes, are not exposed to the same levels or by the same routes as workers. so most of the studies on workers should only point to potential problems for the public, not be taken out of context by inappropriate extrapolation

Two special examples of claims about hazards to people are made for asbestos and radon. The asbestos studies were based on exposures to people working in small steel rooms, aboard destroyers being built during World War II. There is no doubt that these exposures led to many cases of lung cancer. Still, these exposures should not be extrapolated to apply to exposures of people or children living or working in buildings using asbestos ceiling or floor tiles. Similarly, the exposures of miners to radon, while working in uranium mines are not suitable for extrapolation to suggest potentials for developing cancer from radon leaking into homes from the natural underlying terrain. Unfortunately, many studies performed by the scientific community, and published in peer reviewed journals describing the lack of evidence of hazard do not make nearly as much news as a potential but unproven hazard.

The Health Department as Advisor.

In the future, health and program directors should provide their communities with analyses of the potential health effects of chemicals more frequently. As the analysts of community health and illness, they need to know the basics of human toxicology, particularly what a particular concentration means when a chemical has been found in the soil, water or air. They must act as advisors to other community agencies; to see that chemical removals are managed so that they do not contaminate the aquifers, surface water, or air. Although regulation of control of chemical use in the environment may be handled by another agency, health directors should be the people who provide the community with information and reassurance about potential hazards.

Health departments will face more and more problems with the disposal of household and industrial wastes. Many urban communities are running out of land to use as landfills. Department staff must know the elements that go into construction of a modern landfill. The directors and their staffs must make a major effort to help the media and public understand that the difference between a landfill and a "dump" is the application of advanced engineering and environmental protection techniques to construct a landfill and protect the ground, whereas a dump is the collection of garbage and debris on unprepared land. The department's staff may have to act as facilitators in persuading warring neighbors to work out their differences and find a landfill site or provide alternatives to burying waste. Be familiar with recycling and its costs.

In Europe many communities require household waste to be separated into glass, paper, wood, metals and putrescible products. The staff should know how to reduce waste by incineration (without causing air pollution) to extend the lifetime of a landfill.

Landfills

Although landfill construction may be permitted by some agency other than the health department in some states, local health directors should be prepared to advise their city or county manager about the standards needed to protect the environment when the community authorizes someone to construct a landfill for them. They must understand the value of monitoring and recycling wells. Information about who lives near the landfill site, and what businesses are in the neighborhood, must be gathered. Agrochemical data are needed before any work is done, so that environmental changes from leaching can be detected immediately, if they occur. Baseline data on morbidity and mortality in the area will enable you to evaluate complaints that a new waste disposal site is affecting people's health. Remember that the absence of illness cannot be proved, only its presence. In one state where I was a local health director the state's hazardous waste disposal site was located the county where I was the health director. It was in a relatively remote rural area of the county. The site manager lived near the landfill to show that neither he nor his family was concerned about any potential health hazards. In spite of offers of tours of the site with explanations about the system used to protect the community, local farmers complained they and their livestock were adversely affected. The data I had on deaths and longevity of people showed that those people living within walking distance of the landfill (allowing for a long walk) lived longer than the average for the community and their cancer rates were lower than the community's average. There was no way to explain the scientific issues to the farmers; they appeared to have other concerns. However, this data was very useful and consoling to the elected officials from the region. It is interesting that the uranium mine on a small island in the middle of the community's water supply never bothered them. The media were provided the same data given to the farmers and most of the stories about the danger to health from the disposal site disappeared.

Disaster Planning.

The public is bombarded daily with news about our chemical environment and how dangerous the things we eat, drink and breathe can be. Health department staff should not get their scientific expertise from television, magazines and daily newspapers. Health directors can target journals to be read by their staff and develop brain-storming sessions around current issues. They can circulate and annotate journal articles, attend state and national meetings on the environment, learn about the costs and benefits of new technology, and most importantly, are prepared by planning for crises. A crisis management team can be formed in the department, and other experts can be enlisted. For instance, the University of Virginia has an environmental negotiating team. This team is funded from fines paid by Allied Chemical as part of its settlement for polluting the James River with Kepone. One's ability to deal with crises, environmental or otherwise, depends on having credibility within the community. Being open without being an alarmist is vital. A good emergency room physician or triage specialist can walk into the midst of carnage and confusion and bring order. Similar onlookers, families of victims, newspersons, or those interested in manipulating the situation are present when community health crises occur. In my experience, health directors and their staffs should be able cope with community crises the same way an emergency room physician deals with trauma.

When health department staff are provided an opportunity to become skilled in 'Hazard Communication' they should take it gladly, to avoid their becoming part of the problem when such a communication need arises, as it will inevitably.

Environmental Terrorism.

This may take form of acts such as the 2001, Sept 11 airline crashes into the World Trade Towers, movies such as Jane Fonda's movie after a non-injurious release of gases from a Pennsylvania nuclear power station, PETA's invasion of research laboratories, Tree lovers insertion of spikes in trees to injure loggers, or baseless lies about chemicals, released by the Ralph Nader groups such as the supposed dangers of Alar used to control infestations in apples. As Commissioner I and my staff spent countless hours, and lots of money that could have gone to immunizing children or providing prenatal care, to deal with public anxiety, often driven by poor media reporting on the Alar incident, or repeatedly on concerns about the health dangers of electric transmission lines, effect of CRT emissions, supposed neurological dangers of cellular phones, and the supposed ill effects of immunization. These are all fueled by perception. It is much easier to arouse public fear than to dampen it. Review slides by Paul Slovic from the 2003 IOM meeting: Risk Communication in an Age of Terrorism

Since 9-11 the federal government has provided significant additional funds to state and local health agencies to improve their planning for early detection of, and counters to, bioterrorism. The skills and tools developed for this issue can be applied to many health hazards and should transform our ability to deal with the issues discussed above, although this is dependent to a great degree on state and local planning competencies.. Failure of planning showed in the New Orleans flood after the 2005 hurricane. Virginia, in 2009, was judged to be one of three states with an A rating for its All-Hazards approach to emergency preparedness.

Recommended Reading:

1. Committee on Risk Perception and Communication, National Research Council: Improving Risk Communications. Washington DC, National Academy Press, 1989
2. Committee on Scientific and Regulatory Issues underlying Pesticide Use Patterns and Agricultural Innovation. Washington DC, National Academy Press, 1987
3. Ottoboni MA: The Dose Makes The Poison. Berkley, Vincente Books, 1984
4. Rodansky D, Stadler DR(Ed): Indoor Radon and its Hazards. University of Washington Press, 1987
5. Slovic, Paul, Address to IOM, annual meeting 2003 on risk perception as part of the study of the population's mental health.
6. Fallon lf Jr. and Zgodzinski EJ 2nd Edn 2009. Public Health Management (2005) Chapter 5; Emergency Preparedness & Response
7. Turnock, B. Essentials of Public health, 2nd Edn (2007) Chapter 5. Health Emergency Preparedness and Response.