

**Chapter 1 : How Public Health Has Evolved**

*Full text Full text is available as a scanned copy of the original print version. Get a printable copy (PDF file) of the complete article (M), or click on a page image below to browse page by page.*

Page 72 Share Cite Suggested Citation: A History of the Public Health System. The Future of Public Health. The National Academies Press. A History of the Public Health System In Chapter 1, the committee found that the current public health system must play a critical role in handling major threats to the public health, but that this system is currently in disarray. In this chapter the history of the existing public health system is briefly described. This history is intended to provide some perspective on how protection of citizens from health threats came to be a public responsibility and on how the public health system came to be in its current state. In earlier centuries, when little was known about the causes of disease, society tended to regard illness with a degree of resignation, and few public actions were taken. As understanding of sources of contagion and means of controlling disease became more refined, more effective interventions against health threats were developed. Public organizations and agencies were formed to employ newly discovered interventions against health threats. As scientific knowledge grew, public authorities expanded to take on new tasks, including sanitation, immunization, regulation, health education, and personal health care. The growth of a public system for protecting health depended both on scientific discovery and social action. Understanding of disease made public measures to alleviate pain and suffering possible, and social values about the worthiness of this goal made public measures feasible. The history of the public health system is a history of bringing knowledge and values together in the public arena to shape an approach to health problems. Although epidemic disease was often considered a sign of poor moral and spiritual condition, to be mediated through prayer and piety, some public effort was made to contain the epidemic spread of specific disease through isolation of the ill and quarantine of travelers. In the late seventeenth century, several European cities appointed public authorities to adopt and enforce isolation and quarantine measures and to report and record deaths from the plague. Several American port cities adopted rules for trade quarantine and isolation of the sick. In Massachusetts passed laws for isolation of smallpox patients and for ship quarantine as needed. After , inoculation with material from smallpox scabs was also accepted as an effective means of containing this disease once the threat of an epidemic was declared. By the end of the eighteenth century, several cities, including Boston, Philadelphia, New York, and Baltimore, had established permanent councils to enforce quarantine and isolation rules. Hanlon and Pickett, These eighteenth-century initiatives reflected new ideas about both the cause and meaning of disease. Diseases were seen less as natural effects of the human condition and more as potentially controllable through public action. Also in the eighteenth century, cities began to establish voluntary general hospitals for the physically ill and public institutions for the care of the mentally ill. Finally, physically and mentally ill dependents were cared for by their neighbors in local communities. Grob, ; Starr, By the eighteenth century, several communities had reached a size that demanded more formal arrangements for care of their ill than Poor Law practices. The first American voluntary hospitals were established in Philadelphia in and in New York in The first public mental hospital was established in Williamsburg, Virginia in Sanitation changed the way society thought about health. Illness came to be seen as an indicator of poor social and environmental conditions, as well as poor moral and spiritual conditions. Cleanliness was embraced as a path both to physical and moral health. Cleanliness, piety, and isolation were seen to be compatible and mutually reinforcing measures to help the public resist disease. At the same time, mental institutions became oriented toward "moral treatment" and cure. Protecting health became a social responsibility. Disease control continued to focus on epidemics, but the manner of controlling turned from quarantine and isolation of the individual to cleaning up and improving the common environment. And disease control shifted from reacting to intermittent outbreaks to continuing measures for prevention. With sanitation, public health became a societal goal and protecting health became a public activity. The Sanitary Problem With increasing urbanization of the population in the nineteenth century, filthy environmental conditions became common in working class areas, and the spread of disease became rampant. In London, for example,

smallpox, cholera, typhoid, and tuberculosis reached unprecedented levels. It was estimated that as many as 1 person in 10 died of smallpox. More than half the working class died before their fifth birthday. In New York, as late as , "the filth and garbage accumulate in the streets to the depth sometimes of two or three feet. Hanlon and Pickett, Earlier measures of isolation and quarantine during specific disease outbreaks were clearly inadequate in an urban society. It was simply impossible to isolate crowded slum dwellers or quarantine citizens who could not afford to stop working. Wohl, It also became clear that diseases were not just imported from other shores, but were internally generated. Wohl, Urbanization, and the resulting concentration of filth, was considered in and of itself a cause of disease. In earlier centuries, disease was more readily identified as only the plight of the impoverished and immoral. The plague had been regarded as a disease of the poor; the wealthy could retreat to country estates and, in essence, quarantine themselves. In the urbanized nineteenth century, it became obvious that the wealthy could not escape contact with the poor. Almost all families lost children to diphtheria, smallpox, or other infectious diseases. Because of the the deplorable social and environmental conditions and the constant threat of disease spread, diseases came to be considered an indicator of a societal problem as well as a personal problem. Insanity came to be viewed at least in part as a societal failing, caused by physical, moral, and social tensions. The Development of Public Activities in Health Edwin Chadwick, a London lawyer and secretary of the Poor Law Commission in , is one of the most recognized names in the sanitary reform movement. Hanlon and Pickett, To remedy the situation, Chadwick proposed what came to be known as the "sanitary idea. To remove disease, therefore, it was necessary to build a drainage network to remove sewage and waste. Further, Chadwick proposed that a national board of health, local boards in each district, and district medical officers be appointed to accomplish this goal. The report, which influenced later developments in public health in England and the United States, documented the extent of disease and suffering in the population, promoted sanitation and engineering as means of controlling disease, and laid the foundation for public infrastructure for combating and preventing contagious disease. In the United States, similar studies were taking place. Inspired in part by Chadwick, local sanitary surveys were conducted in several cities. The most famous of these was a survey conducted by Lemuel Shattuck, a Massachusetts bookseller and statistician. His Report of the Massachusetts Sanitary Commission was published in Shattuck collected vital statistics on the Massachusetts population, documenting differences in morbidity and mortality rates in different localities. He attributed these differences to urbanization, specifically the foulness of the air created by decay of waste in areas of dense population, and to immoral life-style. He showed that the poor living conditions in the city threatened the entire community. Further, Shattuck determined that those most likely to be affected by disease were also those who, either through ignorance or lack of concern, failed to take personal responsibility for cleanliness and sanitation of their area. Rosenkrantz, Consequently, he argued that the city or the state had to take responsibility for the environment. Massachusetts set up a state board of health in The creation of this board reflected more a trend of strengthened government than new knowledge about the causes and control of disease. Nevertheless, the type of data collected by Shattuck was used to justify the board. Many of the principles and activities he proposed later came to be considered fundamental to public health. And Shattuck established the fundamental usefulness of keeping records and vital statistics. This report eventually led to the establishment of the first public agency for health, the New York City Health Department, in During this same period, boards of health were established in Louisiana, California, the District of Columbia, Virginia, Minnesota, Maryland, and Alabama. Fee, ; Hanlon and Pickett, By the end of the nineteenth century, 40 states and several local areas had established health departments. Although the specific mechanisms of diseases were still poorly understood, collective action against contagious disease proved to be successful. For example, cholera was known to be a waterborne disease, but the precise agent of infection was not known at this time. The sanitary reform movement brought more water to cities in the mid-nineteenth century, through private contractors and eventually through reservoirs and municipal water supplies, but its usefulness did not depend primarily on its purity for consumption, but its availability for washing and fire protection. Blake, Nonetheless, sanitary efforts of the New York Board of Health in , including inspections, immediate case reporting, complaint investigations, evacuations, and disinfection of possessions and living quarters, kept an outbreak of cholera to a small number of cases. During

this period, states also established more public institutions for care of the mentally ill. Dorothea Dix, a retired school teacher from Maine, is the most familiar name in the reform movement for care of the mentally ill. In the early nineteenth century, under Poor Law practices, communities that could not place their poor mentally ill citizens in more appropriate institutions put them in municipal jails and almshouses. Beginning in the middle of the century, Dix led a crusade to publicize the inhumane treatment mentally ill citizens were receiving in jails and campaigned for the establishment of more public institutions for care of the insane. In the nineteenth century, mental illness was considered a combination of inherited characteristics, medical problems, and social, intellectual, moral, and economic failures. It was believed, despite the prejudice that the poor and foreign-born were more likely to be mentally ill, that moral treatment in a humane social setting could cure mental illness. Dix and others argued that in the long run institutional care was cheaper for the community. The mentally ill could be treated and cured in an institution, making continuing public support unnecessary. Although the practice of moral treatment proved to be less successful than hoped, the nineteenth-century social reform movement established the principle of state responsibility for the indigent mentally ill. Grob, ; Foley and Sharfstein, New ideas about causes of disease and about social responsibility stimulated the development of public health agencies and institutions. As environmental and social causes of diseases were identified, social action appeared to be an effective way to control diseases. When health was no longer simply an individual responsibility, it became necessary to form public boards, agencies, and institutions to protect the health of citizens. Sanitary and social reform provided the basis for the formation of public health organizations. Public health agencies and institutions started at the local and state levels in the United States. Federal activities in health were limited to the Marine Hospital Service, a system of public hospitals for the care of merchant seamen. Because merchant seamen had no local citizenship, the federal government took on the responsibility of providing their health care. A national board of health, which was intended to take over the responsibilities of the Marine Hospital Service, was adopted in 1890, but, opposed by the Marine Hospital Service and many southern states, the board lasted only until 1893. Meanwhile, several state boards of health, state health departments, and local health departments had been established by the latter part of the nineteenth century. Rapid advances in scientific knowledge about causes and prevention of numerous diseases brought about tremendous changes in public health. Many major contagious diseases were brought under control through science applied to public health. Louis Pasteur, a French chemist, proved in 1861 that anthrax is caused by bacteria. By 1881, he had developed artificial immunization against the disease. During the following few years, discoveries of bacteriologic agents of disease were made in European and American laboratories for such contagious diseases as tuberculosis, diphtheria, typhoid, and yellow fever.

## Chapter 2 : History of Public Health - Public Health - Oxford Bibliographies

*The fact that public health professionals today are building Public Health doesn't mean that issues addressed by Public Health and are resolved. They are not. For example, outbreaks of infectious disease illustrate the need to continue delivering Public Health solutions.*

Public health is as old as the man itself. In primitive time, since the knowledge was limited, man attributed disease to the wrath of gods, the invasion of body by evil spirits and the malevolent influence of stars and planets. Introduction 5 PowerPoint Presentation: There was nomadic existence of men Magic and spells were prevalent Sanitation of camp sites was there but it was due to mythical reasons Prehistoric public health 6: Great physicians of ancient India: Great physicians 11 PowerPoint Presentation: Mohanjodaro toilet PowerPoint Presentation: Negative feminine principle Yang: Active masculine principle Chinese medicine Hypothesis Yin and Yang 16 Chinese medicine 17: Circumcision was started in B. Mummification was a special custom in Egypt. Greeks created rational medicine Many Greek cities realized the importance of doctors Created posts of city medical officers. Appointed health officers were to advise the Govt on Epidemics Like other Greek pioneers of science, the doctors were prone to think that much more could be discovered by mere reflection and argument than by practice and experiment Greek Medicine BC 27 PowerPoint Presentation: Greeks emphasized the value of exercise, a nutritious diet, and clean air in healing the body. Disease prognosis and case histories were introduced in the 5th century, and medical schools were established. Romans borrowed their medicine from Greeks whom they had conquered They were more practical The first doctor to come to Rome was Arcagathus who arrived from Greece. Public health was born in Rome They developed drained marshes for Malaria control Development of public baths, sewers: The Romans also had knowledge of harmful effects of many common materials. Dark Ages of Medicine: This is one of the indigenous system of medicine nowadays Unani medicine Unani medicine 37 PowerPoint Presentation: All classes of people were treated alike. These institutions provided efforts to cope with epidemic and endemic diseases Most physicians were monks guided by church doctrine and ethics Medical scholarship was based primarily on the teachings of Galen Monastery 41 PowerPoint Presentation: The practice of separating people with disease from the healthy population is an ancient one. By the 7th century, China had a well-established policy of detaining sailors and foreign travellers suffering from plague. From the 14th century, European doctors visiting plague victims wore protective clothing mask and a beak containing strong-smelling herbs. Plague and quarantine 44 PowerPoint Presentation: Smallpox is one of the oldest known human diseases. He carried out the first vaccination with cowpox virus in Following AD Fracastorius envisaged the transfer of infection via minute invisible particles and explained the cause of epidemics Theory of contagion He became the founder of epidemiology. Sydenhem made differential diagnosis of scarlet fever, malaria, dysentery, cholera. He is also regarded as the first distinguished epidemiologist. Dawn of scientific medicine 47 PowerPoint Presentation: A milestone in the history of public health is great Sanitary awakening which took place in England in mid-nineteenth century and gradually spread to other countries. Industrial revolution of the 18th century sparked of numerous problems, i. Sanitary awakening 48 PowerPoint Presentation: Great cholera epidemic of led the birth of public health in England around John Snow, studied the epidemiology of cholera in London from to and established the role of polluted drinking water in its spread. The great cholera epidemic of drew attention of the people and govt. Rise of Public health 49 PowerPoint Presentation: By the beginning of 20th century, the broad foundation of public health 50 PowerPoint Presentation: Preventive medicine really dates back to the 18th century. It developed as a branch of medicine distinct from Public Health. Preventive Medicine got a firm foundation after the discovery of causative agents of disease and establishment of the Germ Theory of disease. Birth of preventive medicine 51 PowerPoint Presentation: Modern Preventive Medicine: Winslow gave definition of public health: Two great movements were initiated for human development: This was a revolutionary statement, because it stated the desired outcome. PHC was not just a package of services, or a level of care or an 8 point programme. Alma Ata conference 66 PowerPoint Presentation: Appropriate treatment of common illnesses and injuries. With the

adoption of Health for All, a new concept of Public Health became evident worldwide, which may be defined as follows. During 20th century the dramatic increase in average span of life is credited to public health achievements such as vaccination programs, control of infectious diseases, better safety policy such as motor vehicle and worker safety, improved family planning, emphasis on safe drinking water. Chadah committee Malaria Mukherjee committee Family planning Kartar Singh committee MPW scheme During s 78 PowerPoint Presentation: The positive results of these evaluation led the government to accelerate the expansion of ICDS scheme through out the country in Formed in, keeping in view the national commitment to the goal of Health for All by National Health policy 80 PowerPoint Presentation: It involved sustaining the high immunization coverage level under UIP, and augmenting activities under Oral Rehydration Therapy, prophylaxis for control of blindness in children and control of acute respiratory infections. In, Reproductive and Child Health programme was launched which incorporated child health maternal health family planning treatment and control of reproductive tract infections adolescent health RCH 83 PowerPoint Presentation: RCH Phase-2 aims at sector wide outcome oriented program based approach with emphasis on decentralization monitoring and supervision RCH Phase 2 84 PowerPoint Presentation: The National Rural Health Mission April 12 th major undertaking by the present United Progressive Alliance Government to honour its commitments under common minimal programme A dopted key guidelines given in National Health Policy e. The mission covers the entire country, with special focus on 18 states, which have relatively poor infrastructure NRHM 86 PowerPoint Presentation: All 29 states are covered Slum and non-slum areas of eight cities, i. Deprofessionalization of medicine i. Community Health, p http:

**Chapter 3 : Health Care in the United States: An Evolving System**

*The panelists generally agreed that an evolution in programming, performance, and measurement is occurring in governmental public health, at least, and is essential for enabling it to align with health system transformation.*

Historically, even early governments, which existed primarily to promote the acquisition of wealth and territory by monarchs and their families, recognized some obligation to protect the health and safety of their subjects. Early public health regulation was rudimentary, as there was no clear understanding of the causes of disease or its modes of transmission. From the late Middle Ages, there was recognition of a relationship between filth and disease and some awareness of the vectors of many infectious diseases through observation. Thus, many jurisdictions had local ordinances targeted at "nuisances" and other sources of filth. Quarantine and isolation of the sick during epidemics -- the archetypal public health regulation -- have been used since the dawn of history. However, a lack of understanding of the germ theory of disease obscured the connection between communal sanitation and the prevention of infectious disease. The impetus for modern public health regulation was the sanitary revolution of the nineteenth century. During this period, scientific discoveries established the link between microorganisms and infectious disease, leading to a greater understanding of the vectors of infectious disease. Soon thereafter, societies concluded that they could prevent the spread of infectious disease through governmental action. Modern public health regulation was born. The leaders of the nineteenth century sanitary revolution appreciated that governmental authority was necessary to implement the strong and often coercive strategies required to clean up living conditions and prevent the spread of disease. In Europe and the United States, the industrial revolution, with its rapid urbanization and environmental degradation, wrought great hardship for many workers with increased poverty and disease. Also, technological developments of the industrial revolution permitted great movements of people across oceans and continents in search of treasure and freedom. These dislocations triggered greater public health regulation. Specifically, in the United States, the large cities on the East Coast, which were on the front lines in terms of sea trade and processing new immigrants, were the catalyst for governmental responses to public health concerns. Not surprisingly, in the United States, the early public health advocates focused on the local public agency as the model for executing public health responsibilities. The first local health board was organized in Baltimore, Maryland, in 1799, with other cities on the East Coast following shortly thereafter. By the early nineteenth century, local boards were established throughout the nation. As infectious diseases and their vectors do not appreciate political boundaries, states soon established state-level public health agencies throughout the later half of the nineteenth century. To this day, states continue to exercise primary responsibility for the regulation of the health professions. For the same reasons that the states established health departments, the federal government also engaged in public health regulation. The federal effort in public health like-wise was a response to the management of disease brought by seamen and immigrants to East Coast cities. Public health was an important concern to the framers of the U. In 1790, Congress established hospitals under the Department of the Treasury to care for sick and disabled seamen in American ports. This statute also established a national board of health appointed by the president. This national board of health was never strong and languished in future years due to a lack of appropriations to fund its operation. The evolution of federal public health regulation proceeded in three stages. First, over the nineteenth century, there were responses to specific public health threats not adequately addressed at either the local or state level, such as the spread of infectious disease from seamen and immigrants. The most important development in this regard was the evolution of the Marine Hospital Service into the Public Health Service. This evolution began in 1800 when the Marine Hospital Service was reorganized as a national hospital system with centralized administration under a medical officer, the supervising surgeon. The leadership of the service selected a military model, with a commissioned officer corps for its organization, out of concern for the corruption and patronage that characterized the federal civil service generally. Another important mid-nineteenth century development in federal public health regulation was the establishment of rudimentary food and drug safety regulation within the federal Department of Agriculture. Of note, this statute required demonstration of the safety of new drugs -- an essentially scientific

determination. The public health advances of the New Deal years were chiefly the creation and expansion of the welfare state. In the Social Security Act of 1935, Congress established social insurance programs for the aged and cash assistance programs for the aged, blind, and disabled as well as poor dependent children. In 1965, this expansion of the welfare state continued with enactment of the Medicare and Medicaid programs for the aged as well as some disabled and some poor. By making health-care services available to vulnerable groups, these two programs dramatically raised the health status of vulnerable groups in the United States. The Medicare and Medicaid programs also greatly expanded the role of the federal government in addressing problems in the health-care sector. This second stage of public health regulation also witnessed the consolidation of the modern federal public health establishment in the mid- twentieth century. In 1944, the Ransdell Act established the National Institutes of Health from the Hygienic Laboratory and authorized the establishment of fellowships for biological and biomedical research. In 1953, the federal public health and social welfare functions were consolidated into one cabinet-level department, the Department of Health, Education and Welfare. This department housed virtually all of the federal agencies with public health responsibilities including the Medicare and Medicaid programs that had evolved since the Civil War. The third stage of federal public health regulation in the 1970s and 1980s was the establishment of new regulatory programs to reduce risks to safety and health in the environment, workplace, and other settings. During this period, Congress enacted extensive environmental legislation to clean up the environment and maintain environmental quality. Perhaps the most important federal environmental legislation was the National Environmental Policy Act, which established a national policy for the environment that would guide federal environmental regulation. In 1970, the Nixon Administration consolidated existing and new federal environmental programs into the new and independent Environmental Protection Agency. Another major regulatory effort of this third stage of public health regulation was workplace health and safety. In the 1970s, Congress enacted the Occupational Safety and Health Act, which established a new regulatory program to promote health and safety in the workplace. The statute established the Occupational Safety and Health Administration OSHA within the Labor Department to set and enforce workplace safety and health standards; the National Institute for Occupational Safety and Health within DHHS to conduct research on occupational safety and health; and the Occupational Safety and Health Review Commission as an independent agency to adjudicate enforcement actions challenged by employers. Unlike earlier federal regulation that tended to be industry-specific and address market dislocations, this third stage of public health regulation reduced risks to health and safety across all industries. Consequently, this new generation of regulation generated great controversy and fueled conservative criticism of government regulation as well as the movement for deregulation that exists to this day. Critique of this new regulatory movement was a major position of the conservative Reagan Administration, which sought its reform. The political and economic ideology of the Reagan Administration fundamentally questioned the appropriateness of government regulation to reduce risks to health and safety in the environment, the workplace, and other sectors. One important development from this controversy was the demand for a better assessment of the costs of regulation and a balancing of these costs with the benefits to be derived. More specifically, in 1981, President Reagan issued an Executive Order mandating cost-benefit analysis in executive branch agencies along with presidential review of agency rules and regulatory planning. President George Bush continued this presidential oversight with the Council on Competitiveness. Liberals saw this cost-benefit analysis as a methodology to undermine laudable liberal regulatory goals and to advance a more conservative agenda. It appears that the executive oversight of rules went far smoother under the Clinton Administration than the previous two Republican administrations, perhaps because of greater agreement between the agencies and the Office of Information and Regulatory Affairs with the Office of Management and Budget about regulatory goals. Nevertheless, since the middle of the twentieth century, great strides have been made, particularly in the developed world, in reducing risks to health and safety resulting from economic activity. Life expectancy in the more developed world is 75 years compared to 64 years in the less developed world -- a difference partially due to reductions in environmental and occupational risks to health and safety. In sum, health and safety regulation has become an essential and permanent component of the modern public health mission. Administrative law and public health have had a long relationship, with much of administrative law

developing in the public health context. State regulation of the professions has generated many important doctrines in state administrative law. For example, two leading U. Supreme Court decisions involving state professional licensure agencies establish procedural due process requirements for adjudicative hearings. The complexities of federal environmental regulation since the s have also generated considerable development in federal American administrative law, particularly with respect to the law of policymaking and judicial review. The law of administrative inspections has also evolved almost entirely in the context of public health regulation. Administrative law addresses three main problems: Customarily, when the legislature addresses a public health problem, it enacts a statute that assigns the resolution or management of the problem to an existing or new administrative agency. In the same vein, the legislature accords the agency the specific powers needed for the fulfillment of these responsibilities. Of primary importance in administrative law is whether the procedures are in place to ensure that the agency exercises these powers in a fair and democratic manner. The concept of procedure pertains to the form, manner, and order of how an agency makes the policies and decisions necessary to carry out its legal and regulatory business. Procedure has little to do with the substantive content of these policies, decisions, or other agency actions. Finally, the legislature may be concerned about safeguards for individuals who might be affected by agency action. The enabling legislation for the agency thus may specifically accord judicial review to individuals aggrieved by agency actions. Regardless, independent sources of law exist in the common law, and the applicable administrative procedure act also authorizes judicial review of agency actions, with a view toward invalidating illegal agency actions. The structural design of administrative agencies The first issue with administrative agencies is how they are organized and their leadership constituted. The most important feature of agency design in administrative law theory is how the individual or governing body in which the power of the agency resides is selected. In the United States, three models of administrative agencies with executive power predominate. The first is the independent department with an elected agency head. This model is found in the states, but not in the federal government. This model has not been widely used for state public health agencies, as generally the chief state health officer does not stand for statewide election. The second model is an executive department with appointment and complete power of removal by the chief executive. This model seems most consistent with the U. Constitution and is prevalent in both states and the federal government. At the federal level, DHHS exemplifies this model. Many states have adopted this model as well for their health departments or consolidated health and welfare agencies. This third model has been used in the federal government for economic regulation and also for some regulation addressing risks to health and safety. There is currently debate over the design of state health departments. Initially, nineteenth century state health departments were comprised of a board of physicians and other public members appointed by the governor. Their functions were more advisory and inquisitorial, leaving most executive functions to local boards of health. With the advent of the Medicaid program in the late s and the need for states to assume major programmatic responsibility for the Medicaid program, many states departed from this model. Specifically, they combined their public health programs and the Medicaid program, along with other social programs, into a single super agency much like the federal DHHS. This design leaves the public health function somewhat buried in the government bureaucracy, with reduced access to the governor and the legislature. It will be interesting to see if this agency structure at the federal level precludes the federal public health function from needed access to the president, Congress, and the scientific community in any future public health crises such as in fall It is noteworthy that the Institute of Medicine IOM , in its recommendations for the reform of public health, called for the reinstatement of the state agency model, in which the commissioner of health has a cabinet- level position rather than a position subordinate to the secretary of a health and human services agency. Also, the IOM recommended that state public health agencies, in conjunction with local health departments, have primary responsibility for the public health function in the United States and that federal agencies serve a supporting role. The powers of administrative agencies The second issue is the nature of the powers accorded public health agencies to execute their regulatory responsibilities. The central issue implicated is whether agencies have the authority to make the requisite policies and decisions to accomplish their statutory assignments.

**Chapter 4 : Public Health A Call to Action for Public Health to Meet the Challenges of the 21st Century**

*Evolution and its elements of natural selection, population migration, genetic drift, and founder effects have shaped the world in which we practice public health. Human cultures and technologies have modified life on this planet and have coevolved with myriad other species, including microorganisms.*

Top Abstract Public health is what we do together as a society to ensure the conditions in which everyone can be healthy. Although many sectors play key roles, governmental public health is an essential component. Recent stressors on public health are driving many local governments to pioneer a new Public Health 3. Local leaders and community members shared successes and provided insight on actions that would ensure a more supportive policy and resource environment to spread and scale this model. This article summarizes the key findings from those listening sessions and recommendations to achieve Public Health 3. Top Introduction The United States has made enormous progress during the past century in improving the health and longevity of its population through public health interventions and high-quality clinical care. In 2014, life expectancy at birth was 78.5 years, up from 47 years in 1900. Smoking prevalence rates among adults and teenagers are less than half what they were 50 years ago. The proportion of people without health insurance is at a historic low of 8. Health reform efforts have also improved health care quality and slowed the growth rate of health care costs. However, this success falls short of ensuring that everyone in America can achieve an optimal and equitable level of health. Racial and ethnic disparities persist across many health outcomes and conditions, including life expectancy, infant mortality, and exposure to environmental pollutants. The gap in life expectancy between people with the highest and lowest incomes is narrow in some communities but wide in others. By mapping life expectancies in several cities across the United States, researchers illustrated that this metric can differ by as much as 20 years in neighborhoods just a few miles apart. These data suggest that investing in safe and healthy communities matters, especially for the most disadvantaged populations. However, many of these challenges require community-based interventions beyond health care. Education, safe environments, housing, transportation, economic development, access to healthy foods – these are the major social determinants of health, comprising the conditions in which people are born, live, work, and age. Fortunately, many pioneering communities across the country are already working to improve health by influencing these determinants in a positive way. From Nashville, Tennessee, to Manchester, New Hampshire, to Harris County, Texas, and the Shoalwater Bay Indian Tribe in Washington, community leaders have built coalitions to improve educational attainment, promote economic opportunity, ensure community safety, and build environments that promote mental health and community engagement. Top Key Influence of the Social Determinants of Health Driven by payment policy changes, our health care system is transforming from one focused on episodic, nonintegrated care toward one that is value-based and would benefit from collaboration with allied community efforts. CDC developed a framework to conceptualize such integration across 3 areas of prevention – traditional clinical preventive interventions, interventions that extend care outside of the care setting, and population or community-wide interventions (Figure 1). Although work in all of these areas is necessary to improve health, the work of Public Health 3. Doing so means we must build on past successes and work across sectors to get closer to the essential definition of public health: Public health is what we do as a society to ensure the conditions in which everyone can be healthy. It is even more salient today. Pioneering communities across the country are demonstrating how this can be achieved, particularly when led by local public health departments. However, public health has been significantly underfunded. Relative to health care spending, the United States has made paltry investments in upstream, nonmedical determinants of health, such as social services, education, transportation, environmental protection, and housing programs. This lack of investment has had detrimental effects on population health. In addition, the recession precipitated a large and sustained reduction in state and local spending on public health activities. In 2014, nearly two-thirds of the US population lived in jurisdictions in which their local health department reported budget-related cuts to at least one critical program area. Unfortunately, the need to strengthen the public health system, and the peril for failing to do so, is often only revealed in the context of disasters and crises. For a community to address fundamental drivers of health

while establishing readiness and resilience to crises requires a strong public health infrastructure, effective leadership, useable data, and adequate funding. Top Public Health 3. During this period, public health systematized sanitation, improved food and water safety, expanded our understanding of diseases, developed powerful prevention and treatment tools such as vaccines and antibiotics, and expanded capability in epidemiology and laboratory science. This scientific and organizational progress meant that comprehensive public health protection “from effective primary prevention through science-based medical treatment and tertiary prevention” was possible for the general population. Evolution of public health practices. IOM, Institute of Medicine. Cross-sectoral collaboration is inherent to the Public Health 3. Pioneering US communities are already testing this approach to public health, with support from several national efforts. Over the spring and summer of , we visited communities across the United States to assess the accuracy of the 5 key components of the Public Health 3. We selected 5 geographically and demographically diverse communities and convened listening sessions with approximately participants each. Each meeting showcased successful multisectoral collaboration designed to address the social determinants of health. They were selected as representative of the broader Public Health 3. They also had experience in public health department accreditation. Allegheny County, Pennsylvania, is a prototype for the model including their work to form a structured partnership supporting health and blending and braiding funding across several governmental jurisdictions. In these listening sessions, local leaders shared their knowledge, strategies, and ideas for successfully implementing Public Health 3. Meeting participants represented an array of expertise beyond public health and health care. Although participants noted unique challenges and successes in each region, many common themes emerged across the meetings. Top Recommendations to Achieve Public Health 3. A more detailed list of specific actions can be found in the Appendix and in the full report Specialized Public Health 3. Although the local health officer often may serve in the role of Chief Health Strategist, there are circumstances in which such leadership comes from those in other sectors. Regardless, the public health workforce must acquire and strengthen its knowledge base, skills, and tools to meet the evolving challenges to population health, to be skilled at building strategic partnerships to bring about collective impact, to harness the power of new types of data, and to think and act in a systems perspective. This will require a strong pipeline into the public health workforce, as well as access to ongoing training and midcareer professional development resources. Public health departments should engage with community stakeholders “from both the public and private sectors” to form vibrant, structured, cross-sector partnerships designed to develop and guide Public Health 3. Communities should create innovative and sustained organizational structures that include agencies or organizations across multiple sectors and with a shared vision, which allows blending and braiding of funding sources, capturing savings for reinvestment over time, and a long-term roadmap for creating health, equity, and resilience in communities. The vision of ensuring that every community is protected by an accredited local or a state health department or both requires major investment and political will to enhance existing infrastructure. Although research found accreditation supports health departments in quality improvement and enhancing capacity 20 , the health impact and return on investment of accreditation should be evaluated on an ongoing basis. Timely, reliable, granular-level ie, subcounty , and actionable data should be made accessible to communities throughout the country, and clear metrics to document success in public health practice should be developed to guide, focus, and assess the impact of prevention initiatives, including those targeting the social determinants of health and enhancing equity. The public and private sectors should work together to enable more real-time and geographically granular data to be shared, linked, and synthesized to inform action while protecting data security and individual privacy. This includes developing a core set of metrics that encompass health care and public health, particularly the social determinants of health, environmental outcomes, and health disparities. Funding for public health should be enhanced and substantially modified, and innovative funding models should be explored to expand financial support for Public Health 3. Blending and braiding of funds from multiple sources should be encouraged and allowed, including the recapturing and reinvesting of generated revenue. Funding should be identified to support core infrastructure as well as community-level work to address the social determinants of health. To secure sufficient and flexible funding in a constrained and increasingly tightening funding environment, local

public health needs a concrete definition of the minimum capabilities, the costs of delivering these services, and a structured review of funding streams to prioritize mandatory services and infrastructure building. Top Early Action on the Recommendations Upon the release of the report, several public and private organizations committed to advancing its recommendations. It was embraced by the American Public Health Association as the blueprint for the future of public health 21 ; others committed to developing training for Chief Health Strategists 22 or to building bridges between public health and the clinical care system, including payers Community-level uptake and action through these resources could accelerate the impact of Public Health 3. Although funding has stabilized, local health departments continue to face resource challenges from local financing streams, and proposals to reduce federal public health spending are likely to have a major impact at the local level Despite promising advances such as the Big Cities Project, the absence of nonproprietary tools for data, analytics, metrics, and other uses leaves actionable information out of reach for most localities Additionally, the daily challenges of meeting statutory public health responsibilities and a lack of experience and skill prevents most local health leaders from acting as Chief Health Strategists to bring people together across sectors. Finally, the basic foundational structure of local governmental public health may itself be a barrier to efficient and cost-effective coordination at the local level. Top Conclusion The era of Public Health 3. With the Public Health 3. With equity and social determinants of health as guiding principles, every person and every organization can take shared accountability to ensure the conditions in which everyone can be healthy regardless of race, ethnicity, gender identity, sexual orientation, geography, or income level. If successful, such transformation can form the foundation from which we build an equitable health-promoting system “ in which stable, safe, and thriving community is a norm rather than an aberration. The Public Health 3. The challenge now is to institutionalize this expanded approach to community-based public health practice and replicate these triumphs across all communities, for the health of all people. Top Acknowledgments We acknowledge the many communities and leaders who helped inform this work. The article is intended to help inform and stimulate discussion. Top Author Information Corresponding Author: Mortality in the United States, The health consequences of smoking “ 50 years of progress: Accessed July 17, PubMed Health, United States, National Center for Health Statistics; Institute for Health Metrics and Evaluation. Accessed October 17, Community Preventive Services Task Force. The association between income and life expectancy in the United States, “ The 3 buckets of prevention. J Public Health Manag Pract ;22 3: The future of public health. The National Academies Press; An environmental scan of recent initiatives incorporating social determinants in public health. Prev Chronic Dis ; Health and social services expenditures: BMJ Qual Saf ;20

**Chapter 5 : The Evolution of Public Health Regulation**

*Eleanor D. Kinney. Excerpted from: Eleanor D. Kinney, Administrative Law and the Public's Health. The promotion and protection of public health is one of the oldest functions of government -- and certainly one of its earliest regulatory functions.*

A hand pump was located right on Broad Street, and Snow was immediately suspicious. Water samples did not reveal gross contamination, but Snow persisted and began to collect detailed information on where the victims had gotten their drinking water. He obtained the names and the addresses of the first 83 victims who had died by the end of the first week. He went to their homes and learned from relatives that the vast majority of them had obtained their water from the Broad St. He argued that the pump handle should be removed in order to prevent further contamination. The board was not convinced, but agreed to remove the pump handle as a precaution. The epidemic quickly subsided. Ultimately, Snow was able to track down victims, the vast majority of whom lived within walking distance of the pump. It was also noted that there was an extremely low incidence of cholera at a nearby work house and also at the Lion Brewery, and both of these businesses had their own water supply. The workers at another large business used water from the Broad St. The map below shows the location of the pump, and the home or business location of the victims is shown by stacks of small dark marks that are clearly clustered around the pump. This type of map, which marks the location of disease cases, is now referred to as a "spot map. The timing of her death indicated that she had been the first cholera case. The cesspool and the pump well were then excavated, revealing that the cesspool, which was within three feet of the well, was leaking, and the wall of the well was decayed, allowing the contamination from the cesspool to seep in. In retrospect, it appeared that once the child died, there was no further contamination of the well, and the epidemic ended. This graph shows the number of cholera deaths over time. There is an abrupt increase in cholera deaths at the very end of August. Deaths peak on September 2, when there were about deaths, and the cholera death rate gradually declines to near zero over the next three weeks. With knowledge of the incubation period for the disease, the shape of an epidemic curve can sometimes provide clues regarding the source of the epidemic. Cholera has an incubation period of only days, and this graph indicates that new cases occurred over a period of about 10 days. This suggests a "continuous source" epidemic, because new cases continue to occur for more than one incubation period, suggesting an ongoing source of contamination.. In retrospect, Snow made several important contributions to the development of epidemiologic thinking: He proposed a new hypothesis for how cholera was transmitted. He tested this hypothesis systematically by making comparisons between groups of people. He provided evidence for an association between drinking from the Broad St. He argued for an intervention which prevented additional cases removal of the pump handle. The Sanitary Idea In many respects, public health as we think of it today i. However, the circumstances that propelled the development of public health as a discipline are more complex with many contributing factors. First, there was the notion of the importance of the monarchy and the power of the state. The influence and power of the state could be assessed in many ways including commerce and trade, but also by the size of the population and the health and fitness of the working population. This crude notion made the work of John Graunt quite compelling, and the importance attached to "numbering the people" grew. A second factor was the emergence of the Enlightenment in the 18th century, which embraced democracy, citizenship, reason, rationality, and the social value of intelligence the value of information gathering. These ideas provided important underpinnings for public health. In the early s, Jeremy Bentham and his disciples the theoretical radicals developed the philosophy of utilitarianism which provided a theoretic underpinning for health policy and wider social policies. One theme was that the reduction of mortality and improvements in health had an economic value to society. Healthy workers were more able to contribute to the economy of the state. To Bentham the welfare of both the wealthy and the poor could be achieved most efficiently with good government. Yet another factor was the recognition that poor health was a burden that fell disproportionately on the poor. Villerme, a physician in Paris had noticed that mortality rates varied widely among the districts arrondissement of Paris. None of these things correlated. However, when he used tax rates as an indicator of

wealth, Villerme found a striking correlation with mortality rates. The graph below shows the correlation between poverty and mortality rates among different districts arrondissements in Paris found by Villerme. This relationship has persisted for centuries, and it is a powerful predictor of health. He concluded that what was really needed was not more physicians, but civil engineers to provide drainage of streets and to devise more efficient ways of delivering clean water and removing sewage and other noxious substances. It is interesting to note that many of the proponents of the "Sanitary Idea," including Edwin Chadwick shown on the right, were "miasmatists" who clung to the belief that disease was caused by breathing foul vapors. Since sewage and garbage smelled bad, they were associated with disease, so the miasmatists pushed to clean up the environment. And despite the fact that their belief in miasmas would prove to be incorrect, the end result was that many of the sources of infectious disease were removed. Chadwick was instrumental in creating a central public health administration that paved the way for drainage, sewers, garbage disposal, regulation of housing, and regulations regarding nuisances and offensive trades. This "sanitary idea" resulted in remarkable improvements in health and well-being, as illustrated in the graph below, which shows a remarkable decline in mortality from tuberculosis from the mid 18th century until the mid 19th century. Among others, these included: Through their efforts landmark legislation was passed including: In the 1840s The Epidemiologic Society of London was formed, consisting of local physicians, ex-military commanders, and civil servants who presented papers related to public health issues. John Snow presented "The comparative mortality of large towns and rural districts and the causes by which it is influenced". This intersection of statistics, philosophy, and economy sparked a new agenda for social reform. These efforts had an enormous impact. The graph below shows the remarkable decline in mortality from tuberculosis in the United Kingdom from 1800 to 1850. The remarkable decline in mortality from TB and other infectious diseases is believed to have been the result of the many environmental improvements that occurred as a result of the implementation of the "Sanitary Idea. Louis Pasteur late Louis Pasteur was a French biologist and chemist who made enormous contributions to germ theory, to prevention of food spoilage, and to the control of disease. In 1854 Pasteur began studying fermentation in wine and beer and rapidly concluded that microorganisms were responsible. He discovered that some microorganisms require oxygen aerobic organisms, while others reproduce in the absence of oxygen anaerobic. Pasteur pioneered the idea of artificially generating weakened microorganisms as vaccines. Pasteur was able to artificially weaken strains of anthrax and cholera in order to generate vaccines. Pasteur developed vaccines against anthrax in sheep and cholera in chickens. In 1885 he developed a vaccine for rabies by growing it in rabbits and then drying the nerve tissue that had been infected with the virus. This vaccine was successfully used to save the life of a boy who had been bitten by a rabid dog. The US also underwent a rapid transition from a rural, agricultural society to one that was intensely urban and industrial. Inventions such as the cotton gin that promoted agricultural production, but also decreased the need for farm workers, driving many to the cities for work. Economic growth and inventions spawned factories and textile mills in US cities. Seamen often became ill while at sea and often were unable to find adequate health care in port cities. Their health was viewed as essential to the developing country, and a network of marine hospitals, mainly in port cities, was established by Congress in 1794 to care for sick and disabled seamen. Seamen were taxed 20 cents a month in order to raise funds to pay physicians and support the network of hospitals. This tax was abolished in 1800. From 1800 to 1850 funds were raised by a levy on merchant ships, and after funds were allocated by the US Congress. Thomas Welsh, a Harvard College graduate and participant in the Revolutionary War battles at Lexington and Bunker Hill, was appointed as the physician in charge. Paul Revere is named as the first health officer. Benjamin Waterhouse was appointed the physician in charge from 1794. Benjamin Waterhouse introduced smallpox vaccination to the United States. Lemuel Shattuck, a Massachusetts legislator, established the first US system for recording births, deaths and marriages. Largely through his efforts Massachusetts legislation became the model for all the other states in the Union. The report was enthusiastically received by the New England Journal of Medicine, but the 50 recommendations in the report were otherwise ignored. It became national in scope and military in outlook and organization. Medical officers, called surgeons, were required to pass entrance examinations and wear uniforms. In 1800, when the Commissioned Corps was formally recognized by legislative action, the medical officers were given titles and pay corresponding to Army and Navy grades. Physicians

who passed the examinations were appointed to the general service, rather than to a particular hospital, and were assigned wherever needed. The goal was to create a professional, mobile, health corps, free as possible from political favoritism and patronage, and able to deal with the new health needs of a rapidly growing and industrializing nation. They killed many people, spread panic and fear, disrupted government, and caused Congress to enact laws to stop their importation and spread. As a result of these new laws, the functions of the MHS were expanded greatly beyond the medical relief of the sick seamen to include the supervision of national quarantine ship inspection and disinfection, the medical inspection of immigrants, the prevention of interstate spread of disease, and general investigations in the field of public health, such as that of yellow fever epidemics. The laboratory later moved to Washington, D. The video below is a segment from a PBS documentary on public health. This particular segment focuses on events at the dawn of the 20th century when bubonic plague threatened San Francisco. Note the futile and inappropriate use of quarantine to deal with the threat of plague. The last section of the clip describes a broad array of public health interventions that eventually emerged. [Link to transcript of the video](#) The Immigration Act of 1892 required that all immigrants entering the US be given a health examination by PHS physicians. The law stipulated the exclusion of "all idiots, insane persons, paupers or persons likely to become public charges, persons suffering from a loathsome or dangerous contagious disease," and criminals. Some estimates indicate that HIV was transmitted from monkeys to humans as early as 1900, but was either unrecognized or failed to initiate human to human transmission until later. The legislation required the Surgeon General to organize conferences of local and national health officials in order to coordinate state and national public health activities. They also passed the Food and Drugs Act. The law forbade adulteration and misbranding of foods, drinks, and drugs in interstate commerce, but contained few specific requirements to insure compliance. Investigations in the garment making industry, as illustrated by these women making flowers, revealed unsanitary conditions and an excessive rate of tuberculosis. Other studies were done of silicosis among miners, sanitation and working conditions in the steel industry, lead poisoning in the pottery industry, and radiation hazards in the radium dial painting industry.

**Chapter 6 : Public Health Surveillance in the United States: Evolution and Challenges\***

*Evolution of public health 1. It is estimated that billion airline passengers travelled in (1). This means that diseases now have the potential to spread.*

Persons using assistive technology might not be able to fully access information in this file. For assistance, please send e-mail to: Type Accommodation and the title of the report in the subject line of e-mail. Public Health Surveillance in the United States: Thacker, MD1, Judith R. Qualters, PhD2, Lisa M. Surgeon General, " In its landmark report, a committee of the Institute of Medicine highlighted assessment as one of the three core functions of public health along with policy development and assurance 1. The committee recommended that every public health agency regularly and systematically collect, assemble, analyze, and make available information on the health of the community, including statistics on health status, community health needs, and epidemiologic and other studies of health problems. Public health surveillance, often called the cornerstone of public health practice, is an essential element of the assessment function. Public health surveillance is the systematic, ongoing collection, management, analysis, and interpretation of data followed by the dissemination of these data to public health programs to stimulate public health action 2. The best recognized use of public health surveillance data is the detection of epidemics and other health problems in a community, but there are many other uses that are critical to public health practice. These data are used to estimate the scope and magnitude of a problem, including the geographic and demographic distribution of health events that will facilitate public health planning. Surveillance data also can be used to detect changes in health practices, monitor changes in infectious and environmental agents, evaluate control measures, and describe the natural history of a health event in a community that will generate hypotheses and stimulate applied research 3. In short, public health surveillance is the foundation for decision making in public health and empowers decision makers to lead and manage more effectively by providing timely, useful evidence 4. In the United States, public health surveillance has focused historically on infectious diseases. Basic elements of surveillance were found in Rhode Island in , when the colony passed an act requiring tavern keepers to report contagious diseases among their patrons. Two years later, the colony passed a broader law requiring the reporting of smallpox, yellow fever, and cholera 5. Shattuck recommended a decennial census; standardization of nomenclature of causes of disease and death; and a collection of health data by age, sex, occupation, socioeconomic level, and locality. He applied these concepts to program activities in the areas of vaccination, school health, smoking, and alcohol abuse and is credited with introducing related concepts into the teaching of preventive medicine 5. Activities associated with disease at the national level began in the United States in when mortality statistics based on death registration and the decennial census were first published by the federal government for the entire country. Systematic reporting of disease in the United States began in , when the Massachusetts State Board of Health instituted a voluntary plan for physicians to provide weekly reports on prevalent diseases, using a standard postcard-reporting format. In , Congress authorized the forerunner of the U. Public Health Service PHS to collect morbidity data for use in quarantine measures against such pestilential diseases as cholera, smallpox, plague, and yellow fever 5. In , Michigan became the first jurisdiction to require the reporting of specific infectious diseases. Also in , a law was enacted to provide for collecting information each week from state and municipal authorities throughout the United States. By , all state and municipal laws required notification i. In , PHS personnel were appointed as collaborating epidemiologists to serve in state health departments and to telegraph weekly disease reports to PHS 5. In , following markedly increased reporting associated with the severe poliomyelitis epidemic in and the influenza pandemic in " , all states began participating in national morbidity reporting. Mortality data related to pneumonia and influenza were reported from 50 cities beginning in in the throes of a devastating pandemic, and that system has expanded and continues to the present to include cities in A national health survey of U. After a PHS study led to the revision of morbidity reporting procedures, the National Office of Vital Statistics assumed the responsibility for this activity. In , weekly statistics that had appeared for several years in Public Health Reports began being published by the National Office of Vital Statistics. In , mortality data were added

to the publication that was the forerunner of MMWR 5. Alexander Langmuir, the first chief epidemiologist at CDC, is recognized as the founder of public health surveillance, as it is known today, and his seminal publication describes the application of surveillance principles to populations rather than individual patients with a communicable disease 6. Langmuir worked with like-minded colleagues at the World Health Organization WHO to organize the World Health Assembly session on National and Global Surveillance of Communicable Diseases, and epidemiologic surveillance became a global practice 7. In 1951, Langmuir established the Epidemic Intelligence Service EIS, which provided a unique approach to training men and women in applied epidemiology 8. The program not only provided the epidemiologists for the polio investigation but has trained approximately 3,000 epidemiologists during the past six decades in the principles and practice of public health surveillance. It is now emulated as Field Epidemiology Training Programs in approximately 30 countries around the world 9. Langmuir also encouraged the organization of the state and territorial epidemiologists in 1951, and the Council of State and Territorial Epidemiologists now speaks effectively for the practice of applied epidemiology in the states. Other legacies of the Langmuir influence include surveillance programs in abortion, birth defects, and other crucial areas of reproductive health. However, a single event in 1955 first put Langmuir, CDC, and public health surveillance on the map. The inactivated polio vaccine had become available in the spring of that year. However, soon after that national vaccine program began, cases of polio were linked to the vaccine, and the U.S. Surgeon General shut down the program. In a matter of days, Langmuir and his team of EIS officers set up a national surveillance system with daily reports from all the states and territories that were sent to the Surgeon General. Officers were sent to the field and within weeks, the source of the problem was detected and identified at a single manufacturer. As a result, the Surgeon General was able to reassure the public and restart the vaccination program within months. In the early 1950s, a concerted effort at CDC focused on the practice of surveillance, and in 1958, an internal report included the following revised definition of epidemiologic surveillance: The ongoing, systematic collection, analysis, and interpretation of health data essential to the planning, implementation, and evaluation of public health practice, closely integrated with the timely dissemination of these data to those who need to know. The final link in the surveillance chain is the application of the data to prevention and control and includes a functional capacity for data collection, analysis, and dissemination linked to public health programs. The internal report was directed at CDC but also included information and recommendations. A subsequent paper described the confusion engendered by use of the qualifying word "epidemiologic" to describe surveillance and argued for the use of the broader term "public health" instead. That paper also carefully defined the boundaries of public health surveillance, especially in terms of research and practice. Current and Future Challenges Given the proliferation of data systems, developments in preparedness and emergency response, rapid maturation and dissemination of the information sciences, and new tools and technologies, the time has come to reassess what is meant by public health surveillance. Division directors, members of the Surveillance Science Advisory Group SurvSAG, and scientists on the science distribution list were invited to share their opinions. A web-based surveillance survey was established in the spring of 2002. A total of 1,000 persons responded to the survey. The question is where does the agency go from this point? Only one third of CDC survey respondents agreed that the agency analyzes and disseminates surveillance data in a timely fashion, and only one in five reported that CDC surveillance systems are flexible and readily able to adopt new methods in a rapidly changing environment. In short, the agency and its scientists and managers must adapt and transform its surveillance systems to meet the public health practice needs of today and tomorrow. Buckeridge, MD, PhD, McGill University 14 To advance public health surveillance in the 21st century, at least six major concerns must be addressed by the public health community: Lexicon The first concern is basic and deals with the lexicon that practitioners use, definitions, and the conceptual framework that is understood by those in public health and elsewhere who need to know. Terms used to modify surveillance are numerous, starting decades ago with "disease," "epidemiologic," "active," "passive," and "sentinel" and evolving to "integrated" and "syndromic" in recent years. To complicate the lexicon further, every program adds a surveillance system modifier. Each new system will be designed with a different meaning and specialized framework. Most recently, the term "biosurveillance" was mandated by a Presidential Directive Homeland Security Presidential Directive 21 [

http: These differences neither lead to clarity of purpose nor facilitate understanding. A conceptual framework for health knowledge is a step toward increased understanding Figure 1. Knowledge of the health of and health risks in a community or population depends on certain inputs in addition to public health surveillance, including research studies that produce generalizable knowledge, health surveys, registries of vital events e. However, a conceptual framework for public health surveillance examines many of the same data systems Figure 2. Global Surveillance Needs CDC is an agency with global reach, and the agency and the world must collaborate for global public health surveillance. WHO has developed a global framework for infectious disease surveillance, which includes formal collaborators e. Clearly, through expanding global efforts in such vertical programs as global immunization, the acquired immunodeficiency syndrome programs, and the Field Epidemiology Training Programs, a strong effort should be directed towards public health surveillance. Information Science and Technology The roles of surveillance in information sciences and emerging technologies is possibly the most pressing issue that confronts the agency and its partners. At the same time, virtually everyone in public health acknowledges that the progress in informatics, including information technology, has paved the way for exciting opportunities to practice public health surveillance more efficiently and effectively. Data quality can be improved and information made accessible in a more timely manner, especially through use of integrated electronic health records. Through improved tools and better strategies, the opportunity exists to link to important data not available traditionally in public health. For CDC and its partners to take advantage of these opportunities, development and use of standards should be improved to facilitate data exchange. This will depend on more effective policies to enable partnering with state and local health departments as well as other federal agencies engaging in public health surveillance e. This will require substantial time, resources, effort, and commitment. However, to be useful, technology must have a purpose; user requirements must have a higher priority than solutions that are technologically exciting An even greater existing and future need exists for workforce development in state and local health departments and internationally 16, Despite the increasing efficiencies that automation might bring to surveillance, even in the most sophisticated systems, human input will remain large and consequential Figure 4. Data Access and Use A fifth major issue in advancing public health surveillance relates to accessing and using data. The opportunities are great. The future system is likely to consolidate information in health information exchanges that allow providers and institutions to share patient data among themselves and with public health agencies without having to turn over the data to the participating institutions. Nationally, an electronic health grid could include consumers, providers, and public health agencies at all levels participating in such data sharing for public health surveillance Figure 5. In this grid, data can be shared without violating confidentiality and the "owner" remains the responsible steward for ensuring this and other factors e. Data Management, Storage and Analysis The last concern relates to analytical challenges, and the most urgent of these challenges relates to data base management. With the increasing availability of clinical, insurer, social, and environmental data sets, the immediate challenge is to organize the data into a format that is accessible and useful for epidemiologists, statisticians, and others who might be able to use these data for public health surveillance. Until these data are available in a useable format, interpretation by subject matter experts is impossible and the data will not be useful. Clearly, there remains much to do. Conclusion In summary, the challenge remains to take this opportunity to build on the existing organizational resources and common interests to strengthen public health surveillance. This consultation offers a tremendous opportunity to inform and shape the direction of the new organizational unit to be developed under the new Deputy Director for Surveillance, Epidemiology, and Laboratory Services. References Institute of Medicine. The future of public health. National Academy Press; Oxford University Press; Disease control priorities for developing countries.

**Chapter 7 : The Evolution of Public Health | Academy Health**

*Discuss some of the major historical figures and events that played a role in the evolution of public health and epidemiology. idea that the public's health was a.*

Diseases have provided the stimulus for much of the activity in public health. In a handful of instances, overcoming a disease has removed a barrier to commerce or another desired goal. For example, overcoming yellow fever facilitated construction of the Panama Canal in the early s, and finding a cure for scurvy allowed mariners to make longer voyages of exploration. It is important to note that advances in public health usually have impacts on people throughout the world and that public health is an international effort. Public health researchers are focusing on heart disease and type 2 diabetes in response to contemporary epidemics. Efforts to understand and cure diseases have had the unintended consequences of developing tools. The science of epidemiology emerged from efforts to stop cholera in England. In addition, forces other than disease have affected public health. Examples include the sanitary movement that began in England and was quickly duplicated in a new England mids , social concerns that reformers used to promote mandatory schooling for children as a way to stop child labor in factories mids , and concern for wholesome food late s. A small number of diseases have had a disproportionate impact on the history of public health throughout the world. Smallpox is noteworthy for its mortality rate and because it is the only disease that has been eradicated. Influenza became a human disease after individuals domesticated pigs. Because influenza mutates so readily, it continues to challenge public health planners. In periodic pandemics, influenza kills many people. Tuberculosis, like influenza, migrated to humans after cattle were domesticated. TB is a concern for public health for at least two reasons. Experts estimate that one person in three carries the TB pathogen. Because the length of time required to treat TB is long months , most strains of TB have developed drug resistance. The smallpox vaccine provided the means for eradication, whereas influenza mutates so readily that the vaccine must be frequently revised. A vaccine for TB is also available, because it is not effective in all recipients, it is not used in the United States as a matter of public health policy.

**General Overviews** Several books have been written about the history of public health. Each emphasizes a different aspect of public health, reflecting the background and interests of the authors. Duffy was the first historian to analyze the work of sanitarians. The history of public health in Rosen is comprehensive through its original publication date ; the expanded edition features a new introduction by Elizabeth Fee. Porter provides a much longer historical time frame that is international in scope. Schneider and Lilienfeld is a comprehensive but brief history of public health, whereas Ravenel is a history of public health in the United States that has been republished. The latter was complete through the original date of publication in A history of American public health. These encompass water quality, safe disposal of wastes, air quality, and environmental cleanliness. Fee, Elizabeth, Theodore M. Brown, Jan Lazarus, and Paul Atheerman. American Journal of Public Health The author provides biographical material about individuals that have had an impact on the history of public health. The writing is outstanding. As of , the series continues. Available online for purchase or by subscription. He also notes that the PHS has played a role in most health initiatives in which the United States has become involved. Although well known for its epidemiological studies, the PHS has conducted or collaborated with research on diseases and treatments. Throughout is history, the PHS has been an advocate for improving health for people throughout the world.

**Health, civilization and the state: A history of public health from ancient to modern times.** This history of public health covers a longer time span, beginning before public health was formally recognized. The author is an historian with training in public health. The coverage is reasonably complete. A half century of public health. The beginning reflects the advent of a uniformed professional service employing individuals based on their training, credentials, and examinations. The last major episode in the book is a description of the influenza pandemic of " and the role assumed by the Public Health Service. The book was originally published by the American Public Health Association in A history of public health, expanded ed. It traces the history of public health by focusing on epidemiology, disease surveillance, and disease eradication. The book was originally published in Elizabeth Fee, Chief of the History of Medicine Division for the

National Library of Medicine, wrote an introductory commentary for this expanded edition. Schneider, Dona, and David E. The development of a discipline, from the age of Hippocrates to the Progressive Era. They succeed but at the cost of brevity for many interesting eras in public health. In general, the coverage in the book is reasonably balanced. Major problems in the history of American medicine and public health: Major Problems in American History Series.

### Chapter 8 : Public Health Timeline | Roots of Health Inequity | NACCHO

*How Public Health Has Evolved In a statement introducing new engagement policies, the World Health Organization said, "The global public health landscape has changed dramatically since WHO was established in "*

The concept of redefining public health is clearly not a new one – the Affordable Care Act ACA included significant provisions to promote prevention both clinical preventive services and community-based approaches , population health, and disparity reductions. However, the panelists contributed some fresh ideas and perspectives challenging the status quo. As Jeff Levi noted, the ACA suggests that there is increased recognition among policymakers that programs such as Community Transformation Grants , policy, and systems change can create environments where the healthy choice is the easy choice. Speaking from the community level, Bechara Choucair said the common goal in the city of Chicago is to improve the health of the population. To do that, Choucair developed Healthy Chicago , an agenda for the city, which Chicago Mayor Rahm Emanuel promised to implement within days. Choucair described the plan as a local tool to translate the national prevention strategy. Among the tasks of identifying priorities and strategies e. Moving from the local level to the state level, Paul Halverson outlined the major roles for public health: He cautioned against a perfect storm on the horizon: Halverson urged policymakers to preserve programs that prevent, prepare, and protect, noting particular concern about underserved populations that public health traditionally serves. Presenting a federal perspective, Jim Hester, acting director of the Population Health Unit in the Center for Medicare and Medicaid Innovation CMMI , presented the federal perspective, suggesting that achieving population health cannot be achieved by traditional public health entities alone. Hester also called for broad stakeholder engagement to mobilize communities, suggesting that CMS – serving as a facilitator – can support community-level infrastructure through its efforts. In the implementation of payment reform, Hester suggested that introducing the business model concept i. Finally, Eduardo Sanchez from Blue Cross Blue Shield of Texas, a former state health official, admonished policymakers for continually making public health the most invisible, under-resourced, and under-appreciated sector of the health system. He posed several questions – What are the functions of public health? Who should perform them? Who is responsible for public safety? Are public health competencies the same as population health competencies? Such organizations would redefine public health by integrating community, clinical, governmental, non-governmental, and provider services into a single health system that is inter-dependent and mutually responsible for population health. Will traditional public health become obsolete? The panelists generally agreed that an evolution in programming, performance, and measurement is occurring in governmental public health, at least, and is essential for enabling it to align with health system transformation. Feel free to share your ideas with us. A video recording of this session is available to NHPC conference attendees on our website.

*The history of public health is dynamic and being generated on a constant basis. Diseases have provided the stimulus for much of the activity in public health. In a handful of instances, overcoming a disease has removed a barrier to commerce or another desired goal. For example, overcoming yellow.*

For example, in and , two of the largest health care systems in southeastern Michigan i. These closures result in additional strains on remaining hospitals, creating even greater stresses for an already fragile system. While hospital closings and mergers create many issues and concerns, both the declining number of beds and the declining number of admissions is related to a significant decline in the number of in-patient surgeries. By , the respective percentages of in-patient and out-patient surgeries were 42 percent and 58 percent. While the cost savings to insurers is real, although difficult to calculate, the impact on formal and informal after-care services and in home health care is equally difficult to estimate. Now many more patients return home on the same day of their surgeries. For individuals with familial and social supports this reality may not be as challenging as for patients who live alone and have little if any family or social network on which to depend. It is calculated by the Institute for the Future that 40 percent of sickness is related to life style and health behavior choices. Clearly education and early case finding are paramount. Prevention has proven effective for individuals or families who have made life style and health behavior changes. However, for many patients, changing to a managed care program, or switching between managed care programs, changes and limits the choices of providers to those on preferred panels. In many plans, if a patient wants to see a provider with whom he or she is familiar, but who is not included as a provider in their "new" plan, an option may exist for obtaining "out of network" services, but it almost always comes with a significantly higher out-of pocket co-pay. Some employers are covering fewer persons. Some are passing the increases on to employees and requiring higher levels of employee contribution. And some employers are just doing away with health care benefits all together. While reductions in the "value" of an existing plan adversely impact employees, the ability to contain insurance costs helps for more people to at least remain covered in some fashionâ€”even if their coverage is only for very serious illnesses. The number of people in the population without health care has increased. Currently it is estimated that 42 million people, or 16 percent of the population, is without any form of health care insurance. The Institute for the Future projected that the number of uninsured will reach 48 billion by While this statistic usually rises during times of recession and decreases in times of expansion, the number of uninsured has increased even during the expansion of the late s and early s. The Institute for the Future also reported that the number of non-elderly persons covered by employment related health insurance dropped from In Michigan, for example, the Access to Health Care Coalition reported that between and the percent of residents without health insurance decreased from However, given the relationship between the economy and the availability of health insurance, this decrease appears temporary. An increase is expected in the number of uninsured, especially in light of the economic downturn of While not all eligible children have been enrolled in these programs, a considerable number are not eligible based on family income exceeding a percentage of the Federal Poverty Level FPL. Mirroring national trends, Michigan is struggling with rising unemployment, a budget deficit, and growing demands for health services and insurance coverage. Often the underinsured and uninsured use the emergency room, the most expensive form of health care service, for any illness. Weiss and Lonquist reported that uninsured emergency room care visits totaled 93 million in In approximately half of the cases, urgent care was not needed, nor did the individuals seeking care have a regular physician or other option for gaining access to health care services. Their observations are summarized below: The first group represents 38 percent of the population. It consists of empowered consumers with considerable discretionary income, who are well educated and use technology, including the Internet,, to get information about their health. Usually they are able to make choices in their plans and coverages. They are able to educate themselves about health behaviors as well as health care issues and concerns. They are likely to engage in shared decision making with physicians and other allied health professionals. Their primary concern is benefit security and the issue of value as plans become more restrictive. People included in this

group include those with unstable job security, both employers and employees, and also early retirees who are waiting for Medicare to begin. Though they have limited access to information, they are likely to focus on learning more about plans and coverages. They are also likely to become more empowered due to some of the voluntary associations to which they belong who focus on problems in the health care system. The third group represents 28 percent of the population whose main concern is access to health care. It includes people under 65 who are uninsured as well as children who have no coverage or are covered by Medicaid. Access to care for this tier is severely limited because the safety net has frayed. People in this tier depend on the limited resources and strained generosity of safety net funding streams and providers. While some are covered by Medicaid, this plan offers only limited choices and benefits depend on funding which often competes with prisons and schools. Generally poor and lacking education, most people in this tier have serious trouble overcoming the information gap between patients and providers. They may be largely ineffective in changing legislation or the structure of health care. If the problem of access is to be solved, it will need to be driven from the top two tiers. Trust however is another issue. Survey results indicated that only 30 percent of patients in managed care plans trusted that their plan would do the right thing for their care, while 55 percent in traditional plans trusted their plans. Also, fewer than 30 percent of patients trusted their HMOs to control costs without adversely affecting quality of care. Dranove, Managed care has a long way to go in persuading the public that managed care is actually care management, although they frequently advertise high quality at a reasonable cost. What Can Be Done? All of this information may be overwhelming, although it represents only a brief overview of the issues and concerns related to our evolving health care system. Nevertheless, there are several practical steps that we can take both individually and collectively: What Does the Future Hold? While trends can be traced and often predicted, there are a significant number of "wild cards" in the future that make the evolution of the American health care system uncertain and volatile. Some of these, according to the Institute for the Future, include Demographic trends and increasing numbers of elderly people in the population; Reimbursement rates for home health care services; new cost containment and cost-shifting strategies; Increasing technology; Economic recessions or expansions; legal and mandatory restrictions on managed care plans; Malpractice insurance, settlements, and jury awards; universal health insurance legislation; and Switching from a private and public insurance model to a national health insurance system. One solution is to learn from other health care delivery models. Perhaps we could benefit both by learning more about other systems especially from countries with high levels of access, and also by beginning to advocate for needed changes in the American health care system. Indeed, the greatest changes may come about as consumers make their concerns known to providers and to state and federal policy makers. It would also make strategic and tactical sense for providers to partner with consumers and policy makers to bring about needed changes. Given our current reality, the focus of change will need to address both access and affordability. References Access to Health Care Coalition Improving access to health care in Michigan. Blue Cross Blue Shield of Michigan. Retrieved March 1, from <http://www.bcbsmi.com>: A comprehensive summary of U. A clinical approach 2nd ed. The evolution of American health care. Employer-Sponsored Health Benefits Institute for the Future Health and health care The forecast, the challenge. National Survey of Health Insurance. National health spending trends in Health Affairs, 17, The sociology of health, healing, and illness 3rd ed. Upper Saddle River, NJ: For more information please contact [mplib-help@umich.edu](mailto:mplib-help@umich.edu).