



Old State House, original site of the Arkansas Department of Health

100 YEARS OF SERVICE



Arkansas Department of Health
1913 – 2013

100 YEARS OF SERVICE



Current Arkansas Department of Health Location

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The team of Department writers who compiled 100 Years of Service wishes to thank the many past and present employees who generously provided information, materials, and insight.

Cover Photo:

Reprinted with permission from the Old State House Museum. The Old State House was the original site of the permanent Arkansas State Board of Health in 1913.

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A MESSAGE FROM THE DIRECTOR



Paul K. Halverson, DrPH, FACHE
Director and State Health Officer

Dear Arkansans,

The Arkansas Department of Health traces its history back 100 years to February 25, 1913, when the first permanent state Board of Health was signed into law by Governor Joe T. Robinson. Over the last 100 years, public health advancements – including controlling contagious diseases, immunizing children and adults, preventing infant deaths, providing good prenatal care to expectant moms, assuring safer food and drinking water – have added 25 years to the life expectancy in the United States.

When you look back at the health of Arkansans prior to 1913, you see diseases and living conditions that held average life expectancies to under 50 years. Unsafe drinking water and outdoor privies wreaked havoc on the health of our citizens. We had no statewide system in place to register a citizen's birth or death. Even though Arkansas

ranks at the bottom of many health rankings, we have made improvements in many areas.

Just during my nearly eight years as health director, we've seen incredible progress like the passage of the Clean Indoor Air Act. Today clean indoor air is the rule in hospitals, public buildings, businesses, restaurants and even most bars.

Only three years ago, Arkansas was one of three states in the nation without a trauma system and the only state without a designated trauma center. Today, we have 62 designated trauma centers with that number expected to grow to more than 70 during 2013, a statewide trauma communications system, an operational Trauma Registry, a robust state and regional Trauma Advisory Council system, a Trauma Image Repository for the electronic transfer of images, an education foundation to increase trauma knowledge to various providers, an increasingly strong injury prevention program, and several other initiatives to improve the care of trauma patients in Arkansas.

I've also seen much advancement in the race to stem the tide of the obesity epidemic. We have a serious problem on our hands – our children may be the first generation in a long time that potentially could have a shorter life span than their parents. But programs like Coordinated School Health and others are making a difference, slowly but surely. In 2008, the UAMS College of Public Health released a report that showed an increase in positive attitudes for children and parents regarding healthy eating and physical activity, as well as a decrease in the consumption of junk food at home and at school.

The Health Department is a vital part of the emergency response efforts when a disaster strikes. As a result of the Preparedness and Response Act of 2002 and other federal funding for emergency planning and assessment, we can now boast of laboratory readiness, surveillance and reporting improvements, education and training and communication. With this funding, the Health

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Department established the Public Health Preparedness and Emergency Response Branch and an emergency operations center that can link with the Centers for Disease Control and Prevention in public health emergencies like the flu pandemic in 2009.

We have a state-of-the-art public health laboratory that provides laboratory analysis and reporting of clinical and environmental samples, alcohol testing, microbiological testing of water for private individuals, neonatal screening of newborns, identification of organisms referred from clinical laboratories, certification of municipal water laboratories for microbiological testing, FDA compliance certification of milk industry dairy laboratories, and unknown biological and chemical substance testing. Of great importance, the 5,000-square-foot Level 3 bio-safety lab has special rooms constructed and ventilated so that laboratorians can safely work with some of the most dangerous microbes known.

In my time as health director, I have seen the improvement of community fluoridation of water. Act 197 was implemented in 2011 guaranteeing access to fluoridated water for all on water systems serving more than 5,000 people. This is so important because studies show that fluoridation reduces tooth decay by 20 to 40 percent. Poor dental care can lead to poor overall health, so fluoridation is a health strategy that fits well with Arkansas's focus on a healthier future.

I am proud of the fact that we have banned "designer drugs" like K-2 and that we are working to implement a prescription drug monitoring program.

And, finally, I hope to see the Arkansas Department of Health become an accredited health department, judged by our peers and held up to the best practices of health departments nationwide. We are currently working on accreditation for the agency and for our local health units statewide.

It's successes like these that make me encouraged about the direction our state is headed and the accomplishments we will see over the course of the next 100 years. I can only imagine how much healthier our citizens will be and how many additional years will be added to their lives. It has been such an honor to work alongside the many dedicated public health professionals who are so passionate about making Arkansas a healthier place to live. I am so proud to be a part of this statewide observance of 100 years of public health accomplishments in Arkansas!

Thank you,

A handwritten signature in blue ink that reads "Paul K. Halverson". The signature is fluid and cursive, with a large initial "P" and "H".

Paul K. Halverson, DrPH, FACHE
Director and State Health Officer

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PREFACE

100 Years of Service reports the significant activities of the Arkansas Department of Health and the advances in public health from the time the first permanent Board of Health was established in 1913. Many people have recorded numerous accounts of these events and programs previously. Gratefully, we have relied upon their work as sources for much of the included content. We have also researched original Department files, program descriptions and reports. In addition, we have included first-hand accounts from a number of employees who were participants in these activities.

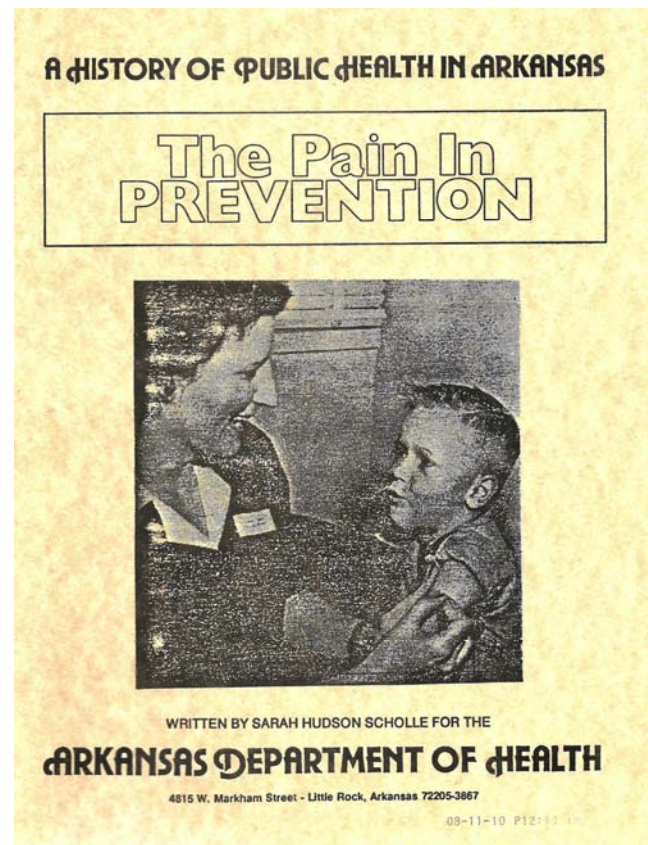
Impetus for composition of the *100 Years of Service* is a strong desire for the Department to preserve and document its history. *The Pain in Prevention* – another comprehensive history commissioned by the Department in the 1990s – tells the story of public health in Arkansas up to that time. Writers and researchers of this current publication not only desire to adequately reflect the events and program activities in the years since, but also to offer further context available to them through some 20-plus additional years of perspective.

This booklet will be valuable to historians and health officials who want to understand the ways in which public health services have evolved and expanded in Arkansas. In addition, *100 Years of Service* may be useful to policymakers and planners who want to review past efforts while preparing for the future.

Content has been organized around what the authors deemed were pivotal public health services that have had the greatest impact on the health and lives of Arkansas's residents since 1913.

As with any attempt to fully reflect the contributions made by hundreds upon hundreds of public health professionals during a century of service, this account may overlook some program or event that others feel should have been included. If so, this has occurred inadvertently and we regret any such oversight.

The team of Department writers who compiled *100 Years of Service* wishes to thank the many employees throughout our agency who generously provided information, materials, and insight. In addition, special acknowledgement is due to members of the agency-wide 100 Years Work Group who contributed mightily towards the realization of this publication, as well as other activities which will communicate and applaud the Department's 100 years of service in the state.



The Pain in Prevention written by Sarah Hudson Scholle for the Arkansas Department of Health, in 1990 (Arkansas Department of Health)

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INTRODUCTION

February 25, 1913, marks the 100-year anniversary of the Arkansas Department of Health, when Governor Joe T. Robinson signed Act 96 of 1913. Over the last 100 years, public health advancements, including disease control, immunizations, maternal and child health, sanitation, and safer food and drinking water, have been credited with adding 25 years to the life expectancy in the United States.

The beginning of the 20th century, both nationally and locally, marked a time in our history where awareness of disease control was at an all-time high. At that time, advances in laboratory science and epidemiology provided evidence and awareness that diseases were specific and often the result of individuals or their environment. Newly developing state and local health agencies, in conjunction with health department laboratories, began working to control sources of disease transmission.

With improvements in immunizations and sanitation, death rates for diseases like diphtheria, typhoid, and yellow fever declined dramatically by the 1920s. During this same time, a major public health shift occurred in which the promotion of overall health was equally as important as the prevention of diseases. The concept of public health as disease prevention was now moving towards clinical care and education. In addition, participation and partnerships between state and local health agencies and the federal government developed to further promote health activities.

In more recent years, the Health Department has worked to enact laws and adopt regulations that restrict smoking, establish a comprehensive trauma system, impose graduated driver licensing, expand water fluoridation, expand newborn screenings, and create a statewide influenza immunization program. Future public health activities will have to continue to address obesity, chronic disease, teen pregnancy, oral health, and infant mortality.

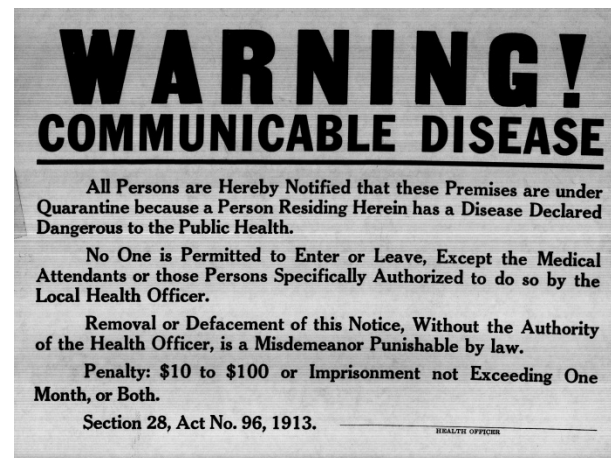
Across social, economic, and political spectrums, the quality of life of all Arkansans is a direct result of public health efforts.

What follows is a brief look at key public health accomplishments of the past 100 years.

INFECTIOUS DISEASE

As formidable as any other threat to the pioneers in the new Arkansas Territory was the threat of infectious disease. Smallpox, yellow fever, measles, and malaria epidemics had nearly wiped out the Native American population in Arkansas and the rest of the country before the Civil War.

By the dawn of the 20th century, Arkansans still faced the prospect of deadly illness that held average life expectancies to under 50 years. However, many significant advances in public health were made as a result of these fatal diseases.



As early as 1933, the State Board of Health, in its rules and regulations, acknowledged the importance of identifying, monitoring, treating, and preventing diseases. The list of “named diseases declared to be dangerous to public health” included anthrax, cholera, chicken pox, diphtheria, meningitis, gonorrhea, hookworm, influenza, leprosy, malaria, measles, typhoid fever, pellagra, plague, smallpox, syphilis, tuberculosis, whooping cough, and yellow fever.

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Every case of infectious or communicable disease is primarily the source of infection from which other cases may directly or indirectly develop, and efficient measures taken to prevent the spread of infection from them will accomplish the best results. The early recognition and immediate notification of the communicable diseases by the physician in attendance is the foundation upon which public health work is based. It is the function of the health officer to enforce measures for prevention and spread of infection, and this should be done by the co-operation of the local health officer with the attending physician and citizens.

Hookworm Fosters Permanent Board of Health

The Arkansas Board of Health was first granted official status by Governor William R. Miller in 1879 and legal authority by the state legislature and Governor Thomas J. Churchill in 1881. However, waning public interest and a false sense of public security saw rise and fall of state and county health boards. It wasn't until 1913 that the Arkansas Board of Health became a permanent fixture in the state.



The Kickapoo Indian Medicine Company was the largest traveling medicine show in the late 1800s to early 1900s. (The Kickapoo Indian Medicine Company)

Hookworm, a tiny roundworm is transmitted through the skin from the soil and caused weakness and vulnerability to other diseases. The main problem caused was anemia. It had become a prevalent infection in the South, where sanitary living conditions and access to shoes were minimal. While treatment was easy to come by, it was often determined by what was affordable, and included things such as goosefoot, wild sage, tobacco, turpentine, coal oil, and even Indian herbal remedies like Kickapoo Worm Killer. None of these remedies were effective.

John D. Rockefeller, Sr., industrialist and philanthropist, believed it was possible to prevent the disease, so, along with his Foundation for Human Welfare, he awarded a \$1 million grant to the southern states and the Sanitary Commission for the Eradication of Hookworm Disease. The Commission set three conditions for a state to qualify for funding: the state



John D. Rockefeller, left, who established the Rockefeller Sanitary Commission in 1909. (Library of Congress)

must have a publicly funded board of health to work on sanitation and water purification, a bureau of vital statistics to help provide measurement tools, and a fully functioning public health laboratory.

The Hookworm Eradication Program provided for testing and treatment. Public health workers were sent into the field to educate communities about hookworm, perform diagnostic tests, and provide Epsom salt and thymol treatment for those who tested positive. Over the next year, the results were dramatic and set the tone for many education and outreach campaigns to come.

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The first significant challenge was to convince an initially hostile public that it had a problem and that poor sanitary conditions were the cause. The new Board of Health used more than 190,000 pieces of educational material and 287 public lectures to help educate the public. City and county boards in 43 counties conducted 54,465 examinations and provided treatment for 10,393 individuals.

It was during this time that "privy inspectors" came into being. Prior to this time in many rural areas, people defecated at random on the grounds near their homes. Sanitation staff worked regularly to keep the privies clean and to make sure they met the new standards. Easy access to privies was essential for an effective maintenance program, resulting in the construction of our first alleyways, many of which are still visible today.

The results were remarkable: children, once sick and frail, sprang back to good health and were restored to a normal weight. The state received positive national attention for its work, and methods used in the field in Arkansas were applied in other parts of the South where public health workers continued to fight the disease.

The Crossett Malaria Experiment

During the time of the Hookworm Eradication Program, science had finally proven that the mosquito was the carrier for malaria. In 1882, Dr. Zaphney Orto of Walnut Ridge in Lawrence County began his investigations of malaria. Dr. Orto believed there was a direct relation between the disease and mosquitoes. Though he would go on to serve as a surgeon in the Spanish-American War, Zaphney continued his research, writing *A Practical Study of Malaria* in 1909.

In 1915, as the connection between malaria and mosquitoes was recognized, an outbreak of malaria occurred in Crossett, Arkansas. Local doctors reported that over 60 percent of the illnesses they treated were cases of malaria. The disease prevalence within the state made Arkansas an ideal location for testing mosquito elimination programs.

STATE OF ARKANSAS
BUREAU OF VITAL STATISTICS
CERTIFICATE OF DEATH

County: Hotwell
Township: Hotwell
City: Hotwell
Full Name: Henrietta Clark
Age: 76
Sex: Female
Race: White
Occupation: farmer
Date of Birth: 1840
Place of Birth: Miss.
Date of Death: July 2, 1914
Cause of Death: Malarial fever

The first recorded death certificate in Arkansas. Ms. Clark died of malarial fever in 1914. (Arkansas Department of Health)

The state's new Board of Health, along with the Rockefeller Commission and the U.S. Public Health Service, set out to completely rid the town of malaria by eliminating or controlling the breeding sites of mosquitos. Gangs of workers under the direction of a sanitary inspector began to methodically mark all the locations of standing water and sources of small, stagnant pools in a "sanitary census." Pools and standing water were treated to prevent mosquito breeding. According to the Rockefeller Foundation's Annual Report for 1917:

Borrow pits and shallow ponds were filled or drained; streams were cleared of undergrowth when this was necessary to let the sunlight in; accumulations of debris were removed from the beds...The one large pond which could not be drained was treated by removing vegetation and other obstructions from the edges so as to give the fish free access to all possible breeding-places. Artificial containers were removed or treated. All remaining breeding-places were sprayed once a week with road oil by means of either artificial drips or knapsack sprayers. No other measures were employed.

Better drainage and an elimination of breeding pools for mosquitoes led to an astonishing result.

The number of physicians' calls for malaria decreased by over 80 percent from June to December of 1916. In a two-year period from 1915 to 1917, physicians' calls for malaria dropped from a high of 2,500 to only 200 – a 92 percent decrease. The U.S. Surgeon General distributed nationwide a report of the experiment, "Public Health Bulletin No. 88," that became the working standard for sanitation workers around the world.

Since the early 1900s, many other significant infectious diseases have taken the stage. Most notably, tuberculosis, influenza, and sexually-transmitted diseases have taken their toll; the fight against them continues today.

Sanatoriums to Short-term Treatment

Perhaps the most dramatic and ground-breaking public health work in the state's history came from research done during the 1960s and 1970s by Arkansas-based doctors Paul Reagan, William Stead, and Joe Bates, which led to a new local hospital and out-patient treatment for tuberculosis (TB).

In 1900, TB was the second-leading cause of death after pneumonia – eight of 10 of those who developed infections died. More than 80 percent of the population was thought to be infected, although most had no symptoms. By the time the Arkansas Tuberculosis Association (ATA) was founded in 1908, the disease was killing 3,000 Arkansans annually.

The only treatment available at the time was to provide good nutrition and plenty of rest and fresh air, all while isolating the patient from the general population. Act 378 of 1909 authorized the state to locate, erect, organize, manage, and maintain a state sanatorium, which later opened at Booneville after the city donated 973 acres. The Arkansas State Tuberculosis Sanatorium was a 700-bed facility available only to whites. Black patients remained without housing until the Thomas C. McRae Sanatorium, a 35-bed facility, opened in 1930.



An aerial view of the Arkansas State Tuberculosis Sanatorium Main Complex circa 1950 (Booneville Development Corporation/South Logan County Chamber of Commerce)

The annual mortality rate remained high, and infected individuals could wait up to six months before placement in the Arkansas State Tuberculosis Sanatorium. Phillips County Representative Leo E. Nyberg, who suffered from TB and lived at the sanatorium, championed what became known as the *Nichols-Nyberg Act of 1938*. Along with Representative Lee Nichols from Logan County, Nyberg acquired funding for a new hospital addition to the sanatorium grounds.

At their height, the Thomas C. McRae Sanatorium held 200 patients, and the Arkansas State Tuberculosis Sanatorium at Booneville, the largest and most recognized sanatorium in the nation, housed 1,000 patients.

Unfortunately, the state's mortality rate remained one of the highest in the country. During the 1960s, extensive research, conducted by Drs. Bates, Reagan, and Stead, led to advances in personal care and treatment. With drastic declines in TB deaths, treatments received in traditional sanatoriums were no longer needed, and the sanatoriums were eventually closed in 1973 after receiving more than 70,000 patients. As advances in education, testing, treatment, and follow-up continued, Arkansas became the model for the nation and, ultimately, had one of the lowest rates of TB in the country.

Though a rise in TB cases would occur again in the 1990s, this would later be attributed to the introduction of HIV, a disease that weakens the immune system.

Sexually Transmitted Infections

In 1919, the Board of Health began a vigorous educational campaign against venereal disease after thousands of Arkansans were found to be infected, and, as a result, were unable to join the Army during WWI. Before WWII, syphilis was the fourth leading cause of death in the U.S., behind only tuberculosis, pneumonia, and cancer. By the beginning of the war, Arkansas had a rate of syphilis that was twice the national rate.



Poster depicting the U.S. military's campaign to combat STDs among servicemen. Mercury was considered standard treatment for STDs, until penicillin replaced it in the mid-1940s. (Mother Jones)

Using a growing network of health units, the Department of Health launched an extensive advertising and educational program to encourage testing, treatment, and prevention. Antibiotic drug therapy developed during the war years caused a decline in the rate of syphilis, but among certain groups today, chlamydia and gonorrhea are on the rise. Education, testing, and treatment campaigns,

most of which are the product of the Health Department, are now working to change those statistics. According to the Centers for Disease Control and Prevention (CDC), in 2010 Arkansas reported 18.5 syphilis cases per 100,000 people.

First diagnosed in 1981, HIV has taken the lives of more than 2,800 Arkansans. As of 2012, more than 5,000 people in the state are living with HIV. The constant themes of fear, stigma, and low health literacy mark this epidemic as deeply as any other in our history. Federal dollars, in the form of Ryan White funds, now provide medication to many of those living with HIV, and modern treatments are effective enough to move this illness, once diagnosed as a death sentence, to a category that more closely resembles a chronic disease. Programs to educate and test, however, are still essential for effective treatment and prevention of this disease.

There were many diseases – cholera, diphtheria, pertussis, foodborne illnesses, hepatitis, and the flu to name a few – that not only demanded the attention of the Health Department, but also shaped the Department's role as a public health provider in the state over the last 100 years. Though now-forgotten outbreaks of hookworm and trachoma were causing sickness, blindness, and death in the early part of the 1900s, developments in vaccinations and drug treatments have defeated many major infectious diseases in the United States.

IMMUNIZATIONS

For much of Arkansas's history, its citizens have been at the mercy of infectious diseases. With better understanding of disease epidemiology and transmission by scientists and public health workers, more legislative and financial support from the government, and cautious acceptance by citizens, the development of vaccinations became a defining characteristic of the 20th century.

The Speckled Monster

In the winter of 1897, on the heels of a minor meningitis epidemic, Arkansans faced a frightening

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new epidemic – smallpox. Characterized by aches, fever, and a rash, smallpox often left its survivors blind and scarred. Although it is not known when smallpox first reached Arkansas, evidence shows that as early as 1698 the disease nearly decimated the Quapaw population. With a mortality rate of more than one in three, smallpox played a key role in public health policy initiatives.

Though few written accounts exist about smallpox in Arkansas, on January 27, 1899, the New York Times reported the following concerning 400 smallpox cases within two months in Salem, Fulton County: “[Dr. H. C. Dunavant, President of the State Board of Health] found people walking about the streets of the town, broken out with the disease, pock-marked and pitted, and others falling ill every day... The local physicians contended that the disease was not smallpox, and little effort had been made to check its ravages. As a result, the disease has become scattered along the line of the Memphis and Fort Scott and Cotton Belt Railroads, and many neighboring towns are now infected.”

One anecdotal story of smallpox, although it did not occur in Arkansas, involved many Arkansans. Late in 1862, a smallpox outbreak occurred at Alton Prison in Illinois. Prisoners who had contracted the disease were transported to a temporary hospital on a small island on the Mississippi River. The men who succumbed to the disease were later buried on the island. It is estimated that, of the 249 men who were buried, at least 59 of them were Arkansas Confederate soldiers.

Edward Jenner is credited with developing the smallpox vaccine, in England, after observing that dairymaids who had developed cowpox were naturally immune to smallpox. The vaccine was widely used throughout Europe and, in 1800, Benjamin Waterhouse became the first doctor to test the smallpox vaccine in the U.S., beginning with his own family. Facing resistance, Waterhouse advocated for widespread use of the vaccine, eventually enlisting the help of President Thomas Jefferson. In a letter dated December 25, 1800,

President Jefferson responded to Waterhouse, saying, “I received last night, and have read with great satisfaction, your pamphlet on the subject of the kine-pock, and pray you to accept my thanks for the communication of it... Every friend of humanity must look with pleasure on this discovery, by which one evil more is withdrawn from the condition of man; and must contemplate the possibility, that future improvements and discoveries may still more and more lessen the catalogue of evils.”

Historically, the vaccine has been effective in preventing smallpox infection in 95 percent of those vaccinated. The last known case of smallpox in the U.S. occurred in 1949, and, by 1971, the U.S. ended its routine smallpox vaccination. Due to a successful vaccination campaign worldwide, smallpox disease was completely eradicated from the earth with the last known case occurring in Somalia in 1977.

The Great Pandemic

More than 675,000 Americans and 40 million people worldwide died from influenza during the pandemic of 1918. By October of 1918, Arkansas officials were forced to recognize the severity of the influenza epidemic, ultimately placing the state under quarantine. Though the quarantine was lifted in November, schools remained closed and children remained confined to their homes until December. Approximately 7,000 Arkansans died from influenza or related complications – roughly 14 times the number of Arkansas servicemen who lost their lives in WWI. Even more startling, the number of people in the U.S. who died is greater than the number of U.S. troop deaths during WWI and WWII combined. The Black Death (*Yersinia pestis*) of the Middle Ages is the only other pandemic to have killed more people.

Persistent social and economic issues made Arkansas susceptible to the flu and its devastating effects. Poverty, lack of medical care, poor communications, low literacy, and racial disparities were all factors. Eventually, these inequalities

became the focus of the Arkansas Department of Health, beginning with the flu immunization.

In recent years, Arkansas has attracted national attention with its ability to vaccinate children against the flu. During the 2009 H1N1 pandemic, with the help of volunteers and funds provided by the CDC and the Arkansas legislature, the Health Department conducted flu clinics in almost 1,100 schools in the state. At school and mass flu clinics and through LHUs, the Health Department administered more than 700,000 doses of vaccine.

Successful Eradication of Polio

Warmer weather in the South provided ideal conditions for sustaining and transmitting polio, a crippling virus that spreads from person to person invading the brain and spinal cord and causing paralysis.



Betty Lu Sorensen, occupational therapist at Arkansas Children's Hospital, tending to a polio patient. (The Encyclopedia of Arkansas History & Culture)

Although there were only a handful of cases in 1920, approximately 50 in 1927, and close to 80 in 1930, the worst polio outbreak in Arkansas occurred in 1937 when 344 cases were reported. Of

these cases, one in four resulted in death. Ninety people died, and most of these were children.

Sunday school classes were cancelled. Parents kept children from movie theaters, swimming pools, and skating rinks. Several towns even prohibited children under 16 from being on the streets or travelling more than two blocks from home.

Polio was endemic in nearly 125 countries by the time the worldwide effort to eliminate it began. In April 1955, the development of the polio vaccine by Dr. Jonas Salk was announced and provided to the state at no cost by the National Foundation for Infantile Paralysis. The Health Department led the charge in distributing the vaccine to local health units (LHUs) and administering the inoculation to children.

Polio, eradicated in the United States 30 years ago, exists today only in Afghanistan, Pakistan, and Nigeria.

The Arkansas Children's Colony, Rubella, and the Measles

From 1963 to 1965, Arkansas Children's Colony, currently the Conway Human Development Center, became home to individuals suffering from rubella. Physicians and nurses capitalized on the Colony's remote location to conduct research on licensed vaccines which became available in 1963. With their parents' approval, children were vaccinated, and the successes gave rise to the popularity of the rubella vaccine.

In 1990, Arkansas experienced another brush with rubella when a 23-year-old pregnant woman presented to one of the public health units in Fort Smith. Local public health workers and outbreak investigators immediately began interviewing individuals who may have been in contact with the patient. All in all, 12 cases were confirmed by laboratory testing, while additional screenings found at least another 134 women who tested positive for rubella. The quick and proactive actions

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by local public health workers were instrumental in staving off any threat of a massive outbreak.

Though rubella and measles share some characteristics, including a red rash, rubella is neither as infectious nor usually as severe as measles. Although rubella is almost always a mild illness, when pregnant women become infected during the first three months of pregnancy, the fetus is put at high risk of having major congenital defects. Worldwide, it is estimated that roughly 200 million people have died from measles, a viral infection of the respiratory system characterized by a rash. Before the measles vaccine, an estimated 400 to 500 people died annually in the U.S. and nearly 1,000 Americans would suffer permanent brain damage or deafness each year. After the late 1980s and early 1990s epidemic affected more than 27,000 individuals, Senator Dale Bumpers declared on the U.S. Senate floor that the prevalence of measles was “shameful and totally avoidable,” citing that there were more deaths from the infection in one year than there were combat deaths in the Persian Gulf.

With the development of vaccinations, diseases such as rubella, measles, mumps, and chickenpox are very uncommon in developed countries. In fact, today, there are only about 50 measles cases a year reported in the United States, and most of these cases originate outside the country.

An Arkansas Visionary and ‘Guardian of Children’

Though, in 1916, Arkansas promulgated rules for a statewide compulsory school smallpox vaccination program, it was Arkansas First Lady Betty Bumpers who led the Every Child by '74 Campaign to eradicate preventable diseases among the state's children. Although school vaccination programs began with first grade students, low enrollment numbers among age-appropriate children compelled Mrs. Bumpers and state health officials to find a more effective and comprehensive immunization program that would reach all children.

The collective efforts of the Arkansas Health Department, the Arkansas League for Nursing, the State Nurses Association, the State Medical Society, the Arkansas National Guard, and the Cooperative Extension Service of the University of Arkansas culminated in a program that gave rise to Arkansas's having one of the highest immunizations rates in the country. This program ultimately became the model for the CDC.



(Public Health Image Library)

Mrs. Bumpers continued her efforts, working with then-President Jimmy Carter and First Lady Rosalynn Carter, to implement the first federal initiative in



comprehensive childhood

immunization. When this national program was launched in 1977, only 17 states required immunizations for

children by the time they entered school. With more than 95 percent of school-aged children immunized today, the CDC still recognizes this as one of its most successful public health programs ever.

Betty Bumpers' efforts didn't end here. Following the measles epidemic of 1989-1991 and working with Rosalynn Carter, Mrs. Bumpers founded Every Child by Two, designed to immunize all children by the age of two and to create state immunization registries. Former Secretary of Health and Human Services (DHHS) Donna Shalala said, "From

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Arkansas to Washington, D.C., to the far corners of the globe, Betty has been a guardian of children, protecting them from polio, from rubella and from many other invisible enemies."

At a dedication ceremony in 1991 for the Dale Bumpers and Betty Bumpers Vaccine Research Facility, President Bill Clinton noted:

In the 50 years since [the discovery of the polio vaccine], we have benefited from the discovery of vaccines against some 20 infectious diseases – tens of millions of lives have been saved; tens of millions of children have been spared the agony and crippling pain of polio, mumps, rubella, measles – most recently, meningitis.

Twenty years ago, we eradicated smallpox, the disease that took thousands of years – struck down men, women and children all around the world, and destroyed entire civilizations. We have eliminated polio from our own hemisphere and... we'll eliminate it from the earth early in the new millennium.

The triumph of vaccines over infectious disease is one of the great achievements of a remarkable 20th century. And at century's end, the men and women who labor in labs to unlock the mysteries of human biology and disease... have made this one of America's great citadels of hope, not only for our people but for people throughout the world.

I think it is important to note, though, that we are here today because the triumph of immunization over disease is also the triumph not just of scientists, but of countless citizens across America – public health specialists, advocates, volunteers, leaders in government – who work together to support new research, and to bring life-saving vaccines to all people.

Over the last 100 years, a variety of vaccinations and immunizations that successfully protect individuals and populations from disease have been developed. As one of the greatest achievements of the scientific community, the introduction and utilization of immunizations is one of the most effective means of disease prevention known to man. In addition, by providing nearly 400,000 vaccinations annually, the

Health Department is the single largest provider of immunizations in the state.

ENVIRONMENTAL HEALTH

The connection between people and their environment is a primary focus of the Health Department's Environmental Health Protection (EHP) Branch. Programs within EHP ensure safe food, milk, and water, enforce the state's clean indoor air law, and license HVAC/R and plumbing professionals. In the last fiscal year, EHP specialists conducted 2,790 individual water and wastewater facility inspections, 5,260 swimming pool inspections, 28,353 restaurant inspections, 761 milk plant and dairy farm inspections, and 284 body art establishment inspections.

The Environmental Health Branch dates back to the early 1900s. Hookworm eradication indirectly led to the Board of Health's formation, to advances in sanitation, and, ultimately, to the creation of the Division of Sanitation Services.

Privies to Modern Day Wastewater Systems

In 1911 and 1912, during the hookworm eradication efforts, sanitary surveys of approximately 7,500 rural homes found that nearly half had privies without "protection from flies, insects, fowl, and domestic animals," while the other half had "no closet conveniences at all." This meant that human fecal waste was on the ground near the homes.

For the next several years, the eradication program and public health workers educated the public about transmission, tested and treated infected individuals, and made initial steps in cleaning and maintaining privies.

Infection rates decreased dramatically, and, by 1935, efforts to build pit privies were underway. Between 1935 and 1942, the Works Progress Administration, a New Deal agency providing public works projects to unemployed individuals, and the Health Department built 51,418 free privies for families in need to improve sanitation around

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homes. In addition, the Arkansas Department of Education worked to ensure schools had sanitary privies.



Outhouse on the Parker-Hickman Homestead c. 1848. (Hargis, K. Arkansas Department of Health)

After WWII and the progress in rural electrification, many people chose to leave urban areas in favor of more rural surroundings. As suburbs began to develop and modern plumbing conveniences became more affordable and accepted, new sanitation issues arose, leading to the development of the state's first plumbing codes in the late 1940s and to the creation of the Plumbing and Natural Gas Section in 1951. Many of these new suburban areas lacked a networked sewer system, making septic tanks the only sanitary form of waste disposal. Originally, septic tanks were designed for areas with at least 60 to 80 acres available for dispersal of waste. However, housing lots in subdivisions were often too small for proper septic tank dispersal, resulting in frequent surface and ground water contamination. Further complicating the issue was Arkansas's varied landscape. Runoff was frequent, as mountainous areas typically didn't have enough topsoil to absorb the waste. Likewise,

the flatlands were too water-saturated to absorb the waste, causing it to settle on the surface.

Seeing this problem across the state, the Health Department realized that the issue needed to be addressed. In 1972, the Board of Health's Bulletin 9 required a permit for septic tanks and inspections before, during, and after construction. This requirement was unpopular with builders and wasn't supported by state legislators. Compounding the problem was the lack of Health Department workers to inspect septic tank installation sites.

In 1974, the Health Department introduced a pair of bills to replace the unpopular Bulletin 9. One of the bills gave the Health Department authority to regulate the installation of septic tanks, while the other made it illegal for an owner of a subdivision to file, or a county official to record, a plan that didn't meet the Health Department's requirements. These bills were designed to steer builders and city officials away from septic tanks in favor of construction of more reliable community sewer systems. As opposition continued, septic tanks continued to malfunction across the state. This issue became so significant that the Division of Sanitation Services reportedly took an average of 600 to 700 calls each month about septic tank problems, and sanitarians reported taking upwards of 10,000 septic tank-related complaint calls a year.

As ground and surface water contamination increased, so did reported waterborne illnesses. In 1977, the Arkansas General Assembly passed Act 402, regulating the "location, construction, installation, operations, and maintenance of individual sewage disposal systems and other alternate methods of sewage disposal systems." Today, environmental health specialists in each county oversee the installation and management of septic tanks and wastewater systems to ensure public health and safety.

Infrastructure and Regulations Lead to Safe Drinking Water

Safe drinking water is often cited as one of the greatest advancements in public health. However, only in the past 100 years has safe drinking water been a true reality to the vast majority of people in the United States.



NEW BOARDER: "I notice a very unhealthy odor round the house to-day. I think your drain must be out of order."
FARMER RUGG: "Can't be that, Mister, fer ther ain't a drain on the whole place."

Caption: New Boarder: "I notice a very unhealthy odor round the house to-day. I think your drain must be out of order." Farmer Rugg: "Can't be that, Mister, fer ther ain't a drain on the whole place." Harper's Weekly: Oct. 15, 1892. (National Library of Medicine)

Prior to the epidemiological discoveries of Dr. John Snow and Louis Pasteur's "germ theory," only the aesthetics—look and taste—of water were considered. Unfortunately, water that appeared safe to drink by sight and smell often harbored deadly pathogens invisible to the naked eye. Inadequate sewage systems and waste disposal frequently resulted in contaminated sources of drinking water, followed by outbreaks of illnesses such as typhoid fever, dysentery, and cholera. Typhoid fever, one of the most common waterborne illnesses, occurred in 100 out of every 100,000 people in the U.S. In addition, diarrhea and

enteritis— common symptoms of waterborne illnesses— were a leading cause of death from 1900 to 1931.

As the nation's cities continued to grow in the early 1900s, some water systems in the U.S. began to focus on reducing turbidity issues by employing filtration methods that helped to reduce biological contaminants. While filtration techniques helped to reduce turbidity, it was regulation and the introduction of disinfectants such as chlorine that made the greatest impact in reducing waterborne illness outbreaks.

In 1914, one year after the creation of the Board of Health, federal regulation of drinking water quality began. These standards, set forth by the U.S. Public Health Service, only addressed drinking water systems that provided water to interstate carriers such as ships and trains and only applied to infectious contaminants. Later, in 1917, legislation established the Bureau of Sanitary Engineering within the Health Department to begin oversight of water quality in Arkansas.

By the 1950s, under the direction of Glen T. Kellogg, major modifications to Arkansas's drinking water system occurred as a result of innovations in sewer systems, waste disposal and regulations. In 1951, Act 200 established the Plumbing and Natural Gas Section at the Department to reduce public health hazards associated with improperly installed plumbing systems. Kellogg, hired in 1947, was an advocate of environmental protection and believed Arkansas's waters should be protected. As a public health worker, Kellogg's vision led him to develop some of the highest standards for drinking water in the nation during that time. These standards regulated biological contaminants and mineral contaminants, such as iron and manganese, and required licensing of all water operators and establishing a buffer zone around surface water reservoirs.

These standards resulted in 83 percent of the state's population having access to safe public water

supplies by 1973. As the environmental movement began to take hold nationally, concern over the safety of the nation's water supply became a priority for legislators, which ultimately led to the passage of the Safe Drinking Water Act of 1974. This act incorporated many of the regulations that Kellogg had worked to develop for Arkansas nearly 20 years earlier.

As a result of drinking water regulations and other protective health codes, the incidence of waterborne illness in the U.S. has decreased dramatically. Today, the Health Department tests each of the estimated 1,307 water systems in the state—on a regular basis—for as many as 46 different pesticides, 22 synthetic organic chemicals, 60 volatile organic chemicals, and 35 inorganic chemicals. Samples are also checked for bacteria, radioactive elements, lead, and copper, resulting in Arkansas having some of the cleanest and safest drinking water in the U.S.

Consumer Product Safety

Fresh food was often preserved through canning, salting, or drying—using unreliable methods which were prone to bacteriological contamination. As early as 1879, Dr. Charles Nash, a former Board of Health president who recognized the need for food safety, attempted to create food safety regulations, but lack of funding and organization thwarted the efforts.

In 1893, the state passed the first law on adulterated foods; however, lack of funding, personnel, and organization meant the law was generally ignored. Nationwide, public concern over food safety was growing. Influenced in part by Upton Sinclair's [The Jungle](#), which exposed the deplorable conditions of the meat packing industry, Congress passed the U.S. Meat Inspection Act of 1906 that authorized the Secretary of Agriculture to require meat inspections.

In 1917, the Arkansas Hotel Inspection Act required the inspection of all the state's food establishments, hotels, schools, creameries, dairies, and other

institutions for sanitary conditions. Unfortunately, limited funding for investigators left many establishments in the state unchecked. By the 1930s, full-time county health units had been established and as a result, 30 sanitarians were hired to inspect local area establishments. While this was an increase in manpower from previous years, most sanitarians spent their time inspecting privies—a health priority at the time—leaving less time for food inspection.

With much of Arkansas's economy hinging on agriculture, food safety is an important issue. Both during and after WWII, non-professional canneries began to pop up across Arkansas to help meet the needs of military personnel. Many of the nearly 250 canneries lacked basic sanitary provisions like clean water or proper wastewater disposal. Many canneries were built as small sheds at the edge of a field and often located near privies or animal pens. These rudimentary, "shade-tree" canneries lacked toilets or hand washing facilities, increasing the threat of foodborne illness.

At the same time, the Health Department saw a need for better food regulation. Although many food manufacturers were generally against food safety regulation, the large canneries saw an opportunity to reduce competition. Understanding the small canneries would lack the capital to bring their facilities up to health codes, the large canneries supported regulations, which required concrete floors, hand washing facilities, and proper drainage, set forth by the Health Department. Within one year of the regulations being enacted, Arkansas's cannery numbers had decreased from about 250 to 164.

Act 415 of 1953, under the general provisions of the Arkansas Food, Drug, and Cosmetic Act, was a landmark in food safety regulation in the state. The Act allowed the Health Department free access to all factories, warehouses, or establishments where food was manufactured, processed, packed, or held for public consumption. Another important component of Act 415 was the requirement that all

food service establishments must be licensed—for a small fee—as established by the Board of Health. The licensing fee helped fund personnel, equipment, and training for the Department's Division of Sanitarian Services, in turn supporting a trained workforce to inspect and ensure food safety for all Arkansans.

Little Rock Gets Grade 'A'

In the early 1950s, nearly 95 percent of all the milk produced in Arkansas was sent to Little Rock for processing. To ensure safe Grade "A" milk, the City of Little Rock issued an ordinance that called for inspection of all milk sent to the city. These city regulations were tighter than early versions of the federal Pasteurized Milk Ordinance that was first proposed in 1924.



Coleman Dairy delivery truck with advertisement featuring Annie Oakley, circa early 1960s. (University of Arkansas, Division of Agriculture)

The Little Rock Grade "A" Milk Program was responsible for inspecting 16 milk processors and 1,200 dairy farms statewide. In 1961, the program administrator, Dr. Thurman Dick, moved to the Health Department to set up a program that would regulate the remaining five percent of Arkansas's milk dairies and processors not covered by the Little Rock ordinance.

By 1977, the Health Department took over the Milk Program, adopting all of the city's rules and regulations. Presently, the program inspects dairy

farms every five to six weeks and milk manufacturers quarterly. The program tests all milk products for bacteria, pesticides and aflatoxins.

Although food safety has increased dramatically over the last century, an estimated one in six Americans still get sick from foodborne illnesses each year. Today, the Health Department has environmental health specialists in each county who are responsible for ensuring that restaurants and food manufacturers follow regulations and provide safe food for public consumption.

Bauxite, Fluoridation and the Office of Oral Health

In the early 1900s, dental caries, or tooth cavities, were common throughout the U.S. and other countries. Typically, the only permanent remedy for dental caries was tooth extraction, and that was often not done before tremendous pain and infection had presented. Not having enough teeth was a leading cause of military rejection during both World Wars. The lack of regular oral hygiene and the widespread use of tobacco were the main factors causing poor oral health. In fact, the "modern day" toothbrush wasn't developed until 1938, when nylon bristles replaced boar hair bristles.

Early in the 20th century, Dr. Frederick McKay, a dentist, began investigating brown stains on the teeth of children in the western U.S. These brown stains were perplexing since the affected teeth seemed to be resistant to decay. In the 1920s, Dr. McKay and Dr. Grover Kempf of the U.S. Public Health Service (PHS) traveled to Bauxite, Arkansas, a mining town owned by the Aluminum Company of America (ALCOA), after hearing reports of similar brown staining.

Their research led them to discover that the enamel disorder was widespread in the children of Bauxite, but not in the children from another town five miles away. Convinced that the staining was somehow connected to the water supply, Drs. McKay and Kempf analyzed the Bauxite water but were unable

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to pinpoint the cause. The doctors published their research, and the report eventually made its way to ALCOA's chief chemist, H.V. Churchill, at company headquarters in Pennsylvania.

Concerned that the results would negatively affect ALCOA, Churchill requested water samples and ran his own analysis. Using more sophisticated technology than McKay and Kempf, Churchill discovered high levels of fluoride in the water. Churchill shared his findings with McKay and requested that he collect water samples from the affected towns. Ultimately, the Bauxite water samples led to the discovery of naturally fluoridated water.

After 15 years of laboratory testing, researchers were able to find the level of fluoride that could protect tooth enamel while preventing any staining. With encouragement from the PHS, the city of Grand Rapids, Michigan, agreed to add fluoride to its public water supply in 1945, making it the first city in the world to purposely fluoridate its water. Over the course of 15 years, researchers monitored cavity rates in the city's 30,000 school-age children. The researchers found that the rate of dental caries among children was reduced by more than 60 percent.



Grand Rapids school children giving saliva samples as part of the city's water fluoridation project. (Library of Congress)

This was a landmark discovery in oral health and paved the way for future policies aimed at preventing tooth decay. In 1950, West Helena Water Works became the first public water system in

Arkansas to fluoridate. It soon became a standard practice to add fluoride to water systems and toothpastes as an inexpensive, yet effective, oral health tool.

Dental hygiene and service programs were carried out at the Department at different levels since the 1940s. Legislation was passed in 2001 that required the Department maintain an Office of Oral Health. The following year, the first statewide assessment of third graders' oral health was completed by the Department, and the Oral Health Coalition was created in 2001. During the initial two years of the Seal the State campaign, more than 2,000 children received free dental sealants - a simple technique that markedly reduces the risk for tooth cavities to form.

Despite these advances, oral health continues to be a serious issue for persons of all ages and races statewide. State oral health assessments show some alarming statistics: more than 20 percent of adults 65 and older have lost all of their teeth due to decay or gum disease; fewer than 30 percent of Medicaid-enrolled children receive dental care; and more than 60 percent of dentists practicing in Arkansas are located in just eight of 75 counties.

In February 2010, the Pew Center on the States, the DentaQuest Foundation, and the W.K. Kellogg Foundation released *The Cost of Delay: State Dental Policies Fail One in Five Children*, a report detailing state efforts to provide low-income children with access to basic, preventive dental care. Arkansas was one of five states to receive an "F" rating, meeting only two of the eight benchmarks.

Armed with this information, the Health Department, the Arkansas State Dental Association, Delta Dental, and state Senator David Johnson pursued a hefty oral health legislative package. In 2011, the Arkansas General Assembly passed SB 359, mandating fluoridation of all water systems serving 5,000 people or more. As a result, the percentage of Arkansans who have access to fluoridated water will increase from 65 percent to

almost 87 percent. Two additional laws were passed allowing physicians and nurses to apply fluoride varnish to children's teeth during well-baby checkups, as well as establishing the Collaborative Care Dental Hygiene Program to provide dental sealants for children in underserved areas.

While the addition of fluoride to water and reduction in tobacco use have led to significant gains in oral health, more improvements are needed and will remain a priority for the Health Department.

LOCAL PUBLIC HEALTH

The scope of public health in Arkansas broadened in the 20th century, moving from an inspection culture to an era of community mobilization. Placing workers in county offices allowed the Health Department to engage citizens and target community-specific needs.

Public Health Nursing and the Emergence of County Health Facilities

Prior to the permanent establishment of the State Board of Health, nurses contributed considerably to the health of the state's communities. Many of the larger towns in Arkansas developed health programs as early as the 1880s in response to the yellow fever epidemic. These programs provided care for the indigent, inspection of public nuisances, and vital statistics collection.

In 1913, the newly created State Board of Health appointed county health officers to carry out inspections of public facilities, conduct sanitary surveys, and maintain records of communicable disease. In many cases, the officers worked alongside residents who remained wary of modern medicine. In "The Waves of Progress: The Clark County Health Department," Ann Pryor noted how folk cures remained ingrained in rural culture, and that "residents did not give up their traditional ways until the people became more knowledgeable and learned to trust their health officer."

Understanding the relationship between cultural competency and good health outcomes was not new to public health nurses whose home visits with patients often included assistance with milking cows, shoveling snow, or even marriage counseling. In addition, public health nurses and workers traversed unpaved rural roadways to provide services, as documented by Alta Gorden, a clerk who worked alongside a county nurse in 1938. Her story details trips where she and nurse Elsa Juhre waded through flooded streams and moved boulders in order to provide immunizations to school children - or to any adult or child that simply showed up at the school to be vaccinated. Similarly, the demand for free immunizations during a typhoid epidemic proved the importance of stationing health nurses inside rural communities. In many cases, it was the absence of, and insufficient access to, physicians in rural Arkansas that helped solidify the importance of local nurses within the minds of rural Arkansans.

In an attempt to foster better community relationships and improve healthcare access, city and county health officers, collaborating with voluntary health groups, women's clubs, and other civic groups, introduced community health education and school health programs. These organizations looked more and more to nurses to perform the dual role of providing health care and health education in schools and homes. In 1913, the Arkansas Tuberculosis Association employed the state's first public health nurse utilizing funds from its annual Christmas Seal Drive. The tuberculosis (TB) nurse delivered care to patients, examined children, diagnosed cases, and provided educational presentations to the public. This was the first documented home health care services in Arkansas. Similarly, American Red Cross nurses provided home nursing care, especially for wounded veterans. Work by the Red Cross included school nursing, maternal and infant care, and relief care for families of veterans. Between 1919 and 1923, a total of 24 Red Cross nursing services were formed across the state. During this time, the Pulaski County Visiting Nurses

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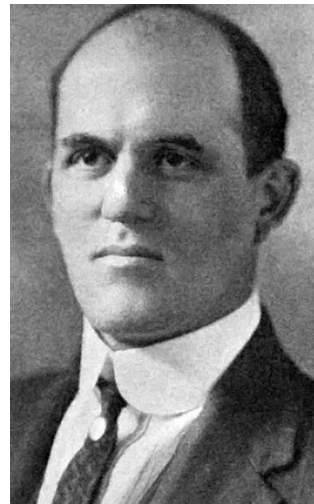
Association was founded to provide nursing care under physician's orders to homebound patients.

The TB Association and Red Cross programs spawned greater understanding and support for public health and public health nursing. Reaching about one-third of the state's counties, the Red Cross left an important legacy of well-trained public health nurses. Each chapter nurse had to meet Red Cross standards which included registering with the state, two years of hospital training in facilities with at least 50 beds, and at least four months of post-graduate training in public health. In addition, scholarships and loans were often available for nurses who sought Red Cross training. The Board of Health later adopted the Red Cross requirements for its nurses.



Providing services such as midwifery classes at the North Little Rock health facility, Ruth Anderson was one of the first two nurses hired by the Board of Health. Ruth graduated from the Arkansas Baptist State Hospital nursing program in 1923 and was a private duty nurse in Brinkley, Arkansas before coming to the Health Department in 1925. (Anderson, R.)

Although nursing services were expanding across the state during this time, there was still a considerable need for local community health facilities. Dr. C.W. Garrison, the first state health officer, established a plan for county health programs. He worked to consolidate rural health and sanitation activities into county health units that reported to the Board of Health's Bureau of Rural Sanitation. In 1927, Governor John Ellis Martineau further expanded rural health coverage declaring an "emergency to exist" decree that created 23 small, full-time county health offices around the state. The health offices were housed anywhere space could be found which was most often a small shared office within a public building such as a county courthouse. A nurse and clerk were often the only employees based in these health offices.



Dr. Charles W. Garrison, Arkansas's first state health officer. (UAMS Historical Research Center)

In 1924, the Jefferson County TB Association provided funding for its first health office and a public health nurse. By 1930, the office housed three public health nurses, and another public health nurse was assigned to the Board

of Education. That same year, Randolph County opened its first health office which was comprised of a shared office space. In 1940, the office moved into two rooms of the newly-constructed courthouse but was relegated to the building's basement. It wasn't until 1949 that a number of health offices with waiting and exam rooms began to emerge, born out of a "disparate need" for health facilities amidst tuberculosis, typhoid, and rabies threats.

During the 1930s, more than 30 local health offices were established in Arkansas. During a decade

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defined by the Flood of 1927, the Drought of 1930-31, and the Great Depression, increasing community needs underlined the importance for accessible public health providers and services. However, economic uncertainty experienced during this time resulted in a rise and fall of local health offices and nurses.

After going bankrupt in 1933, the state had to rely heavily upon federal aid, and only basic public health services were offered. Between January 1933 and May 1934, a federal program provided funding to hire 286 previously unemployed indigent nurses. More than half of the nurses were assigned as county public health nurses. The remaining nurses were assigned as first aid instructors or providers of home hygiene and care for the sick. From April 1934 until November 1935, the Social Service Division of the State Emergency Relief Administration assigned more than 85 nurses in the state to perform county case work. These nurses dealt with clients on county relief rolls, providing services similar to those offered by the state's county health nurses. By the end of 1935, Arkansas only had 18 full-time local health units and about 35 public health nurses- a stark contrast from the previous 30 full-time health units and flourishing nursing network.

The Social Security Act of 1935 provided funds that enabled the renewed growth of local health departments. Hiring and training of new personnel enabled the state to expand health programs and services. By 1940, almost two-thirds of the public health budget was derived from federal grant funding, and some form of full-time health service was available in all 75 counties of Arkansas. Fifteen counties had a full-time local health unit, and the City of North Little Rock had established its own full-time health unit which still operates to this day. Seventeen district health units were in operation, and every county had at least one public health nurse.

Counties with little funding were offered nursing services through the Board of Health. The type and

amount of services offered in each county were based upon local needs. Nurses provided school health inspections, maternity classes, well-baby clinics, and educational presentations at county health fairs. In southeast Arkansas, communicable disease control was focused on venereal disease prevention, while in northwest Arkansas, a trachoma control program was initiated.

In the 1940s, the Board of Health set up a training program for "granny midwives." Mamie Hale, a black registered nurse from Pittsburgh, was recruited to lead the program. She provided training on midwife techniques for managing the medical aspects of pregnancy, labor, and delivery. During WWII, midwife births were common due to a loss of physicians and nurses to the war effort. Black and white women relied heavily on granny midwives. After the war, black women continued to be delivered primarily by granny midwives. Black maternal and infant mortality plummeted during this period, when 75 percent of the state's black births were attended by trained midwives.



Public health nursing tools: a Health Department nursing bag; an infant carrier; a hemoglobin meter; a first aid kit, a mercurochrome; a syringe with .5 cc of tuberculin; "Adventure to Motherhood," a pregnancy and childbirth picture-story; a glass bottle for alcohol; a 10 cc glass syringe; and an otoscope/ophthalmoscope. (Kwanisai, S., Arkansas Department of Health)

As plans to establish freestanding health offices continued, the Arkansas General Assembly passed

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Act 186 of 1949, allowing rural health offices to organize into district health units. The vision of legislators was only partially met, as inadequate funding thwarted the envisioned consolidation of programs, costs, and personnel.

Through the 1950s, local public health employees, dealing with extreme staffing and funding shortages and high rates of turnover, strived to address newly emerging behavioral and socioeconomic risk factors for chronic disease. In addition, the Bureau of Health Facilities Division of Local Health Services provided consulting services to mayors, county judges, advisory committees, and local boards of health on program expansion, new programs, and budgets.

Public health nurses conducted Salk vaccine clinics and specialized nurses were trained in TB control. By the 1960s, public health nurses in Arkansas helped to transform TB care from hospital to community-based treatment, conducted home-care visits for the chronically ill, began family planning clinics, and provided counseling and physical exams in WIC clinics.

During the 1970s, public health nurses performed Early Periodic Diagnosis and Treatment (EPSDT) exams for children, cervical cancer screening, and Sudden Infant Death Syndrome (SIDS) counseling in the local health units. During the 1980s and 1990s, Department nurses worked in school-based clinics to bring health care to underserved teens. Today, nursing continues to serve a critical role in public health service delivery.

Financial Support for Local Health Units (LHUs)

State and regional offices have proved to be important partners in assisting local governments in securing funds and resources for building replacement and improvement. In addition to the Social Security Act of 1935, three additional revenue sources have been of particular significance in assisting with the improvement and expansion of county health unit facilities: The Hill-Burton Act, Community Development Block Grants, and the

State Health Department Building and Local Grant Trust fund.

The Hospital Survey and Construction Act of 1946, or Hill-Burton Act, was a federal law designed to provide grants and loans to improve the physical infrastructure of the nation's hospital system. Nursing homes and other health facilities also qualified for grants and loans for construction and modernization. Facilities that accepted Hill-Burton funds agreed to provide a "reasonable volume of services to persons unable to pay and to make their services available to all persons residing in the facility's area."

Crittenden Regional Hospital, then called Crittenden Memorial, was the first hospital in the state built with aid from Hill-Burton Act funding. The Clark County Health Unit in Arkadelphia soon followed. Although the program funding ended in 1997, nearly 170 healthcare facilities nationwide are still obligated to provide free or reduced-cost care. Two Arkansas facilities are still under Hill-Burton obligation - the Sebastian County Health Unit in Fort Smith and the Phillips County Health Unit in West Helena.

Increasing services and inadequate numbers of personnel strained existing health facilities. The Hill-Burton Act had funded only a limited number of health unit buildings, and many units continued to share space in Department of Human Services facilities, courthouses, businesses, and even former churches and homes.

In 1984, the Health Department received its first funding to support LHU facilities through the U.S. Department of Housing and Urban Development Community Development Block Grants. These grants were administered by the Arkansas Community and Economic Development Program through the Arkansas Department of Industrial Development, now known as the Arkansas Economic Development Commission (AEDC).

Construction of local health units was not the traditional type of project for which industrial

development funds were used in Arkansas. However, far-sighted officials from the Health Department approached the Arkansas Department of Industrial Development, and in the late 1990s, the two agencies worked together to develop a program that provided more than \$14 million in funding to construct 40 new health units and to expand and renovate six health units. The funds were secured through a competitive application process that requires significant local involvement and cooperation. Although the Health Department continues to receive only a small portion of these funds, it is an important resource for eliminating building safety and health issues, as well as for expanding space for local health unit operations.



Currently, Health Department facilities receive funds from special revenues generated through fees paid by people who received public health services. Established by Act 749 of 1987, the State Health Department Building and Local Grant Trust Fund assists counties and cities in improving local health facilities to meet the increasing demand for services. The purpose of the local grant trust fund is to provide grants to counties and cities for new construction, renovation, or expansion of their LHU facilities.

Faulkner, Grant, Lafayette, Lawrence, Little River, Newton, Pike, Poinsett, Randolph, and Searcy were the first counties to receive funding from the local grant trust fund. In May 1990, Newton County was the first to complete construction of a new building after receiving \$150,483. To date, more than \$17 million has been awarded to 174 projects, with 70 different local health units benefiting from the Trust Fund. Approved by the Board of Health, local applications from counties or cities for full-time LHU facilities are reviewed and recommended by a subcommittee of the board. Applicants must meet

set criteria, including a commitment to provide 10 percent matching funds.

With the help of federal, state, and local funds, 93 health units are currently in place to provide services in the state's 75 counties.

Home Health Care Services Expanded

While health services have been provided in patient's homes since the earliest records, it was not until 1965 that Congress established the Medicare Program that covered home health care in every state as a mandatory service. In 1981, the state legislature passed Act 462 that approved an annual appropriation to pay for services for patients without a payment source. With this appropriation, the Health Department established a separate home health program and began to expand services throughout the state. Providing health and personal care services in the home allowed individuals to remain in their homes instead of going into expensive institutional care. Over the years, the scope of the Department's In-home Services Program has broadened. Home visit services include hospice, home health, maternal/infant, personal care, ElderChoices, and community-based case management for persons over age 65 and eligible for Medicaid. Today, In-home Services are provided statewide except for six counties in northwest Arkansas.

Centralized Agency Structure Emerges

In 1971, an extensive reorganization of government in Arkansas changed the duties of the Board of Health. Many of the powers that existed within the Board were transferred to the Department of Health, which became a cabinet level agency in the executive branch of government responsible for implementing the Board's regulations.

Health Department staff were poorly paid and often reimbursed with up to three checks from separate entities - their local county government, the city in which they resided, and the Health Department. In 1975, under the direction of Dr.

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John Harrell, Health Department director from 1971 to 1973, a “handshake agreement” simplified payment statewide.

As part of Dr. Harrell’s “handshake agreement,” simplified payments to staff, local health facilities were made the responsibility of their respective local governments. The Health Department does not lease or own the buildings that house local health unit offices. While the local health unit employees are state employees, the local health unit facilities are provided by the county or city.

Agency reorganization in 1979, led by Dr. Robert Young, increased consistency of services among local health units. Dividing the state into 11 management areas, Dr. Young created a structure for supervision at the local level. Under this “Matrix Management” system, specialists in the field no longer answered solely to a supervisor in the central office. At the same time, Dr. Young emphasized the use of local health “unit” as opposed to local health “department.” This change clarified that rural health facilities were units under overall direction of one state health department, a designation by which local health facilities are known today. Local health services were governed under the Department’s newly formed Bureau of Community Health Services, placing Arkansas among a minority of states with centralized state governance. As of 2008, 42 states continued to practice local or mixed systems of governance.

Nurses, working long days, were delivering most of their services directly to the patient through home and school visits and other types of outreach. As the demand for public health services increased, so did the demand for public health workers. During the 1980s, the Bureau of Community Health Services grew from its initial 1,500 employees to 2,200. As the Health Department added and expanded programs like Women, Infants and Children (WIC), family planning, maternity, hypertension services, and adult health services, health unit administrators began providing more

services in the health units in order to increase time efficiency.

After years of growth and programmatic changes, the Health Department witnessed its second major restructuring. Amidst concerns that the agency had grown too top-heavy, Dr. Fay W. Boozman, the newly appointed director and state health officer, initiated changes to move decisions to the lowest level possible. This change resulted in decentralization but largely left the daily work of local health units unaffected. However, other changes, such as state budget cuts and federal funding shifts, forced cutbacks in some local services, including school-based health clinics, developmental screening for children, some maternity services, some lead screening programs, and more. The screening of infants and children previously done by the Health Department was terminated and returned to family physicians.

A positive achievement at this time was the focus on and expansion of the Hometown Health Improvement initiative, which allowed local health unit administrators to emerge as community leaders.

During the early 2000s, immunizations, along with hometown health outreach, helped highlight the continued importance of local health units in communities. School flu clinics and mass flu clinics required extensive collaboration among schools, school nurses, Health Department nurses, and other community partners. These clinics helped people appreciate and understand the role of the local health units.

Office of Rural Health and Primary Care

In 1979, the Office of Rural Health was created by the state legislature as part of the Health Department. It later became the Office of Rural Health and Primary Care (ORHPC). The office administers several grant programs for small hospitals and committees seeking to improve or enhance health services in rural areas of the state. In 1980, the Rural Physicians Incentive Program was

established to assist in the recruitment and retention of primary care doctors in under-served rural areas with populations of 15,000 or less with grant funds up to \$55,000 over four years. In 1989, Act 620 created the Rural Health Services Revolving Fund to support health systems in rural communities. By 1997, a Medicare Rural Hospital Flexibility Program was established that allowed the ORHPC to assist hospitals with conversion to Critical Access Hospital (CAH) status. CAHs are hospitals certified to receive cost-based reimbursement from Medicare to improve financial performance and reduce closures. There are 29 CAHs in the state.

In 2011, Arkansas's ORHPC received the National Organization of State Offices of Rural Health Award of Merit. This award recognizes a state rural health program that has made outstanding contributions to advance the mission of rural health and improve the health status of rural Americans.

Hometown Health Improvement (HHI) Promotes Community Engagement in Public Health

In 1996, the Department began a strategic planning process known as the Arkansas Strategic Planning Initiative for Results and Excellence (ASPIRE). Through this process the need for a mechanism to address population health issues, including the rising rates of cardiovascular disease, diabetes, and obesity were identified. This need, along with the recognition of the importance of local community partnerships, led to the development of an ASPIRE priority for community health development. This priority was named Hometown Health Improvement (HHI), a coalition-based initiative designed to bring together a wide range of people, organizations, consumers, business leaders, healthcare providers, elected officials, religious leaders, and educators to prioritize community health issues and develop effective solutions.

LHU administrators across the state engaged these local community members and leaders that were interested in improving the health of residents in their local community. These stakeholders were

encouraged to form a county coalition, whose mission would be to assess their local needs and develop solutions to improve health.

LHUs took a lead role in convening the stakeholders. The Health Department provided technical assistance with collecting, interpreting, and providing data to coalitions to guide development of community-specific health improvement strategies. In addition, the Health Department provided education, training, and methods for evaluating results of their efforts. Local participation and control in decision making continues to be a basic principle of HHI success, as well as enhancing partnerships and minimizing duplication of effort.



The first HHI pilot began in Boone County in December 1998. One local strategy was developed using 2002 county-level data, which showed that 29 percent of the county's adults smoked. With a Community Tobacco Education Grant, the county's HHI formed the Tobacco-Free Boone County Coalition. The Coalition set up town hall meetings, promoted state and local tobacco cessation programs, assisted businesses in making tobacco policy changes, worked with community leaders to protect citizens from secondhand smoke, launched a media campaign along with the Health Department's Stamp Out Smoking Program, provided education about the dangers of tobacco use, and participated in community events and activities. Since the coalition formed, the adult smoking rate in Boone County has dropped seven percent. Boone County's coalition has also developed a prescription assistance program and a community health resource center and is currently working to combat obesity through the promotion of healthy community environments.

By 2009, HHI had grown from a successful pilot project to community-related health development efforts in all 75 counties in the state. HHI continues

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to promote working together to improve the health and quality of life for all individuals, families, and communities, by moving from a focus on sickness and disease to one based on prevention and wellness. Healthy people can enjoy their lives, go to work, contribute to their communities, learn, and support their families and friends. A healthy state is able to educate its people, create and sustain a thriving economy, and remain prepared for emergencies.

In 2001, the Coalition for a Healthier Arkansas Today (CHART) was formed to assess the state's needs and formulate a plan to spend the Tobacco Master Settlement Agreement (MSA) funds to most directly improve the health of Arkansans. Through the CHART plan, funding was provided for additional HHI staff to work with communities. Community Health Promotion Specialists (CHNS) and the State School Nurse Consultants were added to focus on Arkansas' school age population. The Tobacco Prevention and Cessation Program also provided grant opportunities to local HHI Coalitions focused in tobacco prevention and cessation.

With the passage of Act 1220 in 2004, funding set aside enabled the addition of the Community Health Promotion Specialists (CHPS) to work with the schools on nutrition and physical activity initiatives.

Through HHI, the Health Department employs one state school nurse consultant (SSNC), 17 community health nurse specialists (CHNS), and six community health promotion specialists (CHPS). The SSNC works with school nurses, school administrators, and CHNS to improve the health of school children in Arkansas and also serves as liaison between school nurses and state agencies.

CHNS serve as a resource to all school districts, school nurses, and teachers who work with each of Arkansas's educational cooperatives and corresponding school districts on health issues.

Other responsibilities include identifying and evaluating training needs of school nurses and targeted communities with respect to tobacco prevention and cessation and other related public health issues; participating in policy development and school-based enforcement of tobacco-related policies; linking school-based tobacco prevention efforts with local community coalitions; and acting as liaison among schools, community coalitions, Hometown Health Improvement, and healthcare providers.

Established to address the problem of childhood obesity, CHPS are strategically placed throughout the state and work with schools, community coalitions, healthcare providers, and the HHI regional team. The CHPS's primary focus is to assist schools and communities in implementing regular physical activity and nutritional standards and policies approved by the State Board of Health and the State Board of Education.

The Department continues to support HHI with dedicated resources. Each of the Health Department's five regions has a regional HHI manager to oversee the coordination of HHI activities. Regional HHI staff includes coordinators, health educators, and rural health specialists.

Today, the Hometown Health Support Services Branch at the Department consists of two sections: Hometown Health Improvement and the Office of Rural Health and Primary Care. The mission of the branch is to assist communities in improving the health of their citizens by promoting health behaviors and providing assistance with the development of health systems and services. The Office of Rural Health and Primary Care (ORHPC) works with communities and HHI on health system issues due to the close relationship between lack of access to quality affordable health care and poor health. Among its efforts to improve health care in rural areas, the ORHPC provides support for small hospitals seeking to enhance health services, grant programs for community health centers to address

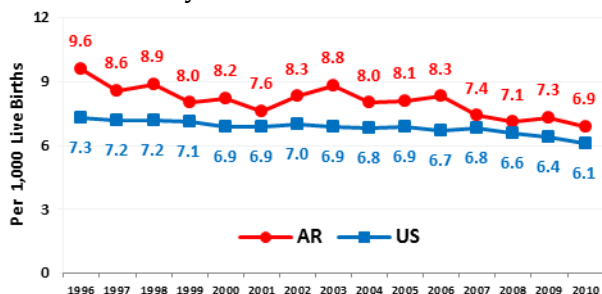
underinsured and uninsured populations, and technical assistance for enhancing primary care.

FAMILY HEALTH

At the beginning of the 1900s, for every 1,000 live births, approximately 100 infants died before age one and nine women died of pregnancy-related complications. Though death rates have declined more than 90 percent for mothers and babies over the last 100 years, mortality rates are still high. Even with some of the most advanced technology and sophisticated medical care in the world, the U.S. continues to have one of the highest infant mortality rates among industrialized nations.

Arkansas has historically had one of the highest infant mortality rates in the U.S. In 2009, the infant mortality rate for Arkansas overall was 7.3 infant deaths per 1,000 live births. The Healthy People 2020, a U.S. Department of Health and Human Services (DHHS) initiative, target rate is 6.0. Arkansas's public health efforts to address maternal and infant mortality date back to the early days of the State Board of Health and have relied heavily on the availability of federal and special program funding.

Infant Mortality Rate



Source: National Center for Health Statistics (NCHS) and Linked Birth/Infant Death File, Health Statistics Branch

According to the CDC, “[e]nvironmental interventions, improvements in nutrition, advances in clinical medicine, improvements in access to health care, improvements in surveillance and monitoring of disease, increases in education levels, and improvements in standards of living contributed to this remarkable decline... Despite

these improvements in maternal and infant mortality rates, significant disparities by race and ethnicity persist.” Efforts continue today to improve the life of baby, mother, and family.

Pellagra

Pellagra, a nutritional disease resulting from a severe niacin deficiency, was one of several diseases widely found in the South from the late 1800s through the 1930s and was most prevalent among poor blacks. Symptoms included fatigue, dermatitis, diarrhea, and dementia. Diagnosis and treatment of pellagra was dismal, due in part to similarities in symptoms with hookworm and malaria. Averaging 7,000 deaths per year, at least 100,000 deaths in the South were attributed to pellagra during this time. More than half of the victims were African-American, and more than two-thirds were women.



Pellagra mortality numbers in 1930. (Marks, H.)

The flood of 1927 heightened pellagra awareness as food became even scarcer and tens of thousands of people abandoned their homes. Pellagra cases increased dramatically across the region, and in Arkansas alone, 657 people died that year from pellagra.

Dr. Joseph Goldberger, a Hungarian epidemiologist, was appointed by U.S. Surgeon General Rupert Blue to investigate the cause of pellagra in 1914. Goldberger found the



Dr. Joseph Goldberger, U.S. Public Health Service. (Public Health Image Library)

disease was caused and cured by diet and was the direct result of poverty. Recognizing the connection between poverty, poor diet, and niacin deficiency, the American Red Cross conducted experiments in the Marked Tree, Poinsett County area using powdered yeast in the late 1920s. In the late 1930s, corn and white flour were enriched with niacin, an organic compound identified by researchers as a key to pellagra prevention. By 1938, the number of pellagra deaths in Arkansas had dropped to 184. At present, this disease has been essentially eliminated in Arkansas.

The Sheppard-Towner Act

Signed by President Warren Harding in 1921, the Sheppard-Towner Maternity and Infancy Act was the first federal social welfare program created explicitly for women and children. It provided a \$5,000 grant to each state with additional funds determined by matching state funds and by population. Arkansas was one of 41 states that enacted enabling legislation and implementation plans in 1922.

The Board of Health used its initial \$5,000 grant to open the Bureau of Child Hygiene and hire its first two nurses. The two nurses investigated the practice of midwifery and the under-registration of births. With matching funds, several counties eventually participated in maternal and child health programs. Jefferson County was the first, joined by Phillips, Ashley, Jackson, and Pulaski counties all by 1925.

The limited number of programs available to Arkansans was, in part, a reflection of trends in health clinics and nurses. By 1935, the number of local health clinics had dwindled from 30 to 18 and the number of public health nurses from 286 to five. Federal grants, as part of Title V of the Social Security Act of 1935, were awarded for specialized training in public health work to address the need for qualified nurses and full-time local health clinics. Specifically, these funds for maternal and child welfare were “for the purpose of enabling each State to extend and improve, as far as

practicable under the conditions in each State, services for promoting the health of mothers and children, especially in rural areas and in areas suffering from severe economic distress.”



Jefferson County Premature Project (The Pain in Prevention)

Throughout the mid-20th century, Title V funding grew to include infant mortality/population studies, as well as maternal/infant and children/youth special projects designed to provide comprehensive services to low-income families.

From 1943 to 1947 Arkansas implemented the Emergency Maternity and Infant Care (EMIC) Program, a federal infant mortality reduction program which paid for hospital and medical care for the wives and children of servicemen in the lowest four military pay grades. The EMIC Program increased access to hospital care for low and middle-income pregnant women and served more than 20,000 patients.

In 1966, the Maternity and Infant Care Project targeted women and infants with conditions predisposing them to physical or mental handicaps to provide them with comprehensive preventive and medical services. LHUs provided preventive services before and after delivery, and patients received hospital care at the University of Arkansas for Medical Sciences (UAMS). The program ensured coordinated services for low-income mothers and their children in 10 central Arkansas counties.

In the 1970s, the Title V Program was again expanded to cover “Improved Pregnancy Outcome” projects, enhancing services to low-income pregnant women who had medical complications associated with their pregnancies. Communities where many of these projects were implemented witnessed declines in infant mortality as accessibility to care improved.

Advances in Midwifery

Midwifery was extremely popular in Arkansas, with a reported 4,000 midwives living in the state in 1926. By 1940, Arkansas was third in the nation for midwife-attended births, nearly one quarter of all reported births.

The popularity of midwifery was most notable in the African-American community due to segregated facilities and lack of available hospital beds. Only 10 percent of pregnant black women were reported to deliver their babies in a hospital in 1945, in contrast to 60 percent of white women. As a result, black maternal mortality rates were twice as high as white maternal mortality rates in 1930 and three times as high in 1954.

With federal funding, the Board of Health, in cooperation with the State Medical Society, began offering obstetric clinics for women who would use midwives as birth attendants. Midwifery would receive considerable attention over the next several decades as the Bureau of Child Hygiene, the Board of Health, and the General Assembly worked to improve its practice by providing instruction to and registering lay midwives.

By 1952, the Board passed rules and regulations regarding the practice of midwifery. Act 838 of 1983 provided for the lawful practice and licensure of lay midwifery in counties having 32.5 percent or more of their population below the poverty level. Act 481 of 1987 expanded the lay midwife licensure statewide. Specifically, Act 481 directed the Board to adopt regulations governing the qualifications for licensure of lay midwives and the practice of lay midwifery. The Lay Midwife Advisory Board

continues to this day with appointments made by the Board of Health.



Traveling Arkansas midwives with their support van and driver; c. 1920s. (Michael B. Dougan, Encyclopedia of Arkansas History & Culture)

Home Nursing Care, Traveling Incubators, and County Efforts

Home visits by local public health nurses, also funded by Title V, were a signature perinatal service in Arkansas. Public health nurses were making home visits to maternity patients and teaching new mothers to care for their babies as early as the 1930s.

In 1945, recognizing that premature births were the largest single cause of death among infants, the Arkansas Medical Society’s Committee on Prematurity worked with the Board of Health to organize a program for better premature infant care. Incubators were constructed for use throughout the state. For example, three incubators were purchased in Newton County in 1949, and the county’s one public health nurse traveled throughout the area to assist in care of maternity patients.

The Jefferson County Premature Project, a collaboration between Jefferson County Hospital, the Jefferson County Health Unit, and the state Health Department, began in the 1960s. Public health nurses helped families prepare for their newborns and made regular visits to assist with their care.

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In 1969, the Arkansas General Assembly and Governor Winthrop Rockefeller enacted legislation which addressed health needs of indigent patients in nine east Arkansas counties: Crittenden, Cross, Craighead, Greene, Lee, Mississippi, Phillips, Poinsett, and St. Francis. Act 490, with funds from extra dog track racing days at Southland Park in West Memphis, provided a medical resource for high risk pregnant women needing specialized maternity care for both mother and infant. Women meeting income eligibility criteria and who had a pregnancy-related high risk condition could participate. Eligible women, identified by private providers and nurses from local health unit maternity clinics, were provided hospitalization prior to delivery, delivery and outpatient services, and newborn care.

Wave of Progress in the 1980s

As part of the 1989 Southern Regional Project on Infant Mortality, then-Governor Bill Clinton stated that “[w]e cannot afford to lose our next generation, the children who will become the future leaders, workers, parents, and innovators of our region and our nation.” This would mark the end of a decade in which a flurry of maternal and child health efforts occurred.

From 1978 through the early 1980s, the Arkansas Maternal, Infant and Child Health Project teamed nutritionists, social workers, and obstetric and pediatric nurses to provide maternity and pediatric clinic services in sites throughout the state. The Maternal and Child Health Block Grant was created in 1981, consolidating Title V funds with new funding streams. The block grant required each state to offer prenatal clinic services to low income pregnant women.

In 1984, Governor Clinton appointed the Task Force on Indigent Health Services. One of its recommendations was the development of a regionalized system of maternity care and care for children under the age of five. Shortly thereafter, the General Assembly created the Arkansas Indigent Health Care Advisory Council. The result

was a regionalized perinatal care system that enhanced access and quality of obstetrical services for indigent pregnant women.

Assisting in this regionalized approach, the Regional Medical Center worked alongside the Health Department to provide maternity services to high-risk Arkansans. In addition, the General Assembly funded the Reproductive Health Monitoring System in order to collect and analyze data to describe birth trends, congenital anomalies, fetal deaths, and any developmental disorders.

Other educational and analytical efforts were conducted to assist physicians and public health nurses to better serve pregnant women. UAMS sponsored several regional continuing education programs on risk assessment, substance abuse, preterm labor, and other perinatal topics to physicians and nurses across the state. The Health Department and the High Risk Pregnancy Program at UAMS worked jointly to create standard maternity risk assessment tools and formal referral guidelines.

In April 1987, Arkansas became one of the first states to take advantage of the Medicaid eligibility expansion options through the Sixth Omnibus Budget Reconciliation Act (SOBRA), which provided more extensive coverage for children and pregnant women. Staff from the Health Department and state Department of Human Services Medical Services Division (Medicaid) worked closely together to address infant mortality. Dubbed “Good Beginnings,” the Health Department implemented a new process to determine eligibility for Medicaid and provided additional services like nutritional counseling through local health units.

Good Beginnings was part of the broader Healthy Futures Program that worked to create a regional system of appropriate maternity care for Arkansas women based on their risk factors. With funding from the Robert Wood Johnson Foundation, the Healthy Futures Program included a statewide

media campaign – the Campaign for Healthier Babies – and a toll-free hotline.

Infant and Child Death Review and Sudden Infant Death Syndrome (SIDS)

Historically, Pulaski County’s infant mortality rate exceeds that of the state and the nation. Analyzing and reviewing infant deaths became critical in understanding infant mortality trends and shaping policies to reduce mortality rates.

During the 1980s, the Health Department, with funding from special grants, provided funding to the state crime lab to perform autopsies of suspected SIDS deaths. Today, the Department still provides some funding for this service.

By 1992, the Health Department had established the Infant Death Review which used a case-by-case approach to investigate Pulaski County’s high infant mortality rate. There was a complete review of all Pulaski County infants who died before reaching age one between August 1989 and August 1991. The Health Department, in 1998, began a statewide Infant Mortality Review project that examined all infant deaths in the state, making recommendations for broad improvements in health and social service systems.

Home interviews and grief counseling to families experiencing the death of an infant were provided across the state. These services were funded by the Maternal and Child Health Bureau of the U.S. Department of Health and Human Services through the national Fetal and Infant Mortality Review Program. Public health nurses statewide were trained to provide the services. Recommendations made by the infant mortality review teams included how to help mothers recognize the dangers of smoking around infants, follow safe sleep practices, and seek early prenatal care.

In 2009, funding for infant and child death reviews was established as one of Governor Mike Beebe’s health initiatives. The project’s primary goal, through a joint effort of the Health Department, the

UAMS Department of Pediatrics, and the Arkansas Children’s Hospital Research Institute, is continued implementation of a well-coordinated Infant and Child Mortality Review Program in Arkansas.

For more than a decade, the Health Department has participated in and promoted educational campaigns to reduce the risk of SIDS and other sleep-related infant deaths. Beginning in the mid-1990s, the Back to Sleep campaign was a major priority of the Department. In 2012, Arkansas joined the Safe to Sleep Champions Initiative, an effort created by the Eunice Kennedy Shriver National Institute of Child Health and Human Development of the National Institutes of Health.

Maternal and Child Health Looking Forward

Since the 1980s, Arkansas has used about a third of its Maternal and Child Health Block Grant to fund prenatal clinic services in local health units. Local physicians and hospitals provide care for pregnant women with medical complications and work to make sure that nearly all pregnant women have access to a hospital for delivery. Currently, more than 60 of the state’s 75 counties provide prenatal clinic services within their health units. In 2010 and 2011, the Health Department saw an average of 12.4 percent of all Arkansas women who gave birth. Nearly 80 percent of all pregnant women now receive prenatal care beginning in their first trimester. Better participation by mothers is, in part, a response to an increased availability of services and programs currently offered by the Health Department.

Partnering with the UAMS Department of Obstetrics and Gynecology, the Health Department provides clinical services to high-risk pregnant women in its LHUs. UAMS, through its subspecialists in maternal-fetal medicine, provides consultation services to Health Department clinicians through the Antenatal and Neonatal Guidelines, Education and Learning System (ANGELS). With significant financial support from the Arkansas Department of Human Services, ANGELS provides evidence-based guidelines for

maternal-fetal and neonatal care. Using interactive video conferencing, consultations are available so that patients, local providers, and UAMS physicians can communicate remotely and provide support directly to patients in the LHU. ANGELS also provides a 24-hour call center for women with concerns about their pregnancy, labor and delivery, or post-partum care.

The Department of Health Maternal and Child Health Division and Department of Human Services initiated a program to provide home visiting services statewide to pregnant and newly parenting Medicaid clients considered at risk. Although very effective, the program was deemed financially unsustainable, so it was restructured. Currently, the In-Home Services Section of the Health Department operates the Maternal and Infant Program (MIP).

In the early 2000s, the Health Department collaborated with the Nurse Family Partnership to implement a home visiting program to match first-time, low income mothers with registered nurses until their children were two years old. Due to a lack of funding, the home visiting program was cut a few years later, only to reemerge in 2011 with the assistance of federal funding. The first team of nurses in the new program began home visits in the Arkansas delta region in September 2011.

Most recently, the Health Department partnered with Arkansas Children's Hospital and received federal funding to support the Arkansas Home Visiting Network. This network will build a support system for programs that use home visiting as their primary source of service delivery.

Family Planning Introduced

With encouragement from the Arkansas Public Health Association and approval of the Arkansas Medical Society, the Health Department began to offer family planning services in 1964. Dr. Eva Dodge, UAMS professor and obstetrical consultant for the Health Department, assisted in the development of the Arkansas Family Planning

Program. Dr. Dodge worked with Margaret Sanger, the founder of Planned Parenthood, in the early 1940s and drew on this experience when developing Arkansas's program.



Dr. Eva Dodge, 1959.
(Arkansas History
Commission)

From 1964 to 1965, the Health Department

offered a limited number of family planning clinics throughout the state. In 1966, President Lyndon Johnson required that at least six percent of all federal maternal and child health funds be spent on family planning services provided in the clinics. As a part of Johnson's Great Society initiative, the Office of Economic Opportunity (OEO) granted Arkansas's first award to Pulaski County in 1966 to organize a countywide Family Planning Program. By the late 1960s, services were also being provided in Randolph and Grant counties.

In July 1969, in his Special Message to the Congress on Problems of Population Growth, President Richard Nixon stated, "No American woman should be denied access to Family Planning assistance because of her economic condition." The Title X Family Planning Services and Population Research Act was enacted the following year. Its mission was to provide "the educational, comprehensive medical, and social services necessary to aid individuals to determine freely the number and spacing of their children."

In Arkansas, clinics offered infertility counseling and contraceptives, usually in the form of pills or intra-uterine devices (IUDs) - the first contraceptive devices prescribed by Arkansas family planning clinics. According to Dr. Rex Ramsey Jr., state health officer from 1974 to 1979, the purpose of the family planning clinics was "to enable families to have the number of children they want and can economically care for."

Services were initially available only to couples giving written consent but later included all women, men, and adolescents. Passed by the 69th General Assembly and signed into law by Governor Dale Bumpers, the Arkansas Family Planning Act of 1973 provided that all contraceptive information and supplies would be available to everyone, regardless of age, race, sex, or income. By year's end, family planning services had been provided to more than 20,000 women.

On May 1, 1988, the family planning programs at the Health Department merged with the Arkansas Family Planning Council, Inc. (AFPC), which had been offering clinical and educational family planning services since 1971. The purpose was to increase the current available family planning resources with limited funding. These combined programs have been a part of the Health Department since June 1988.

Teen Pregnancy and Sex Education

During this time, Arkansas had one of the highest teen pregnancy rates in the country. Health Department Director Dr. Jocelyn Elders hoped to combat the epidemic by instituting school-based medical clinics to offer pregnancy counseling and distribute condoms. These efforts created controversy. However, by the 1990s, Little Rock Central High School in Pulaski County and Lincoln High School in Washington County made these services available in their school health clinics.

From 1988 to the mid-1990s, there were 94 clinical sites, two contract clinical sites, and some school-based clinics offering family planning services in Arkansas. In addition, Little Rock Job Corps and Jefferson Comprehensive Community Center partnered with the CDC's Division of Reproductive Health to offer clinical services in their communities.

In 1997, state funding became available for efforts to reduce teen pregnancy. In 1998, the Health Department and the Unwed Birth Comprehensive Strategies Committee targeted counties with the

highest teen pregnancy rates to support coalitions aimed at reducing unwed teenage pregnancy. Benton, Crawford, Jefferson, Mississippi, Phillips, Pulaski, Sebastian, and Washington counties had coalitions. State funds decreased, and those projects ended by 2009.

Abstinence Education

As part of the 1996 Welfare Reform Bill, Congress appropriated funds for abstinence education. Every \$4 of federal allocation had to be matched with \$3 of state, local, or private resources. The purpose of the abstinence education program was to provide "...mentoring, counseling, and adult supervision to promote abstinence from sexual activity, with a focus on those groups which are most likely to bear children out of wedlock."

Act 1159 of 1997 established the Unwed Birth and Abstinence Education programs at the Health Department. State funds were appropriated to support both programs. The Governor's Steering Committee on Abstinence Education was created by executive order to serve as a clearinghouse to consider state grants to promote teen abstinence education and advise on program management and evaluation of the Abstinence Education grant. Governor Mike Huckabee appointed nine committee members. Abstinence education programs were carried out through grants to community-based organizations. By 2009, federal and state funding for both abstinence education and unwed birth programs had been cut.

In 2010, federal abstinence funding was again made available to states under federal Title V funding through the Affordable Care Act. Arkansas submitted a successful application for funding and selected the evidence-based curriculum, Choosing the Best. The current program targets youth 12 to 19 years old and is managed through Healthy Connections, Inc. in Mena, Arkansas. The program funds five sites: Prevention Education Programs, Inc., in Arkansas and Prairie counties; Centers for Youth and Families in Pulaski and Saline counties; Centers for Youth and Families in Chicot County;

Prim 'n Proper/Choosing to Excel in Conway and Faulkner counties; and Reality Check, Inc., in Benton, Washington, Madison, Carroll, Boone, Johnson, Crawford, and Sebastian counties.

Women's Health Waiver

In 1997, the first Family Planning Waiver was implemented in Arkansas. This expanded coverage of family planning services under the Medicaid program to include all women of child-bearing age with incomes below 133 percent of the federal poverty level (FPL). Prior to the waiver, reimbursement for family planning services was only available to Medicaid-eligible women in extreme poverty or for pregnant women whose incomes were up to 133 percent of the FPL within 60 days postpartum.

In 2003, a three-year extension was granted and the name changed to the Women's Health Waiver. The expansion included coverage for women with incomes up to 200 percent of the FPL. Participation and dollars saved increased significantly. During the waiver's first five years, cumulative costs were approximately \$47 million, while cumulative Medicaid costs averted were approximately \$122 million. After six years, there was a net reduction in Medicaid expenditures of approximately \$75 million.

The Women's Health Waiver, and its predecessor, the Arkansas Family Planning Waiver, have resulted in a cumulative cost savings of over \$743 billion. The most recent estimates show nearly 57,000 unplanned pregnancies have been prevented due to program participation. Savings for each prevented unplanned pregnancy ranged from \$8,162 in 1997 to \$17,652 in 2011.

Reaching the Underserved and At-Risk

Over the last several years, there has been an emphasis on health services for people who are hard to reach or at risk. In 1999, the DHHS Region VI Office of Family Planning made funds available through the Family Planning Educational and

Clinical Services Linkage Innovations Research Project to identify the best programs that address the reproductive health needs of the most underserved populations. In Arkansas, the two sites were the Wilbur Mills Substance Abuse Treatment Center in Searcy and the Ouachita Children's Center in Hot Springs.

From 2002 to 2004, the Family Planning on the Inside project, a collaborative effort between the Health Department's Women's Health Section and the Arkansas Department of Community Corrections in Pine Bluff, linked prison health services with community-based healthcare. This project provided family planning education, services, and referrals of women prior to and after their release.

A partnership between the Health Department, community-based organizations, faith-based organizations, and other providers formed the Crawford Sebastian Community Development Council (CSCDC) Family Planning Program which provided reproductive health services to teens and adults. The CSCDC provided the necessary equipment, facility space, staffing, and follow-up essential to delivery of services, and the Health Department provided supplies (including contraceptives), laboratory services, and other support.

The Phillips County Male Project (PCMP) is an ongoing activity and has received strong support from community leaders and local program administrators for its effort to bring males into the family planning discussion. PCMP promoted participation in reproductive health education, referral, and services, as well as encouraging career-seeking males to pursue family planning and allied health program occupations.

Health Department program goals for 2012 addressed comprehensive family planning through outreach to hard-to-reach populations and partnerships with other providers. Funded through the Personal Responsibility Education

Program, the Centers for Youth and Families provides abstinence education and contraceptive services to foster care adolescents, ages 11 to 19, living in Pulaski County. Aiming to prevent pregnancy and sexually transmitted infections (STIs), the program incorporates at least three adulthood preparation subjects and includes the evidence-based curricula Be Proud Be Responsible and Making Proud Choices.

The Health Department is constantly developing new outreach strategies, based on scientific evidence and population demographics, to determine best practices and services needed to optimize health outcomes. Male educational materials, as a part of family planning, are available for clinics and outreach opportunities, and each Health Department region has an annually updated male services plan. Local health units maintain lists of community resource providers for their area. LHUs employ a variety of methods to remind patients of appointments, including phone, email, and text. LHUs with on-site interpreters have increased the interpreters' available hours, improving accessibility to needed communities.

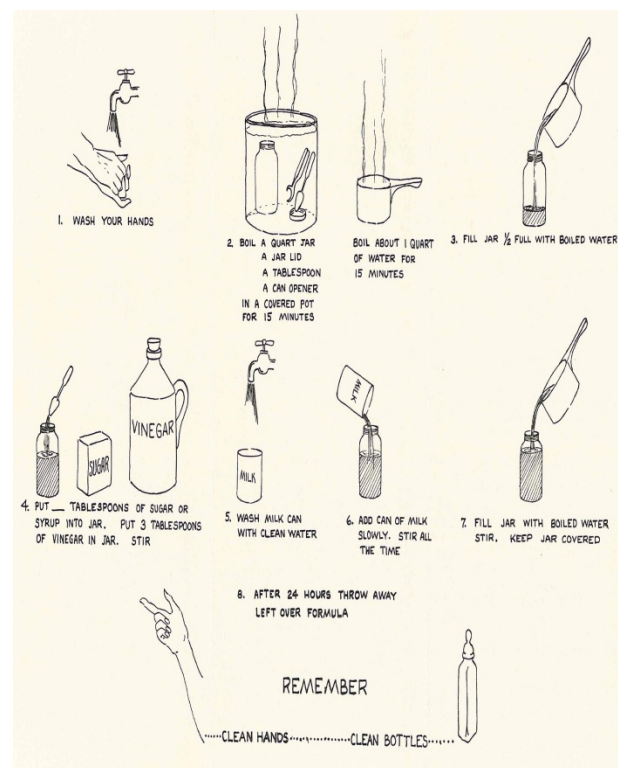
Family planning "float teams" travel in the Central, Northeast, and Northwest regions, using existing nurse practitioners to reach larger at-risk populations. With the objective of reducing unintended pregnancies, these teams take family planning clinics directly to the targeted population. All five regions currently work with the coordinated school health districts, the community nurse specialists (CHNS), the community health promotion specialists (CHPS), and the Department of Education Wellness Centers to address teen pregnancy prevention and family planning within the school districts.

Special Supplemental Nutrition Program for Women Infants and Children (WIC)

During the 1960s, as educators and health workers became more aware of the impact of poverty and malnutrition on low-income individuals, pregnant women, and children, a growing desire to

implement assistance programs emerged. What followed was a decade of social policies designed to address the needs of America's most vulnerable populations.

President Lyndon Johnson made poverty and its impact on American families a primary focus of his administration. In 1966, coinciding with many of his Great Society social initiatives, Johnson signed the Child Nutrition Act to address the nutritional needs of children. In 1969, the White House Conference on Food, Nutrition, and Health convened to focus national attention and resources on the problem of poverty-related malnutrition and hunger. Specific recommendations included placing the nutritional needs of low-income pregnant women and preschool children as the top priority.



Instructions for making vinegar-based formula distributed to households lacking refrigeration. One of several informational brochures distributed in local health units, c. 1962. (Arkansas Department of Health)

An intense national media campaign ensued, and shortly thereafter, various programs were implemented, including the Commodity Supplemental Food Program and the Food Stamps

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Program. Though beneficial, these programs were unable to provide relief to the extent with which it was needed. A taskforce of five physicians, sponsored by the Marshall Field Foundation, was charged with examining the extent of the health problems. Years later, Dr. Raymond Wheeler would recount some of the Field Foundation's findings:

Wherever we went and wherever we looked, whether it was in the rural South or in an urban ghetto, we saw children in significant numbers who were hungry and sick, children for whom hunger was a daily fact of life. And inevitably, many of these children were weak and in pain. Their lives were being shortened. They were, in fact, visibly and predictably losing their energy and their spirit and their health. They were suffering from hunger and disease and many of whom were dying, either directly or indirectly from these conditions.

In 1972, under President Richard Nixon, an amendment to Section 17 of the Child Nutrition Act formally established the Special Supplemental Food Program for Women Infants and Children (WIC). Sponsored by Senator Hubert Humphrey, WIC began as a two-year pilot program providing supplemental food to enrollees and was intended to serve the most vulnerable populations at critical times of growth, to meet nutritional needs, and to establish healthy habits for life. In October 1975, WIC was established as a permanent program nationwide. Legislation followed, in 1977, to increase the overall funding for the program and mandate nutrition education for participants.

The Arkansas WIC Program began in 1974, and within the first year, WIC clinics were created in Arkansas, Ashley, Bradley, Calhoun, Chicot, Cleveland, Cross, Desha, Drew, Lincoln, Monroe, Phillips, Prairie, and Woodruff counties. The program served approximately 2,621 participants with a \$173,000 grant. By 1979, every county provided WIC services through the local health units, with roughly 21,342 participants served. By 2004, Arkansas WIC was serving 89,113 participants and had a total budget of \$75,621,966.

Participants were prescribed supplemental foods through a monthly package tailored to meet their special dietary needs. Foods were chosen to provide essential nutrients likely to be missing from the diets of low-income women, infants, and children. The initial food packages were designed to combat anemia, and foods had to contain high quality protein, iron, calcium, vitamin A, and vitamin C.

The late 1980s saw the beginning of an increased emphasis on breastfeeding promotion and support in WIC. In addition, pregnant and post-partum women became eligible for WIC services. In 1993, an enhanced food package for exclusively breastfeeding women was added that increased the amount of milk, cheese, juice, and legumes and added carrots and tuna. Greater participation by pregnant women reduced the cost of Medicaid by \$3 for every \$1 spent on WIC.

WIC food packages did not change substantially until 2009. In that year, the U.S. Department of Agriculture directed the National Institutes of Health (NIH) to study all WIC food packages. NIH made recommendations that significantly changed WIC eligible foods. Food packages were legislated to promote and support the establishment of successful, long-term breastfeeding, to provide WIC participants with a wider variety of foods including fruits, vegetables, and whole grains, and to provide WIC state agencies greater flexibility in prescribing food packages to accommodate the cultural food preferences of participants.

In July 1992, the Farmers' Market Nutrition Program was established by Congress to provide fresh, nutritious, unprepared, locally grown fruits and vegetables through farmers' markets and roadside stands to WIC participants and to expand awareness and sales at farmers' markets and roadside stands. Arkansas WIC has participated each year since 2008. In fiscal year 2011, Arkansas vendors accepting WIC coupons received more than \$66 million.

The Arkansas WIC Program is evolving in how it reaches participants and is now using technology to educate and encourage enrollment in the program. Facebook™, texting, and other forms of social media are used. In addition, all WIC food programs nationally must convert to Electronic Benefit Transfer by 2020, though Arkansas expects full implementation in 2014.

WIC enables parents to stretch every dollar and ensure a healthy start to a child's nutritional needs. Additionally, by reaching women early in their pregnancies for health care, making referrals for prenatal care and immunizations, and educating mothers on healthy nutritional choices, the WIC Program has been an effective tool in reducing the number of low birth-weight babies, improving overall birth outcomes, helping children develop into stronger and healthier adults, and reducing some of the state's Medicaid costs.

CHRONIC DISEASE

Alzheimer's, asthma, cancer, diabetes, heart disease, hypertension, and other chronic diseases affect millions of Americans. In Arkansas, cancer is the second leading cause of death – lung cancer is the leading cause of those deaths. Major risk factors for many chronic diseases include smoking, physical inactivity, and high-fat diets. In an effort to reduce the impact of chronic diseases, the Chronic Disease Branch at the Health Department educates Arkansans on the signs, symptoms, and treatment of chronic diseases; advocates for prevention, treatment, and control of chronic diseases; and provides clinical screening services.

Early Chronic Disease

Over the course of the last 100 years, the common infectious diseases became less prevalent due to the successes of public health interventions such as immunizations and improved sanitation. Public health efforts that once centered on infectious diseases were gradually shifting toward chronic diseases.

Early on, nutritional deficiencies were most often determined to be the cause of chronic diseases such as pellagra and rickets, a disorder caused by a lack of vitamin D, calcium, or phosphate that led to softening and weakening of the bones. Though easy to treat, nutritional deficiencies were often overlooked when first investigating such diseases. In the case of scurvy, it took scientists hundreds of years to discover the cure was as simple as adding vitamin C to the affected individual's diet.

More recently, scientists, policymakers, and medical and public health personnel have successfully put into place a number of nutrition-based programs to provide nutrition education and healthy supplemental foods to children and adults. Goiter, an abnormal enlargement of the thyroid gland, was determined to be the result of iodine deficiencies, which in many countries is a major public health issue affecting about two billion people. By 1924, table and cooking salts were fortified with iodine as a simple and inexpensive way of fortifying the population's diet. More recently, food was fortified with folic acid, and educational campaigns encouraging women of child-bearing age to use folic acid were developed to reduce the number of babies born with serious spinal cord defects.

Historically, chronic diseases have disproportionately affected individuals who are poor and less educated. Public health efforts began to acknowledge these trends, and by the late 1930s and into the 1940s, the Health Department had the beginnings of cancer and heart programs to help serve indigent populations and those without access to care.

Chronic disease-related activities slowly expanded, and in 1962, the Division of Chronic Disease started the first visits by public health nurses to chronically ill persons in their homes. The nurse visits were conducted as directed by private physicians. A pilot project was conducted in Ouachita County from 1962 to 1965. By 1965, public health nurses were making home health visits to patients with

chronic diseases in 33 counties, and most visits were paid for by the federal Medicare program. Arkansas became one of the first rural states to implement statewide home health visits. These nurse visits were the start of the In-Home Services Program.

During the 1970s, the Bureau of Cancer and Special Services housed the Cancer Registry and Cancer Screening divisions. Agency reorganization, in December 1979, created programs for hypertension and chronic disease within the Division of Health Maintenance. By 1981, in order to add management support to the growing number of chronic disease programs, a Section of Environmental and Personal Health Maintenance was created.

The emergence of infectious diseases such as HIV combined with budget cuts in the 1980s forced a shift in the Health Department's priorities. By the end of the decade, the Division of Health Maintenance had been eliminated, and two new divisions were formed – the Division of AIDS/STD, Communicable Disease and TB and the Division of Chronic Disease and Disability Prevention. The disability prevention programs were funded through a new federal grant.

By 1990, the Department continued to rebuild and expand its Chronic Disease and Disability Prevention Division. Through federal block grant funding, a program called PATCH, which stood for Planned Approach to Community Health, was implemented, as well as a small stroke prevention program called Strike out Stroke. The Strike out Stroke program also had a small smoking prevention component.

Public health continued to direct more focus on chronic diseases, and additional federal funds were available to support these efforts. By the late 1990s, the Division of Chronic Disease and Disability Prevention included programs such as Breast and Cervical Cancer Control (including BreastCare and the Arkansas Central Cancer Registry), Diabetes Prevention and Control, Tobacco Prevention and

Education, Traumatic Brain Injury, Worksite Wellness, and disability prevention programs targeting child safety seats and fire prevention. At that time, many of these programs consisted of only one staff person who coordinated the goals and objectives internally and among partners and coalitions.

In 1996, \$37,000 from a Preventive Health Block Grant funded the first worksite wellness program. This was the start of the Department's efforts to promote healthier environments for workers.

Arkansas BreastCare Program Takes Center Stage

In 1992, the Department of Health received capacity building funds from the Centers for Disease Control and Prevention (CDC) Federal Breast and Cervical Cancer Early Detection Program. The federal program had a mandate to provide funding to every state. Capacity building efforts involved defining the breast and cervical cancer burden, identifying potential healthcare providers, and developing public and professional education resources. In 1995, the Health Department received implementation funding, which meant that qualified women could receive screening and diagnosis for breast and cervical cancers. Those with a diagnosis of cancer were treated through a loosely connected network of charity providers throughout the state.

Sponsored by State Representative Dr. Josetta Wilkins of Pine Bluff, the Breast Cancer Act was adopted by the legislature in 1997. The act provided supplemental funds for screening and diagnosis, as well as treatment of diagnosed breast cancers. In addition, an eight-member, governor-appointed advisory board was established to provide policy and fiduciary guidance for spending the state dollars.

The Arkansas BreastCare Program, housed within the Department, became fully operational in 1999. New state funds were available to enhance the existing federal funding. The state funds were used for medical services and increased public and

professional education. With the guidance of the BreastCare Advisory Board, enrollment and billing centers were established, professional education efforts were developed, and a media campaign was launched.

The BreastCare Program successfully implemented a statewide breast and cervical cancer early detection program. In addition, development of a strong and stable infrastructure has allowed for expanded screening, detection, and treatment services over the years.

The federal Breast and Cervical Cancer Treatment Act of 2000, allows BreastCare women, diagnosed with breast or cervical cancer, to be eligible for some Medicaid services. Additionally, in 2001, the state's BreastCare Advisory Board voted to match federal funds for treatment of breast and cervical cancers. Medicaid Category 07 was established for BreastCare-eligible women providing all Medicaid services to enrollees.

The BreastCare Program continues to provide free mammograms, clinical breast exams, Pap tests, and other tests for uninsured residents of the state. Regardless of changing funding streams, the program was able to provide services seamlessly, primarily through a very strong network of organizations and volunteers. Each year, in recognition of her efforts, Josetta Wilkins Awards are given to a volunteer individual, professional individual, and an organization that make the fight against breast cancer their top priority and raise breast cancer awareness in Arkansas.

Comprehensive Cancer Control

In 1998, using case study reports from state health departments, the CDC developed a set of recommendations and lessons learned for states to use as they moved forward in developing comprehensive programs for cancer prevention and control. From the data gathered, the CDC chose a handful of states that were ready to receive training and technical assistance in plan development. Although Arkansas was chosen as one of the

“planning” states, it received no additional funding due to federal funding constraints.

Despite this lack of funding, the Department moved forward, in partnership with other internal agency programs and external organizations, to form the Arkansas Cancer Control Taskforce. In 2001, the Taskforce wrote the *Arkansas Cancer Plan: A Framework for Action 2001-2005* and soon after was awarded implementation status with funding from the CDC. The Taskforce eventually evolved into the Arkansas Cancer Coalition, comprised of about 650 individual members and cancer control partners representing various partner organizations statewide. Coalition members work to reduce the burden of cancer for everyone by strengthening and sustaining the cancer control support network within the state.

Cancer Registry Authorized

Arkansas was one of the first states to develop a statewide cancer registry, which remained in use for more than 30 years. In 1945, the Arkansas legislature authorized a state cancer registry that was organized as a freestanding Cancer Commission. Act 277 of 1945 established the Commission whereby 11 major hospitals around the state gathered information on cancer and performed follow-up. The registry was created using paper and pencil, nothing like the computerized registries of today. In 1970, the registry was computerized, though reporting was voluntary, and data quality was poor. Due to the relatively weak structure and authority, in addition to state funding cuts under Governor Bill Clinton, the registry was discontinued in 1979.

Through Act 435 of 1989, the Arkansas legislature again authorized the creation of a central cancer registry and this time transferred all functions to the Health Department. The new registry was modeled after one developed by the University of Kentucky, which was considered exemplary at that time.

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In October 1992, Arkansas received federal funding for capacity building for a Breast and Cervical Cancer Control Program that was later expanded to include screening. Also in 1992, the U.S. Congress passed the Cancer Registries Amendment Act that provided federal funding for state central cancer registries. These federal actions strengthened the central cancer registry as a core component of cancer control efforts.

In 1994, with approval from the CDC's Program of Cancer Registries, the Department proceeded with its plans to implement the Arkansas Central Cancer Registry. Today, the registry is a gold-standard system. The data housed within the registry serves a fundamental role in cancer research and prevention efforts and enables public health professionals to understand better the cancer burden in Arkansas.

First Tobacco Warnings

Though tobacco use was evident in the 1800s, it remained relatively uncommon until the advent of a cigarette-making machine in 1881. As more and more companies made cigarettes, the popularity of this pastime grew. During WWI and WWII, free cigarettes were provided to servicemen. Tobacco use was also increasing among women as changing attitudes encouraged their entry into the workplace. The expanded market and servicemen returning from the wars led to huge increases in tobacco production and sales.

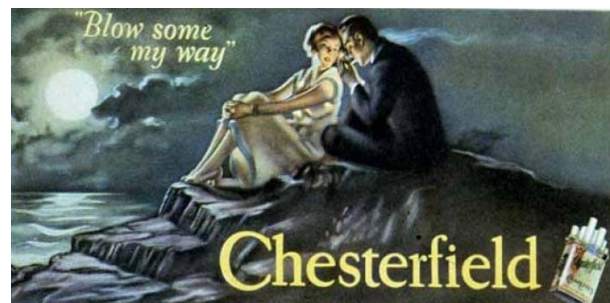


(Public Health Image Library)

By 1944, production was up to 300 billion cigarettes a year, and servicemen accounted for nearly 75 percent of all cigarettes purchased. The wars were good for the tobacco industry – smoking had become a popular and accepted part of culture, and companies made millions of dollars from the sale of cigarettes. Many nicotine-addicted veterans became lifetime customers. A couple of decades would pass before the public was warned about the associated dangers.

In 1964 in response to increasing rates of lung cancer, the U.S. Surgeon General issued a report about the dangers of cigarette smoking. The report identified nicotine and tar, ingredients in cigarettes, as the source. In 1965, the U.S. Congress passed the Cigarette Labeling and Advertising Act which required every cigarette pack to have a warning label on its side reading "Cigarettes may be hazardous to your health."

Tobacco use was deeply ingrained in the American culture, and smoking continued despite the public health warnings. In the 1980s, policies aimed to reduce smoking increased as federal, state, and local governments and private companies began restricting tobacco advertising and limiting the use of tobacco in public places. An Office of Tobacco Control and Prevention was formed at the Health Department with a grant provided by the CDC.



A 1926 ad targeting women smokers who were a largely untapped market at the time. (Leggett & Myers)

The funds supported two positions and also provided small community grants to reduce illegal cigarette sales to minors. The tobacco program also received about \$50,000 from the Office of Alcohol and Drug Abuse Prevention to develop the Keep

Illegal Cigarettes from Kids (KICK) campaign that won the 1996 Vision Award from the Association of State and Territorial Health Officials.

MSA and CHART

By the late 1990s, Arkansas's high smoking rates and related diseases contributed to rising and unaffordable healthcare costs. Tobacco use was the major contributing factor to Arkansas's poor health burden and designation as one of the least healthy states in the nation. At this time, Arkansas had the fourth-highest rate of age-adjusted lung cancer deaths and cardiovascular deaths, as well as the second-highest rate of stroke deaths. As a result, the overall age-adjusted death rate for Arkansas was 19 percent higher than the national average. Undoubtedly, these high mortality rates were associated with Arkansas having the 11th-highest rate of smoking among adults and the seventh-highest rate of tobacco use among high school students.

In November 1998, 46 state attorneys general and four major tobacco corporations reached an agreement concerning the states' tobacco-related healthcare costs. As a result of the Tobacco Master Settlement Agreement (MSA), the tobacco companies offered financial payments in exchange for individual state agreements to hold the companies harmless for past and future medical claims related to tobacco use. The companies also agreed to restrict marketing to youth and to eliminate all direct and indirect lobbying efforts aimed at influencing legislation and regulation of tobacco products. The settlement did not include any guidance or restrictions on states' use of their MSA funds.

On behalf of Arkansas, Attorney General Winston Bryant agreed to accept approximately \$62 million MSA dollars the first year and \$50 to \$60 million each year thereafter. A working group - the Coalition for a Healthier Arkansas Today (CHART) - was formed to assess the state's needs and determine where MSA dollars would have the greatest impact to improve the health of Arkansans.

The CHART group was comprised of healthcare providers, leaders from educational and research institutions, and health advocacy organizations. The major CHART principles stipulated that all funds should be used to improve and optimize the health of Arkansans; funds should be spent on long-term investments that improve the health of Arkansans; and future tobacco-related illness and healthcare costs in Arkansas should be minimized through this opportunity.

In 2000, after the CHART plan failed to pass in a Special Session, Governor Mike Huckabee announced his intention to take the proposal "to the people" as a voter-initiated referendum in the November election. Ninety thousand signatures were required for placement on the ballot - equivalent to 10 percent of the voters from the previous statewide election. During the next three months, local tobacco prevention coalitions, grassroots organizations, and paid canvassers garnered more than 120,000 signatures supporting the ballot initiative.

With majority support in 73 of the state's 75 counties, the CHART plan, called the Initiated Tobacco Settlement Proceeds Act of 2000, passed with the largest majority in any statewide race that year, receiving 64 percent of the votes. With passage of the Initiated Tobacco Settlement Proceeds Act (Initiated Act 1), it was clear voters were ready for Arkansas to lead the nation in reducing tobacco use and its associated diseases.

Comprehensive Tobacco Prevention and Cessation Program

A small Tobacco Prevention and Education Program was established in the Health Department through a small CDC federal grant in 1993. However, the program lacked adequate funding to be a viable player in statewide tobacco prevention efforts. In time, funding would be made available to transform this program into a comprehensive, evidence-based tobacco prevention and cessation program.

Following CHART plan recommendations, the legislature directed MSA funds toward a variety of health-related programs and institutions including the UAMS College of Public Health (COPH), the Minority Health Initiative, the Arkansas Biosciences Institute, and the Delta Area Health Education Center. In addition, the Tobacco Prevention and Cessation Program (TPCP) would be established and funded with 31.6 percent of the MSA dollars annually. Currently, Arkansas is the only state that continues to direct all MSA dollars toward health-related programs.

One important recipient of Initiated Act I funds was the new COPH which was dedicated in 2004. For years, former Health Department Director and State Health Officer Dr. Fay W. Boozman and other key public health and state officials worked to create the COPH in Arkansas. For the first time, the state had a college offering graduate level specialty tracks in public health. The college would also be a valuable resource to address the state's major, preventable causes of morbidity and mortality, as well as the risks encountered by groups who disproportionately bear the burden of disease. As the Department director, Dr. Boozman championed public health efforts and the promotion of healthier lifestyles statewide. After his accidental death in 2005 and as a tribute to his diligent efforts, the college was re-named the UAMS Fay W. Boozman College of Public Health.

The comprehensive TPCP was modeled after the CDC's Best Practices for Tobacco Prevention and Control. The TPCP includes components for community prevention programs; local school programs for education and prevention in grades K-12; enforcement of youth tobacco control laws; statewide programs with youth involvement to increase local coalition activities; tobacco cessation programs; tobacco-related disease prevention programs; a comprehensive public awareness campaign; and grants and contracts funded for monitoring and evaluation, as well as data gathering.

The program has been successful. Smoking rates among adults and children have steadily declined, as a result of evidence-based strategies, such as the tobacco Quitline and the award-winning Stamp out Smoking (SOS) Campaign. As smoking rates decline and fewer cigarettes are sold, Arkansas's MSA dollars decrease. While reductions in funding can be troublesome, in this case it is a positive sign of our state's strong tobacco prevention and cessation efforts.



Tobacco Initiatives Take Center Stage

Though smoking rates were declining during this period, and despite rates of heart disease, stroke, and cancer being linked to secondhand smoke, smoking was still present in nearly all public buildings including hospitals. Advocates for change, including local coalitions, organized to propose new state laws banning smoking in all workplaces, including most restaurants. The Clean Indoor Air Act took effect on July 21, 2006, making Arkansas one of 18 states in the nation to prohibit smoking in indoor workplaces and public areas, reducing the public's exposure to secondhand smoke.

Today, the Clean Indoor Air Act is enforced in hospitals, public buildings, businesses, restaurants and even some bars. The concern by some that businesses would lose revenue did not materialize, and compliance has been very good. The changes in public policy have helped increase the number of people who quit smoking. The health benefits associated with clean indoor air laws are attributed to reduced exposure to the toxins contained in tobacco smoke. Research documents the fact that healthcare costs and worker productivity are both improved as a result of this act.

In 2006, Arkansas became the first state to implement a primary law that prohibited smoking in a car with a young child. The Arkansas

Protection from Secondhand Smoke for Children Act of 2006 prohibited smoking in any motor vehicle in which a child who is less than six years of age and weighs less than 60 pounds is restrained in a child passenger safety seat. The act was amended in 2011 to protect children under the age of 14. As of 2011, Arkansas was one of only four states to have such laws.

Implementation of prevention and cessation programs coupled with changes in public policy are positively affecting the smoking rates in Arkansas. However, there are other public health initiatives that have benefited from these efforts including the creation of a statewide trauma system.

Smoking Funds State Trauma System

Injury is the number one killer of Arkansans between the ages of one and 44. Thirty percent higher than the national average, Arkansas's fatality rate is, in part, a product of the state's rural road system, the 12th largest in the nation. Furthermore, a 2008 study conducted by the American College of Emergency Physicians, found that Arkansas had the worst system of emergency care in the nation.

For some time, government officials and healthcare providers had been looking for a way to fund a trauma system in Arkansas, the only state without a designated, verified trauma center. Recognizing that tobacco taxes not only reduce smoking rates but also create new public health funding sources, Governor Mike Beebe developed a tax proposal that would fund Arkansas's trauma system. Act 393 of 2009 established Arkansas's trauma system under the direction of the Health Department, using a 56-cent per pack increase on cigarettes and a tax on smokeless tobacco products.

In September 2010, three designated trauma centers were announced as part of the new system. UAMS in Little Rock and Regional Medical Center at Memphis (The MED) in Tennessee were designated as Level I centers, while Jefferson Regional Medical Center in Pine Bluff was designated as a Level II

center. By the end of 2010, Arkansas Children's Hospital also received a Level I designation. As of December 17, 2012, 58 hospitals have been designated. Arkansas now has five Level I, five Level II, 19 Level III, and 29 Level IV hospitals within its trauma system.

Implementation of the trauma system includes funding for Emergency Medical Services (EMS) providers and training. In addition, the Arkansas Trauma Communication Center (ATCC) was created to ensure that traumatically injured patients are transported to the most appropriate hospital(s) to treat their specific injuries in the shortest time possible. Trained paramedics and nurses act as call center operators to triage and advise on transport of major and moderate trauma patients to hospitals with the appropriate capability to provide optimum care.

Prior to the trauma system, EMS providers transported trauma patients to the nearest hospital regardless of that facility's ability to care for the injury. In many cases, the patient needed a higher level of care. Through guidance received from the ATCC, ambulances are now able to bypass those lower level facilities and quickly deliver patients to definitive care. If for some reason a trauma patient in a lower level facility is determined to need a higher level of care, the ATCC can also assist with the hospital-to-hospital transfer. In these instances, the receiving hospital's emergency department would often spend several hours to arrange the acceptance of the traumatically injured patient at a higher level facility. Now, with the resources of the ATCC and cooperation of the state's hospitals and EMS providers, the average time of acceptance for all trauma patients (major, moderate, and minor) has been reduced to seven minutes.

Addressing Lifestyle for a Healthy Arkansas

In the late 20th century, due to poor diet and lack of physical activity, obesity rates began to skyrocket. Obesity rates among Arkansas's children and adults had increased steadily over the last decades and regularly exceeded the national rates. In fact,

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for nearly two decades, Arkansas's obesity rate had been among the highest in the nation. The obesity epidemic became one of the most pressing public health threats to families and children, and the cause stemmed from two things: eating too much and exercising too little.

As more and more obese children reached adulthood, the prevalence of diabetes and hypertension began to surge. By the early 21st century, diabetes was the sixth leading cause of death in the state, and Arkansas ranked nearly last in availability of key diabetes resources. Arkansas was leading the nation in deaths from stroke, and stroke was the third leading cause of death in the state. Furthermore, Arkansas had the 15th highest heart disease mortality rate in the U.S., with heart disease being the leading cause of death in the state.

In 1996, the CDC funded the Arkansas Diabetes Prevention and Control Program (DPCP) to reduce the disproportionate burden of diabetes in the state. The DPCP was created to define and monitor the burden of diabetes and to develop new approaches to diabetes control by raising community awareness and coordinating health system efforts.

In 2000, Arkansas became one of 14 states selected to receive capacity building funds from the CDC to establish a cardiovascular health program. The program was charged with defining the burden of cardiovascular disease and developing partnerships that would work together to create a state plan with population-based strategies to improve cardiovascular health in Arkansas. In 2004, Arkansas was the only state selected to receive CDC funding to move its cardiovascular program from capacity building to implementation. In order to be eligible for the funding, the TPCP provided state match funds.

In 2011, the Department, in collaboration with the American Heart Association, established the Arkansas Stroke Registry with state funding. The registry collects real-time data on stroke treatment

from hospitals serving Arkansans. The registry received federal funding in 2012.

In 2003, taking the lead in the fight against childhood obesity, the Arkansas legislature passed Act 1220. With the strong support of Governor Mike Huckabee and House Speaker Herschel Cleveland, Act 1220 established improved standards for food options in schools and limited vending and *a la carte* items and was hailed as "the most ambitious school reforms in the nation at that time" by the Robert Wood Johnson Foundation. Adopted in 2007, the law established a statewide Child Health Advisory Committee that developed standards and policy recommendations for healthier foods and increased physical activity in grades K-12 in all public schools.

Some of the law's provisions, like the requirement for an annual body mass index (BMI) measurement for each public school student and a corresponding report for the parent, were controversial. Arkansas received national media attention and attracted public health experts interested in the state's innovative approach.

The reforms, which continue today, are supported with the state's MSA dollars. In 2008, the COPH released four-year evaluation results that showed an increase in positive attitudes for children and parents regarding healthy eating and physical activity, as well as a decrease in the consumption of junk food, both in homes and at school.

During the same year as the school reforms, Governor Huckabee was diagnosed with Type 2 diabetes and began a rigorous routine of diet and exercise, losing more than 100 pounds. In 2004, attempting to "make one of the unhealthiest states in the country one of the healthiest," Huckabee started the Healthy Arkansas Initiative aimed at improving health through lifestyle changes.

The Healthy Arkansas Initiative focused on physical activity, nutrition, and the elimination of tobacco use. Health Department Director Boozman, chronic disease program staff, and other leadership

worked closely with the governor's office to develop and implement Healthy Arkansas strategies that are still in place today. Governor Huckabee became a champion for healthy lifestyles in Arkansas and was one of the first governors in the U.S. to recognize obesity and chronic disease as a public health crisis.

MINORITY HEALTH

Arkansas's long history of slavery, Jim Crow laws, poll taxes, separate but equal doctrines, segregation, racism, and discrimination played a significant role in the health and welfare of African Americans and other minority populations. Only in the last 30 years have noticeable changes occurred to address health disparities and health equity.

Dr. Elders and the Office of Minority Health

In 1987, Governor Clinton appointed Dr. Joycelyn Elders to serve as director of the Arkansas Department of Health. She was the first African American and the first woman to hold that position. Central to Dr. Elders' vision for



Dr. Joycelyn Elders.
(Centers for Disease Control and Prevention)

public health in Arkansas was access to adequate and appropriate services for minority populations.

In 1991, health disparities among minority populations took center stage when Dr. Elders presented findings from the U.S. Department of Health and Human Services' (DHHS) "1985 Report of the Secretary's Task Force on Black & Minority Health" to the Arkansas General Assembly. The report - the first comprehensive national minority health study addressing the health status of African Americans, Hispanics, Asian/Pacific Islanders, and Native Americans compared to that of whites -

documented that 60,000 excess deaths occurred each year in minority populations. Cancer, cardiovascular disease, chemical dependency, diabetes, homicide, suicide, unintentional injuries, and infant mortality accounted for 80 percent of these deaths.

Eight recommendations were outlined in the report: implementing targeted outreach to minority populations; increasing patient education; improving delivery and financing of health services; developing strategies among non-federal entities; improving coordination among federal agencies; increasing involvement of state, local, and community agencies and organizations; improving sources of health data; and developing a research model. In 1986, the year following the report, DHHS created the Office of Minority Health, the first federal agency dedicated exclusively "to improving the health of all racial and ethnic minority populations through the development of policies and programs aimed at eliminating unequal health outcomes."

In July 1991, following Dr. Elders' testimony, the Arkansas legislature passed Act 912 that established the Arkansas Minority Health Commission (AMHC). That same year, Dr. Elders established the Office of Minority Health, now the Office of Minority Health & Health Disparities (OMHHD), within the Department of Health. AMHC, a freestanding legislative entity reporting directly to the governor's office, partners with OMHHD on many health initiatives. The AMHC's mission is to assure that all minority populations have equal access to health care; to provide education; and to address, treat, and prevent diseases and conditions that are prevalent among minority populations. In addition, OMHHD's mission is to provide leadership in improving health outcomes by advocating for health equity for at-risk populations as defined by race or ethnicity, age, education, disability, gender, geographical location, income, and sexual orientation.

Arkansas's Latino Population

The Latino population in Arkansas has more than doubled in size since 2000. In fact, the rate of growth for Hispanics in Arkansas is among the fastest in the nation.

Beginning in the 1990s, efforts were made to address cultural and language barriers that limited healthcare delivery. The Department took several steps to improve access and provide service better adapted to the Hispanic population – efforts that continue today.

Numerous educational materials such as pamphlets, fact sheets and videos were translated from English to Spanish. The Department provided health education materials to minority media outlets statewide to alert Hispanic populations and other minorities groups of important health issues.

In 1996, OMHHD in conjunction with the University of Arkansas for Medical Sciences (UAMS) Affiliate Program developed a Cultural Diversity Training curriculum that is now incorporated into the orientation of all new Department employees.

In 1997-1998, "A Risk Study on Factors Affecting Hispanic Utilization of Public Health Care in Arkansas," sponsored and funded by DHHS in conjunction with the Health Department, examined the factors affecting Latino access to public healthcare in Arkansas including the quality of care. The study was based on the opinions of an expert panel comprised of members of the Latino community, healthcare professionals, and OMHHD professionals who provided leadership for services to the Latino community.

In 2001, Initiated Act I funding provided a five percent set aside that must go toward tobacco prevention cessation projects in minority communities. Several of the projects have targeted Hispanic and Latino communities.

That same year, Act 1461 allowed for a pay increase up to 10 percent for any state employee whose specific job assignment required the skill to communicate in a language other than English.

To assist clients with limited English proficiency, the national Office of Minority Health provided each local health unit two sets of "I Speak" cards. These cards allowed clients to communicate their language needs. OMHHD continues to provide 'I Speak' cards.

Recently, the Department has assessed its capacity to provide bilingual services to non-English speaking clients. The assessment identified gaps in services and provided strategies for improvement.

Arkansas's Newest Minorities

The Marshallese population is the only legal, migrant population permitted to come into the U.S. without a health assessment. Following WWII, and as reparation for its nuclear bomb testing in the Northern Marshall Islands, the U.S. entered into the Compact of Free Association with the three sovereign states of the Republic of the Marshall Islands, the Federal States of Micronesia, and the Nation of Palau. It permitted their inhabitants to live and work in the U.S. without being subject to documentation and inspection requirements under standard U.S. immigration laws.

In the late 1970s, Springdale became home to the state's first Marshall Islander. Although exact numbers are unknown, more than 6,000 Marshallese reside in northwest Arkansas, and it is believed this is the largest Marshallese population within the continental U.S.

Providing health care for Marshallese immigrants presents a unique set of health challenges. Several cultural and ethnic barriers exist between the Marshallese and the rest of the state's population. Marshallese populations also have higher rates of tuberculosis, hepatitis B, syphilis, and Hansen's disease.

Marshallese are ineligible for federally funded public assistance such as Medicare, non-emergency Medicaid, Social Security benefits, food stamps, State Children's Health Insurance Program, and Temporary Assistance for Needy Families.

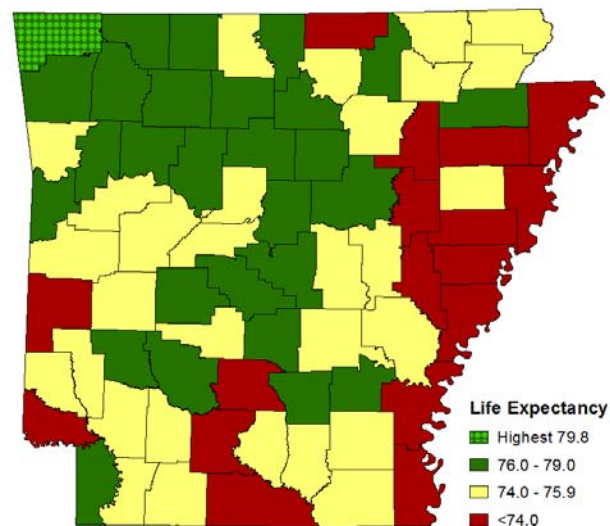
Additional Minority Health Initiatives

In 2007, Governor Mike Beebe signed Act 842 into law, establishing the Arkansas HIV Minority Task Force to study ways to strengthen HIV prevention programs, address the needs of those living with HIV and AIDS, and develop specific strategies for reducing the risk of HIV and AIDS in the state's minority communities.

In 2009, the Department's strategic plan focused on critical health challenges and disparities in the Arkansas delta region. Southeast Targeted Area Resources for Health (STAR.Health) was developed as a pilot program to explore new approaches aimed at addressing health problems in the rural southeast counties of Chicot, Desha, and Lincoln. STAR.Health employs community health workers (CHWs) and provides training to promote improvements in maternal-child health, oral health, and chronic disease management. Currently, nine full-time CHWs, supervised by public health nurses, are located in local health units in the three counties.

One important way to evaluate the overall health of a state is to examine the life expectancy rates. Analysis, conducted by the Department's Health Statistics Branch, identified a handful of "red counties," in which the average life expectancy is six to 10 years less than the county with the highest life expectancy.

In 2011, the General Assembly approved two measures affecting health equity. Acts 790 and 798 of 2011 encouraged state agencies, boards, and commissions to provide programs, services, and research to improve health and health care and reduce health disparities in "red counties."



Life expectancy at birth based on death data from 2007 to 2009 and population estimates for 2008. Individuals living in red counties have an average life expectancy of six to 10 years less than individuals living in the green counties. (Arkansas Department of Health)

The acts also required an annual report detailing services - health screenings, preventive health services, health outreach programs, health awareness programs, and public outreach and education - to reduce disparities in the "red counties."

Sickle cell disease is a genetic condition that is present at birth and is inherited when a child receives a sickle cell gene from both parents. Sickle cell disease affects minority populations. Act 990 created an Adult Sickle Cell Clinic at UAMS with physicians and nurses trained to treat and track sickle cell disease patients.

The Health Department continues to prioritize prevention, control, and treatment of heart disease, stroke, cancer, HIV, diabetes, obesity, infant mortality, and unintentional injuries. African Americans and other minority populations historically have the highest incidence, prevalence, and mortality associated with these conditions.

The Health Department has become the major provider of health-related services to the Marshallese. In 2011, the Dr. Joseph Bates Outreach Clinic opened in Springdale to be more responsive

to the health needs of the Marshallese and Latino communities.

The Health Department has made progress in its efforts to address and prioritize the issues of health disparities, social determinants of health, and health equity and inequalities. The Department continues to provide public health services that are affordable and accessible, using best practices and ensuring diversity, innovation, creativity, and sensitivity to all Arkansans.

EMERGENCY PREPAREDNESS

Some might imagine that emergency preparedness, as we think of it today, became a major responsibility of the Department of Health following the terrorist attacks on September 11, 2001. In fact, emergency planning and response have been public health concerns since early in the 20th century.

As with 9/11, external events – floods, earthquakes, pandemics, and man-made threats – have dictated the actions the Department has taken to protect Arkansans. In an attempt to address these events in the most timely and effective manner, preparedness efforts have consistently emphasized improving coordination, collaboration, and communication within all levels of government.

Flood of 1927

A disaster of epic proportions, the flood of 1927 affected Arkansas far worse than any other state in terms of destruction and costs. With a river that became more than 70 miles wide, more than 1.5 million total acres under water, and 36 of 75 Arkansas counties underwater, the flood killed an estimated 100 Arkansans and left tens of thousands more without food, water, or shelter.

For local health organizations, relief efforts included providing safe water, sanitary facilities, and protective immunizations. Cooperative efforts between organizations resulted in changing

attitudes towards government responsibility in aiding victims.

With limited public health personnel and funds, out-of-state aid was essential. With funding from the county, state, Red Cross, Rockefeller Foundation, and U.S. Public Health Service, relief agencies erected 20 permanent health facilities. In addition, the Rockefeller Foundation, which had provided 75 percent of the funds used in Arkansas, opened a training facility in Mississippi to prepare physicians, nurses, and sanitarians.

The flood of 1927 and the droughts of the 1930s contributed greatly to the poor economic conditions present in Arkansas. The Board of Health was forced to grow “from a practically non-functioning board of physicians to a structured, authoritative institution encompassing the entire state.” In fact, State Health Officer Dr. C. W. Garrison, with the assistance of Governor John Martineau, was said to have “built his department on floods and droughts.”



Arkansas City, Desha County, was covered in water from four to 30 feet in depth following the levee breaks in 1927. (Desha County Historical Society)

Cold War Fears

Following WWII, the country found itself in an era where thermonuclear war seemed inevitable. Advanced planning and preparation efforts required for civil defense propelled the Health Department into a new domain. According to Dr. Maurice Roe, medical director of the U.S. Public

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Health Service, Region VII, “[t]he organization of all civilian defense activities will be such that each individual will know ahead of time where he is to go and what he is to do rather than wait for instructions from some central point, since an atomic attack will be too swift to allow a wait for orders. Public health personnel will work within the official plan for health agencies rather than as community volunteers.”

Included in the Fiscal 1955-1957 ADH Public Health Plan, a letter (November 19, 1956) detailing the state’s water pollution control plan recognized that although the state lacked radiological waste at that time, future monitoring activities might be necessary and would be carried out by Department staff in cooperation with other state agencies. Within two years, radiological monitoring activities were well underway. J.T. Herron, M.D., state health officer, reported to the U.S. Public Health Service, Region VII, that low-level radioactivity doubled from the previous year and a new program measuring radioactivity in public water and cistern supplies, rain samples, and the air had begun.

In the event of a nuclear war, Act 454 of 1959 gave the Health Department responsibility for directing and coordinating a radiological health program comprised of the medical care service, health protection service, and mortuary service. However, no funding was provided to administer the program. The Health Department also implemented the Medical Self-Help Training Program in coordination with the State Civil Defense at Conway by distributing training kits and teaching materials, providing consultations, and teaching classes.

Arkansas Nuclear One

The 1970s and 1980s were plagued with a series of events that affected and altered the administration and development of Department responsibilities related to emergency preparedness.

In 1973, the Health Department’s Bureau of Environmental Health Services Division of

Radiological Health signed an agreement with the U.S. Atomic Energy Commission to perform both on-site and off-site environmental radiation monitoring, sample analysis, and data evaluation at Entergy’s (formerly AP&L) Arkansas Nuclear One (ANO) power plant near Russellville. Routine surveillance activities at ANO found no appreciable increase in the environmental radiation traceable to the source-oriented facility.

In late 1977, the Division began an environmental surveillance program to monitor radioactive plant emissions from the coal-fired Flint Creek Power Plant in Gentry, Arkansas. Later that same year, in cooperation with the EPA and other offices of the Health Department, the Radiological Health Division conducted an environmental sampling program to identify and monitor fallout radiation resulting from the Chinese Nuclear Testing of September 1977.

On March 28, 1979, there was a partial nuclear meltdown at Three Mile Island power plant in Pennsylvania, the worst accident in U.S. commercial nuclear power plant history. Small amounts of radioactive gases and radioactive iodine were released into the environment. The following year, the Arkansas General Assembly passed and Governor Bill Clinton signed two laws establishing and funding the Arkansas Nuclear Planning and Response Program (NP&RP). Jointly administered by the State Health Department and the State Office of Emergency Services and fully operational in April 1980, the NP&RP aimed to strengthen the state’s responsibility for enhancing protective measures and providing services in the event of an incident involving ANO.

A few weeks later on May 10, 1980, a ruptured seal at ANO leaked approximately 63,000 gallons of radioactive water on the reactor building’s floor. When AP&L began venting the radioactive gases, Governor Clinton and Health Department Director Dr. Robert Young requested a 48-hour delay for independent testing. The request, and a subsequent order by Dr. Young, was ignored, and the release of

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radioactive gases into the environment proceeded. In response to this incident, the U.S. Senate passed an amendment to the federal Nuclear Regulatory Commission Appropriation Bill to require the Nuclear Regulatory Commission to facilitate information flow with state authorities

Today, the Health Department's Radiation Control Section Radiological Emergency Response Team (RERT) maintains responsibility for responding to any potential off-site release of radioactive material from Arkansas Nuclear One's reactors. The RERT is prepared and equipped to respond to a variety of radioactive material incidents including transportation accidents, lost radioactive sources, and "dirty bombs."

Vertac Company in Jacksonville

On May 14, 1979, the Department was notified by the EPA that dioxin, a by-product in the manufacture of 2-4-5-T, had been detected in samples taken at the Vertac Company in Jacksonville. Because of the potential contamination of Rocky Branch Creek, which flows through the Vertac facility, the Department issued a quarantine of Rocky Branch Creek within 24 hours of the notification from the Environmental Protection Agency. This was the first time in Arkansas history that a public health quarantine had been ordered on the basis of a serious potential chemical contamination of water. Numerous Department personnel worked over a period of several months to collect biological specimens, vegetation, soil, silt and water were collected and submitted for laboratory examination.

Titan II Missile Silo Explosion

In September 1980, a missile exploded at the U.S. Air Force's Titan II Missile Launch Complex in Southside in Van Buren County. The explosion and ensuing fire destroyed the missile and the silo housing it. The Health Department responded with emergency personnel and over the next 14 hours monitored a five-mile area adjacent to the site for

radiation and nitrogen dioxide. All results were negative.

Officials worried that water sources close to the silo may have been contaminated by fuel or other materials released in the explosion. Another concern was the possibility that a toxic gas escaped into the atmosphere, a potential threat to area residents. The Health Department monitored the wells and with the cooperation of the CDC, surveyed households in the area.

Given military policies on the release of restricted information to the general public, lack of communication between Air Force personnel and representatives of state and local government bred many problems. Subsequently, the Air Force and state and local governments met to establish an evacuation plan for the 17 silo complexes located in Arkansas. A memorandum of understanding to help strengthen the lines of communication between the Health Department, Office of Emergency Services, Air Force personnel, and local government officials was signed.



The Health Department's mobile TB chest x-ray clinic trailer, dubbed the "White Whale," happened to be nearby when the Titan II missile exploded in the silo and the nuclear warhead was propelled to the USAF missile site's boundary. The Whale was later converted into a mobile communications center and mobile EOC during ANO exercises and other real world events. (Arkansas Department of Health)

Emergency Communications Center

In 1981, the Department expanded an existing Emergency Communications Center (ECC) to cover

all of Arkansas, using an equipment grant from the U.S. Department of Transportation. The ECC provided access to emergency ambulance dispatch for all citizens through the Enterprise 800 telephone lines, monitored responses of ambulances to comply with regulations, assisted ambulances in locating hospitals and relayed patient information as needed. Today, the ECC has six full-time emergency communications specialists who provide coverage 24-hours-a-day, 7-days-a-week. These specialists serve as a point of emergency contact for the Health Department for anything affecting the health and welfare of Arkansas citizens.

Chemical Stockpile Emergency Preparedness Program

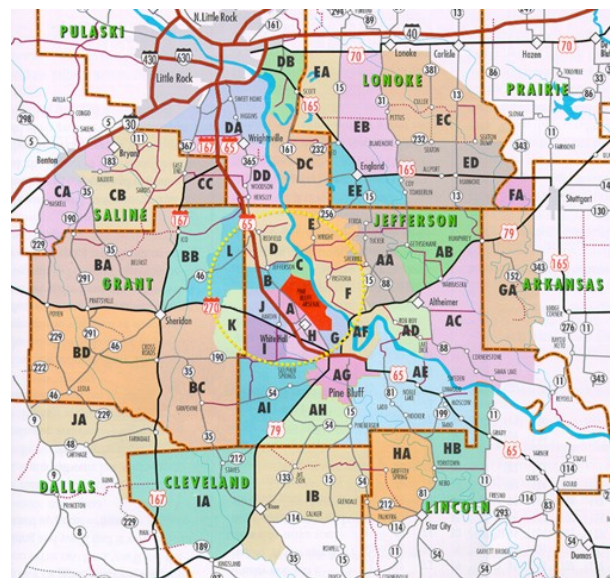
Manufactured primarily during WWII, nerve and blister agents were stored across the nation to deter chemical attacks from other countries. In 1985, Congress directed the Army to destroy the aging stockpile of chemical weapons. By the beginning of the 21st century, there were eight sites housing weapons: Anniston, Alabama; Pine Bluff, Arkansas; Pueblo, Colorado; Newport, Indiana; Bluegrass, Kentucky; Edgewood, Maryland; Umatilla, Oregon; and Deseret, Utah.

With 12 percent of the nation's original stockpile on site, the Pine Bluff Arsenal stored a vast array of weapons including rockets, warheads, and land mines that contained sarin and VX nerve agents, as well as a variety of mustard agents. Construction of an incinerator to destroy those agents was marked by a groundbreaking ceremony at the arsenal in February 1999.

In addition to eliminating the stockpiles, Congress directed the Army and the Federal Emergency Management Agency (FEMA) to assist the affected areas with emergency preparedness. Receiving more than \$32 million, Arkansas's Chemical Stockpile Emergency Preparedness Program (CSEPP) created a succinct plan for responding to any event that might occur at the arsenal. Practicing evacuation of private and public entities,

identifying evacuation routes, and educating the public were all part of the preparation and included participation from the Arkansas Department of Emergency Management (ADEM), the Arkansas Department of Environmental Quality, and the Health Department.

Though the Pine Bluff Arsenal still operates, testing chemical defense clothing and manufacturing smoke, incendiary, and pyrotechnic devices, the last chemical agents were destroyed in November 2010.



In addition to the cities of Little Rock and North Little Rock, the CSEPP plan affected 10 counties: Arkansas, Dallas, Grant, Jefferson, Lincoln, Lonoke, Prairie, Pulaski, and Saline.

Arkansas Assists Hurricane Katrina Evacuees

In September 2005, the Health Department activated and fully staffed its Emergency Operations Center (EOC) as reports began coming in that thousands of Katrina evacuees were on their way by plane, car, and bus to Arkansas. The state's greatest concern was how to house and feed the evacuees while simultaneously preventing the spread of disease in mass shelters. The Health Department accomplished hundreds of logistical tasks during this mass evacuation, including processing thousands of applications for services ranging from medical assistance and social services to temporary employment assistance. In the end, approximately 31,000 evacuees were processed

through the Arkansas system. In addition, coordination with CDC allowed for an epidemiological team to assess the health status of the evacuees. Rapid needs assessments and evaluations of the impact on environmental services systems allowed for a more efficient response to Hurricane Katrina. The Arkansas Public Health Laboratory also conducted drinking water analysis for several months following Hurricane Katrina. Increased laboratory infrastructure provided through preparedness initiatives was essential to manage increased workloads.

Bioterrorism and Other Threats

In a 2005 Commonwealth Fund issue brief on bioterrorism, Rachel Garfield noted:

The West Nile outbreak of 1999 and anthrax attacks of 2001 heightened awareness of the dangers of bioterrorism and public health emergencies. Such emergencies can cause widespread illness and death, disrupt economic and government activities, create fear, cost billions of dollars, and can even escalate to an international crisis. Many factors make current threats more salient than in the past. Previously unknown illnesses have emerged, known diseases thought to be nearly eradicated have reappeared, resistance to antimicrobial drugs to treat illnesses is rising, and the threat of terrorism persists. In addition, recent public statements about the safety of the nation's food supply have heightened public debate about the problem. The nation's ability to prepare for and respond to an infectious disease or bioterrorist attack rests largely in states' public health systems.

Federal funding for states' emergency preparedness plans began in 1999 with a series of bioterrorism and public health preparedness grants. Following the events on September 11, 2001, Congress passed the Public Health Security and Bioterrorism Preparedness and Response Act of 2002 to provide funding for emergency planning and assessment; infrastructure development including laboratory readiness, surveillance, and reporting improvements; education and training; and communication. With this funding, the Department

established a Division of Bioterrorism, now the Public Health Preparedness and Emergency Response Branch. In addition, the Health Department made funds available to partners, such as hospitals and community health centers, for their emergency preparedness efforts. Additional preparedness funding was used to purchase equipment such as improved communication devices, integrated internet connections, and protective gear for handling hazardous materials.

Routine smallpox vaccination for the general public in Arkansas ended in 1970 after the disease was eradicated in the United States. For a brief period in 2003, the Health Department carried out the voluntary federal plan, vaccinating 1,124 designated civilian healthcare providers, such as public health nurses, clinicians and hospital clinicians, and some additional non-civilians to protect them should it become necessary to vaccinate the general public in the event of a bioterrorism emergency.

During the last decade, the CDC's Strategic National Stockpile (SNS) - which can supply a cache of medical supplies and pharmaceuticals to affected states within a 12-hour timeframe - was established. Arkansas was the first state to use mass flu clinics to demonstrate the Department's ability to distribute large amounts of medicines to many people in a short amount of time. In addition, SNS resources were used during the 2009 H1N1 flu pandemic when Arkansas implemented a plan for mass dispensing of medications throughout the state.

The CDC also implemented the Health Alert Network (HAN), a nationwide system to coordinate and distribute critical information about public health events. The HAN allows health agencies to communicate via a secure website and an emergency messaging system in the event of terrorist attack, natural disaster, and other public health threat. In Arkansas, the HAN is used to distribute health information and alerts to healthcare providers, hospitals, local health

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departments, ADEM, laboratories, pharmacies, veterinarians, and other health agencies immediately by e-mail or by voice notification.

Under the leadership of the U.S. DHHS, the Health Department is the lead agency for the state's Emergency Support Function #8 for Public Health and Medical Services – coordinating the health and medical response to emergencies in the state. The Preparedness and Emergency Response Branch works with partners to respond to a medical surge, establish liaisons with the state public health laboratory, communicate with the public, coordinate with public health at the local level, establish liaisons with the Health Department's epidemiologic branch, and help access resources from federal partners.

In April 2007, a new, high-tech, and fully functional Emergency Operations Center (EOC) opened in the basement at the Department's central office. The EOC can be made operational in minutes and provides a central location to assess the current threat, coordinate an operational response, and make critical decisions during emergency and disaster situations.

The Department's preparedness plan is now integrated with those of various state and federal partners and has guided the response to disasters such as Hurricanes Katrina, Ike, and Gustav; West Nile virus; the 2009 ice storm; H1N1 influenza A pandemic; tornadoes; and the 2010 Albert Pike Campground flood. In 2010, Arkansas was one of only three states to receive a perfect score in the annual Trust for America's Health review of state public health emergency preparedness plans to handle disasters, epidemics and terrorism. The Department is well prepared today to respond to and manage recovery for a variety of emergency conditions.

PUBLIC HEALTH LABORATORY

The first State Health Department laboratory had its origin when the Rockefeller Sanitary Commission began an attack on diseases prevalent

in the South in the early years of the 20th century. One of three requirements for financial assistance was the presence of a functioning public health laboratory.

In 1913, when the state's political leaders created the Board of Health, they also established a Health Department with a vital records section and a laboratory. The first public health laboratory was located on the second floor of what is now the Old State House Museum located on W. Markham St. in downtown Little Rock. This building also housed the University of Arkansas School of Medicine, so the medical school laboratory and the public health laboratory worked together to meet the condition set out by the Rockefeller Commission.

Years later, the Health Department moved to the State Capitol grounds and operated in a building that now houses the Department of Career Education. In 1969, a new building for the Health Department central offices and laboratory was opened at its current location on W. Markham St. in Little Rock next to the University of Arkansas for Medical Sciences campus. Then in 1977, an addition was built to the public health laboratory because its scope of work and services had markedly expanded.



Arkansas Department of Health's laboratory in 1965 (Arkansas Department of Health)

In the late 1990s, U.S. authorities became particularly concerned that anthrax spores and other highly dangerous microbial agents could be used as weapons for bioterrorism. Indeed, in 2001,

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anthrax spores were released in a building in Florida, and soon afterwards anthrax spores, enclosed in envelopes, were sent through the U.S. mail to congressional leaders in Washington. These events caused concern throughout the U.S., and ordinary citizens became alarmed when an unexpected white powder was noted in a home or place of business.

In 2003, an Arkansas family received a letter containing small amounts of white powder from a New Jersey mail-processing center that handled other tainted letters. Although no one fell ill, the FBI requested Department testing of the substance. The powder was sent to the Health Department laboratory for identification, and it was immediately apparent that the facility did not have properly constructed laboratory space where laboratorians could work with these highly dangerous agents with safety for themselves and the environment.

The Health Department took quick action by asking the legislature and Governor Mike Huckabee to permit the Health Department to issue bonds to finance the construction of a new Public Health Laboratory. Approval was granted, and the bond issue was financed by increasing the fees the Department charges for issuing birth and death certificates.

At a cost of \$24.6 million, construction of the laboratory began in 2004, and was completed in October 2006 as a state-of-the-art structure with 80,000 square feet of space to accommodate approximately 140 laboratory workers. Of great importance, the 5,000-square-foot Level 3 bio-safety lab has special rooms constructed and ventilated so that laboratorians can safely work with some of the most dangerous microbes. In 2009, the new laboratory features were essential in the Health Department's round-the-clock response for testing the massive volume of potential H1N1 specimens.



Public Health Laboratory (Arkansas Department of Health)

The Public Health Laboratory is inspected regularly and is approved and certified by the American College of Pathologists, the Environmental Protection Agency and the federal Food and Drug Administration. Approximately 800,000 individual tests are done each year. This number includes about 500,000 clinical specimens from human subjects, from animals, and from the environment.

The Public Health Laboratory provides analysis and reporting of clinical and environmental samples, alcohol testing, microbiological testing of water for private individuals, neonatal screening of newborns, identification of organisms referred from clinical laboratories, certification of municipal water laboratories for microbiological testing, FDA compliance certification of milk industry dairy laboratories, and unknown biological and chemical substance testing.

LOOKING AHEAD

This publication represents a historical account of the many public health activities and accomplishments of the Arkansas Department of Health during the first 100 years of service. There have been immeasurable improvements in areas that protect and preserve our quality of life.

The role of public health has evolved from its beginnings around infectious disease and sanitation control to address a wide range of physical, mental, and social factors that influence the well-being of our citizens and communities. Since its inception in

1913, Arkansas's public health system has been constantly evolving to address the population's changing needs, providing more than 100 services.

The role continues to change as public health faces new challenges such as emerging infectious diseases, high rates of unintentional injuries, and other priorities. Added to that, the Department faces budget shortfalls and workforce challenges, including large numbers of workers who are retiring, shortages of skilled and trained professionals and the need for ongoing education to assure that emerging diseases and new threats can be effectively addressed.

Despite the fact that Arkansas scores near the bottom among the states for many health rankings, it is making progress, and the future looks hopeful. Through this publication and other methods of communication, the value and contribution of public health services will be better understood and will result in increased support from citizens and policy makers. Better understanding of public health services and accomplishments will help demonstrate how the good health of our children and adults is necessary in order to have better education and improved economic development.

During upcoming years, the Department will address a number of strategic priorities, in order to:

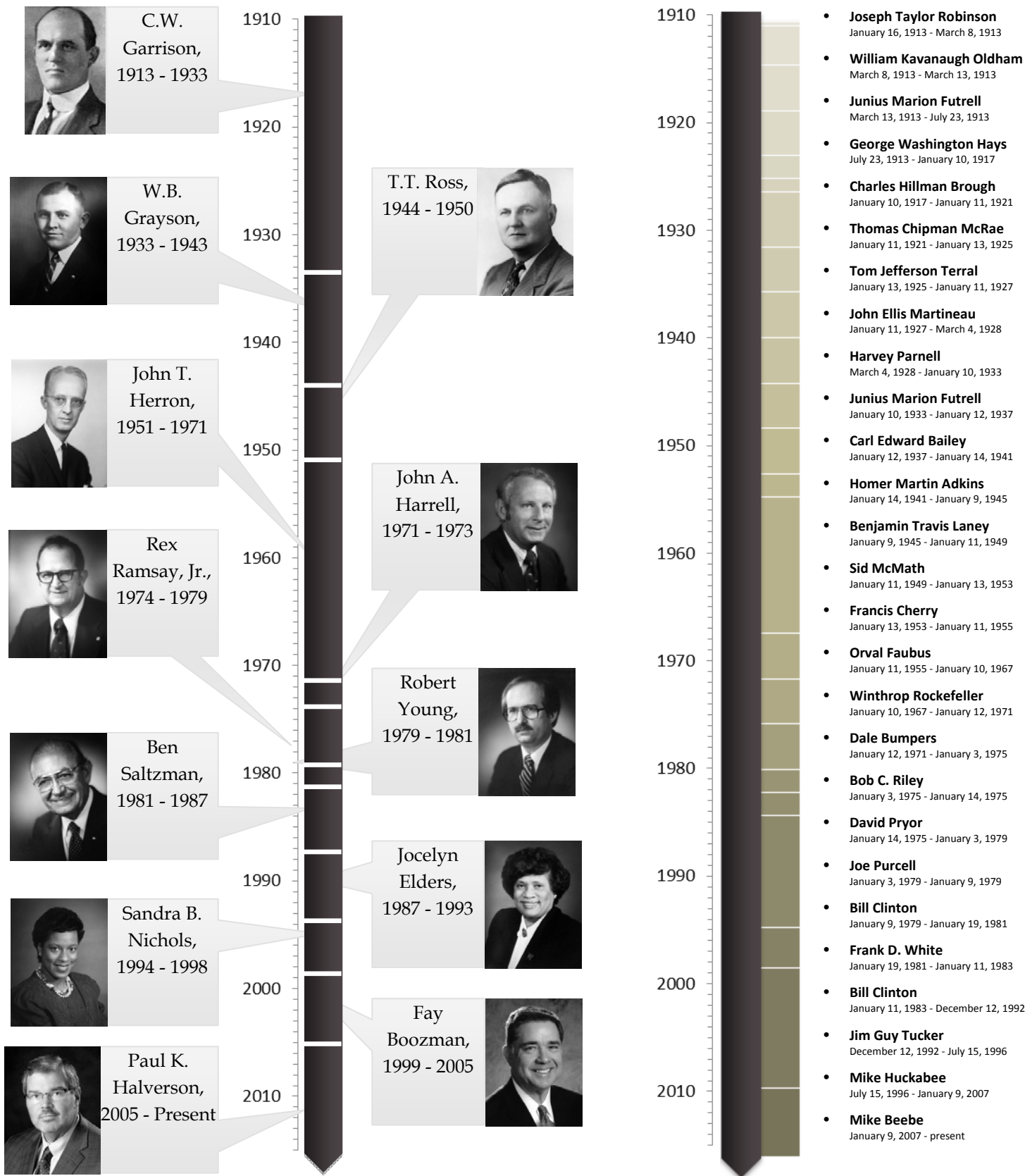
- *Strengthen and expand statewide clinical and other services*
- *Optimize HIV/STD services*
- *Reduce infant mortality*
- *Reduce teen birth rates*
- *Implement electronic health records*
- *Focus on high burden health issues*
- *Improve hypertension prevention, diagnosis, treatment, and control*
- *Advance policies to support healthy eating and active living*
- *Increase childhood immunization rates*
- *Continue "Plain Language" efforts to strengthen and integrate health literacy strategies*

- *Assure external /internal educational materials and appropriately utilize the attributes of effective health communication*

- *Strengthen and expand the Southeast Targeted Area Resources for Health Initiative (STAR.Health)*

With so many important pieces of a comprehensive public health system in place, we look forward to reporting our progress and improved health status for Arkansans in the years to come.

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Governors for the State of Arkansas from February 1913 to present. (Worrell, A. Arkansas Department of Health.)

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