

# HEALTHY CHICAGO

TRANSFORMING THE HEALTH OF OUR CITY

CHICAGO DEPARTMENT OF PUBLIC HEALTH

POLICY BRIEF

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## Public Health and the Power of Policy: A Historical Perspective

### Background Information: What Is “Public Health”?

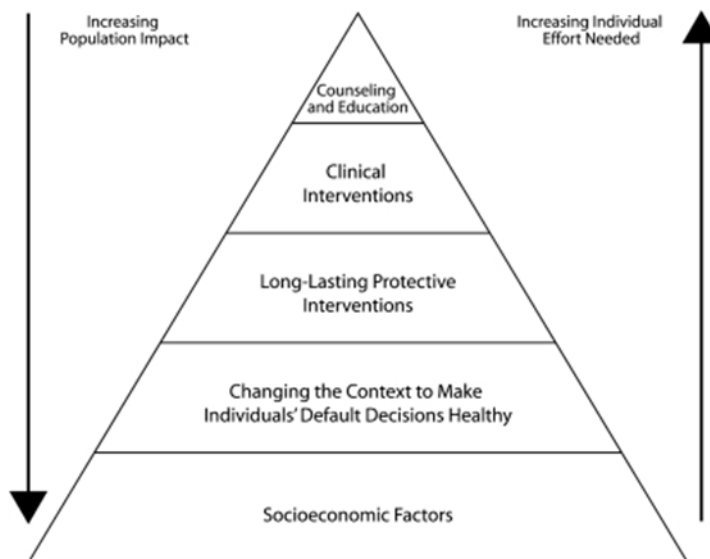
Public health is defined as the science of protecting and improving the health of populations.<sup>1</sup> During the 20th century, life expectancy for Americans increased approximately 30 years. Public health is responsible for 25 years, while medical advances account for just 4 years.<sup>2</sup> Instead of individual interventions, such as one-on-one health counseling, public health focuses on interventions aimed at entire populations, for example, ensuring a clean water supply or setting food safety standards.

### The Health Impact Pyramid: The Power of Policy, Systems, and Environmental Change

For prevention to be effective in improving public health, a comprehensive approach that goes beyond education and providing direct services is necessary. Policy change is a powerful way to affect meaningful, sustainable, cost-effective improvements to public health. This a relatively new way of thinking about public health.

To illustrate this concept, the U.S. Centers for Disease Control and Prevention developed the Health Impact Pyramid to describe the impact of different interventions on health. At the base of the pyramid are interventions with the greatest impact on the population. At the pyramid narrows, the interventions require more individual effort and have less population impact.<sup>3</sup>

**Figure 1: Health Impact Pyramid**



Near the base of the pyramid, the section labeled “Changing the Context to Make Default Decisions Health” is achieved through “policy, systems and environmental changes, “ which includes modifying the environment to make healthy choices practical and available to all community members, as well as influencing policy and legislation. By changing laws and shaping landscape around us, a big and sustainable impact can be made, often with fewer resources than one-time programmatic interventions with limited reach.<sup>4</sup>

### **A Early Example of Health Policy Improving Public health**

One of the earliest examples of changing the context through policy change is the story of Dr. John Snow and the Broad Street pump. In the mid-19th century, London was ravaged by a series of cholera epidemics. Thousands died, and city officials were at a loss for what to do about it. Dr. Snow investigated the outbreak in the neighborhood near Broad Street — he interviewed people in afflicted households and examined water sources for contamination. Dr. Snow was convinced that microbes in contaminated water caused cholera, but this theory went against the miasma theory popular at that time.\* His investigation led him to believe the water from the Broad Street pump was causing the epidemic. Although he tried to inform residents of the causes of cholera and advised them against drinking the contaminated water, they continued to draw water from the pump. Where information and education failed, an environmental change was necessary. Dr. Snow presented his evidence to the Board of Guardians of Saint James’ parish and the Board ordered the Broad Street pump be disabled by removing its handle. After the handle was removed the disease was almost instantaneously contained.<sup>5</sup>

In Chicago, during the mid to late 1800s, the waste from meat packing plants and other industries were dumped in the Chicago River. This industrial waste and household sewage was polluting Lake Michigan, which was Chicago’s source of drinking water. Eventually the lake became so polluted that people drinking it became sick with cholera, typhoid fever, and dysentery, creating a major public health crisis.<sup>6</sup> In 1854 alone, the cholera epidemic took the lives of 5.5% of Chicago’s population. In 1891, at the peak of the typhoid epidemic, the typhoid death rate was 174 per 1000,000 persons.<sup>7</sup>

In the late 19th century, Illinois law created the Sanitary District of Chicago to protect the City’s water supply. The Sanitary District’s solution was to reverse the flow of the river by digging a series of canals, sending animal waste and sewage from the Chicago River down the Des Plaines River, through the Illinois River, and then into the Mississippi River, which is why the River still flows backwards today.<sup>8</sup> The reversal of the Chicago River was an engineering marvel and one of the boldest public works projects ever attempted by the City of Chicago. This was a major public health victory for the City of Chicago.<sup>9</sup> (Of course, residents from St. Louis and downstream the Mississippi River to be a victory.)<sup>10</sup>

By the 1920s, modern sewage treatment facilities were built as a long-term solution to waste treatment and disposal.<sup>11</sup> Across the nation, water-borne epidemics were eventually cured by public health officials and urban planners who “changed the context’ by improving the urban conditions in Chicago<sup>12</sup> — a perfect example of how policy and environmental changes can impact public health.

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\*The miasma theory held that cholera and other diseases that were prevalent at the time were caused by a miasma (Greek: “pollution”), a poisonous form of “bad air.”



## Modern Examples of Health Policy Improving Public Health

There are many modern examples that illustrate the power of policy. Perhaps the best example of the impact policy can have on public health is tobacco control policy. In the early 20th century, annual per capita consumption began its steady climb from 54 cigarettes to a high of 4345 cigarettes in 1963.<sup>13</sup> At the cigarette's peak of popularity, as much as 44% of the adult population smoked.<sup>14</sup> After the release of the U.S. Surgeon General's 1964 report on smoking and health and the Fairness Doctrine in 1968,<sup>†</sup> consumption decreased slightly. However, it was only a short-term decrease. Consumption quickly rebounded to near 1963 levels. In contrast, long-term, sustainable decreases in smoking rates occurred when policies were enacted regarding taxation, enforcing age limits and banning smoking in public places.<sup>15-16</sup> As a result of policy changes, today consumption is closer 2000 cigarettes annually per capita with 20% of the adult population smoking.

A major factor in the reduction of tobacco use and secondhand smoke exposure in Illinois was catalyzed by *local* policy efforts led by the City of Chicago. In 1988, Chicago passed its first Clean Indoor Air Ordinance that restricted smoking in restaurants, workplaces and other public spaces. Then, in 2008 the City Council passed a stronger Clean Indoor Air Ordinance prohibiting smoking in nearly all enclosed places.<sup>17</sup> Ultimately, the State of Illinois followed Chicago's lead. Although the tobacco industry and smokers raised an outcry at price and location regulations, it is hard to imagine someone today smoking inside Chicago bars, restaurants, or other workplaces. It was only a few years ago that both were permitted and seemingly the norm. Policies that were once controversial are now commonplace, even expected and preferred.

Regulation of lead in homes and in the environment is another area where policy has successfully reduced a public health threat. It wasn't until the 1970s that lead exposure was recognized as a threat to child development. At that time, doctors would routinely see lead poisoned patients with blood lead concentrations of 45 micrograms per deciliter or more—so high that they were exhibiting neurological problems and anemia. Higher concentrations cause seizures or death. The primary source of lead poisoning is leaded paint, which is present in homes built during the first half of the 20th century. Another source is soil that has been contaminated by leaded gasoline.<sup>18</sup> Children growing up in the 70s were exposed unacceptable levels of lead. What helped bring blood lead concentrations down was a set of policies aimed at the sources of exposure. Chicago led the nation in policies to prevent lead poisoning. In 1972, Chicago was the first city to limit the lead content of paint and in 1984 was the first city in the nation to ban the sale of leaded gasoline.<sup>19</sup> The federal government eventually followed suit and banned lead-based paint in 1978 and leaded gasoline in 1996.<sup>20</sup> Today, death from lead poisoning is almost unheard of and blood lead concentrations are down. Nonetheless, in a city with older housing stock like Chicago, significant numbers of children are still at risk for behavioral problems and lowered IQ.<sup>21</sup>

Improving motor vehicle safety is one of the top public health accomplishments of the 20th century, and it was primarily accomplished through legislation and enforcement. By the 1960s, car use skyrocketed compared to earlier decades, as had the number of traffic fatalities. In response, the *Highway Safety Act was passed*, creating the National Highway Safety Bureau and authorizing the government to set safety standards for motor vehicles. Just a few years later, traffic fatalities were steadily decreasing.<sup>22</sup>

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<sup>†</sup>The Fairness Doctrine was a policy of the U.S. Federal Communications Commission (FCC) that required broadcasters to present balanced coverage of issues of public interest. In 1967 the FCC ruled that the policy applied to cigarette advertising. This meant that any station airing cigarette ads was required to also run anti-smoking ads.



Highway fatalities declined even further as seat belt laws were implemented. Over half of people who die in traffic accidents were not wearing a seatbelt at the time of the accident. Wearing a seat belt is the most effective way to prevent death or injury in a crash. In 1981, before the first mandatory seat belt laws were implemented, a mere 11% of the population used seat belts. Now, thanks to the implementation seat belt use laws, coupled with public awareness campaigns such as “Click It or Ticket,” that number is up to 85%.<sup>23</sup>

### **Political Tenability: Policy Change Is Often Met With Resistance**

Although John Snow was initially successful in banning access to the Broad Street pump through local policy, the success was short-lived. There was a great deal of pushback from parish officials and the public. The Board eventually gave in and replaced the pump’s handle. It was some time before proper sanitation measures were put in place to protect the public from similar outbreaks. Snow’s theory was dismissed and he died before he could learn that Italian anatomist Fillipo Pacini discovered the bacterium that causes cholera in 1854.<sup>24</sup> Today a monument marks the site of the Broad Street pump in honor of Snow’s discovery. Now we know that Snow was right — a bacterium is the cause of cholera — and any other theory seems implausible, just as the probability of a cholera outbreak in Chicago is implausible because the City of Chicago has strong sanitation policies in place.

This holds true for modern examples of policies that impact health. While laws have successfully regulated tobacco use, lead exposure, and seat belt use, there are still risks. Tobacco laws have reduced cigarette consumption and deaths from smoking, yet smoking is still the leading risk factor of preventable deaths in the United States.<sup>25</sup> Laws regulating lead have virtually eliminated fatal lead poisoning and lowered blood lead concentrations in children, but 25% of children in the United States still live in housing with lead-based paint.<sup>26</sup> Seat belt use is up, but 90 people still die in motor vehicle crashes a day.<sup>27</sup>

Moreover, despite the obvious success of these efforts, advocates have faced pushback from industry, interest groups and the public.<sup>28-29</sup> These issues are still the focus of public health efforts with initiatives such as smoke-free housing, smoke-free parks, and lead free Healthy Homes, and Click It or Ticket laws. There are also new, sometimes controversial strategies to limit access to unhealthy foods, eliminate food deserts and increase physical activity for adults and children. It is important to remember the lesson of John Snow and the Broad Street pump: history has taught us it is imperative to stand by evidence-based policies aimed at improving public health — even when it’s politically difficult — because doing so saves lives.



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